

ARICA AND VICTORY PASS SOLAR PROJECTS

FINAL ENVIRONMENTAL IMPACT REPORT



SCH# 2020100076
November 2021

Prepared by:

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FINAL ENVIRONMENTAL IMPACT REPORT

Arica and Victory Pass Solar Projects **Riverside County, California** State Clearinghouse No. 2020100076

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NOVEMBER 2021

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Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
AB	Assembly Bill
AC	alternating current
ACEC	Area of Critical Environmental Concern
af	acre-feet
afy	acre-feet per year
APE	area of potential effect
APM	Applicant-proposed measure
B.P.	before present
BBCS	Bird and Bat Conservation Strategy
BESS	Battery Energy Storage System
BLM	Bureau of Land Management
BMP	best management practices
BP	before present
BRTR	Biological Resource Technical Report
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	County of Riverside Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHP	California Highway Patrol
CHU	Critical Habitat Unit
CMA	Conservation and Management Action
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
County	County of Riverside

**Arica Solar Project and Victory Pass Solar Project
Acronyms and Abbreviations**

Acronym/ Abbreviation	Definition
CPUC	California Public Utilities Commission
CRA	Colorado River Aqueduct
CRHR	California Register of Historic Resources
CRIT	Colorado River Indian Tribes
CRPR	California Rare Plant Rank
CSA	County Service Area
CSP	concentrating solar power
CUPA	Certified Unified Program Agency
CVGB	Chuckwalla Valley Groundwater Basin
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DC	direct current
DEH	County of Riverside Department of Environmental Health
DESCP	Drainage Erosion and Sedimentation Control Plan
DFA	Development Focus Area
DPM	diesel particulate matter
DRECP	Desert Renewable Energy Conservation Plan
DTC/CAMA	Desert Training Center/California-Arizona Maneuver Area
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EMF	electromagnetic fields
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESS	Energy Storage System
FAA	Federal Aviation Administration
FHSZ	Fire Hazard Severity Zone
FLPMA	Federal Land Policy and Management Act
GO	General Order
HWCL	California Hazardous Waste Control Law
I	Interstate
IBC	International Building Code
ITP	Incidental Take Permit
IWMP	Integrated Weed Management Plan
JTNP	Joshua Tree National Park
KOP	Key Observation Point
kV	kilovolt
lb/day	pounds per day
L _{dn}	day-night average sound level
L _{eq}	equivalent sound level
LOS	level of service
LSA	Lake and Streambed Agreement
LST	Localized Significance Threshold
LUPA	Land Use Plan Amendment
mg/L	milligrams per liter

Acronym/ Abbreviation	Definition
MM	Mitigation Measure
MMT	million metric tons
MT	metric tons
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NECO	Northern and Eastern Colorado Desert Coordinated Management
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NOA	<u>Notice of Availability</u>
NOP	Notice of Preparation
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
O ₃	ozone
OHV	off-highway vehicle
OPLMA	Omnibus Public Lands Management Act
PA	Programmatic Agreement
PFMM	Potentially Feasible Mitigation Measure
PFYC	Potential Fossil Yield Classification
PM ₁₀	particulate matter with an aerodynamic diameter equal to or less than 10 microns
PM _{2.5}	particulate matter with an aerodynamic diameter equal to or less than 2.5 microns
POD	Plan of Development
PRC	California Public Resources Code
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PRPA	Paleontological Resources Preservation Act
PTNCL	Prehistoric Trails Network Cultural Landscape/Historic District
PV	photovoltaic
PVMGB	Palo Verde Mesa Groundwater Basin
RCALUCP	Riverside County Airport Land Use Compatibility Plan
RCFD	Riverside County Fire Department
RCFD	Riverside County Fire Department
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental conditions
ROD	Record of Decision
ROG	reactive organic gas
ROW	right-of-way
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill

**Arica Solar Project and Victory Pass Solar Project
Acronyms and Abbreviations**

Acronym/ Abbreviation	Definition
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SDC	Seismic Design Category
SEZ	solar energy zone
SF ₆	sulfur hexafluoride
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Office
SO ₂	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SR	State Route
SRMA	Special Recreation Management Area
SSC	Species of Special Concern
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCL	Tribal Cultural Landscape
TCP	Traditional Cultural Property
TCR	tribal cultural resource
TDS	total dissolved solids
TISG	Transportation Impact Study Guide
UL	Underwriter's Laboratory
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UXO	unexploded ordnance
VMT	vehicle miles traveled
VOC	volatile organic compound
VRM	Visual Resource Management
WEEP	Worker Environmental Education Program
WSA	Water Supply Assessment

P Preface

P.1.1 Purpose and Organization

This Final Environmental Impact Report (EIR) has been prepared by the California Department of Fish and Wildlife (CDFW) for the proposed Arica and Victory Pass Solar Projects (Projects). This Final EIR contains the agency and public comments received during the public review comment period for the proposed Projects Draft EIR. CDFW, as the California Environmental Quality Act (CEQA) lead agency, has prepared this EIR in conformance with CEQA of 1970 Statute (California Public Resources Code, Section 21000 et. seq., as amended) and implementing Guidelines (14 CCR 15000 et. seq.), as well as in accordance with California Fish and Game Codes 711.7(a) and 1802.

This Final EIR is an informational document only, the purpose of which is to disclose to CDFW decision makers and the public the environmental consequences of issuance an Incidental Take Permit for the desert tortoise (*Gopherus agassizii*) and Lake and Streambed Alteration Agreements, in combination with the proposed Projects, as the “whole of the action.” CDFW has analyzed and disclosed the environmental effects as the whole of the action of the proposed Projects or one of the alternatives described in the Draft EIR. All written comments received during the public review period (August 6, 2021, through September 20, 2021) on the Draft EIR are addressed in this Final EIR (refer to the Responses to Comments chapter).

P.1.2 Format of the Final Environmental Impact Report

This Final EIR consists of the August 2021 Draft EIR and the following four chapters:

Preface. This chapter summarizes the contents of the Final EIR and the environmental review process.

Response to Comments. During the public review period for the Draft EIR, a total of seven comment letters were received: one from a public agency, five from organizations, and one from a member of the public. Section RTC.2 of this Final EIR contains a list of those who provided comments on the Draft EIR during the public review period, and Section RTC.3 includes the comment letters received and CDFW’s responses to the comments. Each comment letter on the Draft EIR is coded using a letter and number and presented with brackets indicating how the letter has been divided into individual comments. Each comment is labeled using the code assigned to the comment letter, followed by the comment number. For example, comments in Letter B1 are numbered B1-1, B1-2, B1-3, and so on. Immediately following the letter are responses to each comment, each with identifiers that correspond to the bracketed comments. As the subject matter of one topic may overlap between letters, the reader must occasionally refer to one or more responses to review all the information on a given subject. To assist the reader, cross-references to other comments are provided.

Final EIR. Several of the comments that are addressed in the Response to Comments chapter resulted in minor revisions to the information contained in the August 2021 Draft EIR. Additional revisions to the Draft EIR, including those identified specifically in responses to comments, were included in the Final EIR. Deletions from the text are shown in ~~strike through~~ and additions to the text are shown in underline text in various chapters of the Draft EIR. These changes and additions to the EIR do not raise important new issues related to significant effects on the environment. These changes do not alter the conclusions of the Draft EIR and are considered insignificant as the term is used in Section 15088.5(b) of the CEQA Guidelines. Additionally, through the certification of this Final EIR, where the term “Draft EIR” is used in the text, this is now deemed to be “Final EIR.”

P.1.3 Environmental Review Process

Notice of Preparation

Pursuant to Section 15082 of the CEQA Guidelines, CDFW published a Notice of Preparation (NOP) on October 5, 2020, which was circulated to interested agencies, organizations, and individuals. The NOP was also sent to the State Clearinghouse at the California Governor's Office of Planning and Research. The State Clearinghouse assigned a state identification number (SCH No. 2020100076) to this EIR. The 30-day NOP public review period ended on November 4, 2020.

A public scoping meeting was held on October 21, 2020, to gather additional public input on the scope of the environmental analysis. Approximately 30 individuals attended the virtual scoping meeting. All comments received during the NOP public notice period and scoping meeting were considered during the preparation of this EIR. The NOP and copies of the comment letters are included in Appendix B of the EIR.

Noticing and Availability of the Draft and Final EIR

The Draft EIR was made available for a 45-day public review and comment period pursuant to CEQA Guidelines Section 15087 starting on August 6, 2021, through September 20, 2021. To initiate the start of the public comment period, the Draft EIR and Appendices, the Notice of Completion, the Notice of Availability (NOA), and Summary Form were uploaded to the State Clearinghouse CEQAnet Web Portal. The NOA was distributed to interested parties and was also filed with the Riverside County Clerk. The NOA sent described that the documents were available on CDFW's website at <https://wildlife.ca.gov/Notices>. The NOA also described how to submit comments on the Draft EIR. The 45-day public review period provided interested public agencies, groups, and individuals the opportunity to comment on the contents of the Draft EIR.

This Final EIR will be presented to CDFW for review and potential certification as the environmental document for the Projects. CDFW will provide the Final EIR to the State Clearinghouse to be posted to the CEQAnet Web Portal at <https://ceqanet.opr.ca.gov/Project/2020100076>, and provide notice of availability of the Final EIR to all agencies that commented on the Draft EIR, pursuant to CEQA Guidelines Section 15088(b). CDFW will also post the Final EIR on the CEQA Notices portion of the CDFW website at <https://wildlife.ca.gov/Notices/CEQA>.

P.1.4 Revisions to the Draft EIR

The comments received during the public review period for the Draft EIR resulted in some minor clarifications and modifications in the text of the Draft EIR. These changes are included in various chapters of the Final EIR, to be presented to the CDFW decision-makers during their review of the EIR. Refer to the Final EIR where deletions from the text are shown in ~~striketrough~~ and additions to the text are shown in underline.

RTC Responses to Comments

This section of the Final EIR, Responses to Comments, contains all comments received on the Draft EIR and responses thereto. When a comment is not directed to significant environmental issues and does not raise specific issues related to the adequacy of the environmental analysis, the response indicates that no further response is required.

The responses to comments are organized as follows:

- RTC.1 List of Commenters
- RTC.2 Written Comments and Responses. Contains verbatim comment letters and responses to environmental issues raised.

RTC.1 List of Commenters

During the public review period, seven comment letters were received on the Draft EIR. These comment letters and their corresponding responses are presented chronologically and organized in the following categories:

- A. Agencies
- B. Non-Governmental Organizations and Companies
- C. Individuals

Each comment letter has been assigned a unique letter-number designation based on category and chronology. Comment letters received and unique letter-number designators for each letter are listed in Table RTC-1. Individual comments within each letter are bracketed and subsequently numbered in the right-hand margin and correspond with the responses of the same letter-number designation. All comments submitted are noted and included in the administrative record for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). As appropriate, similar comments are cross-referenced in the individual responses. Section RTC.3 provides responses to all comments received and all bracketed comment letters.

Table RTC-1. Draft Environmental Impact Report List of Commenters

Comment Letter Designation	Date of Letter	Commenter Name/Agency	Response Nos.
A1	9/20/21	Southern California Association of Governments (Frank Wen)	A1-1–A1-6
B1	9/06/21	Audubon (Garry George)	B1-1–B1-6
B2	9/17/21	Desert Tortoise Council (Edward L. LaRue)	B2-1–B2-7
B3	9/20/21	Defenders of Wildlife and Sierra Club (Jeff Aardahl, Defenders of Wildlife and Jenny Binstock, Sierra Club)	B3-1–B3-3
B4	9/20/21	Center for Biological Diversity (Ileene Anderson)	B4-1–B4-15
B5	9/20/21	Clearway Energy Group (Aarty Joshi)	B5-1–B5-9
C1	8/25/21	Robert Tilford	C1-1–C1-3

RTC.2 Written Comments and Responses

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Comment Letter A1



SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
T: (213) 236-1800
www.scag.ca.gov

REGIONAL COUNCIL OFFICERS

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Clint Lorimore, Eastvale

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**Jan C. Harnik, Riverside County
Transportation Commission**

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Clint Lorimore, Eastvale

Community, Economic &
Human Development
Jorge Marquez, Covina

Energy & Environment
David Pollock, Moorpark

Transportation
Sean Ashton, Downey

September 20, 2021

Ms. Magdalena Rodriguez, Project Manager
California Department of Fish and Wildlife, Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, California 91764
Phone: (909) 844-2520
E-mail: Magdalena.Rodriguez@wildlife.ca.gov

RE: SCAG Comments on the Draft Environmental Impact Report (DEIR) for the Arica and Victory Pass Solar Projects [SCAG NO. IGR10451]

Dear Ms. Rodriguez,

Thank you for submitting the Notice of Availability of the Draft Environmental Impact Report (DEIR) for the Arica and Victory Pass Solar Projects ("proposed project") to the Southern California Association of Governments (SCAG) for review and comment. Located on Bureau of Land Management-administered land in the County of Riverside, California, the proposed project includes utility-scale solar photovoltaic electrical generating and storage facilities and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The Arica Project would generate 265 megawatts (MW) and the Victory Pass Project would generate 200 MW of energy. Each Project would include up to 200 MW of battery storage. The sites and associated facilities would encompass approximately 2,724 acres of a 3,800-acre site.

Based on SCAG staff's review, the DEIR does not reference the most recently adopted 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). SCAG staff comments are detailed in the attachment to this letter.

A1-1

When available, please send the Final Environmental Impact Report to IGR@scag.ca.gov. If you have any questions regarding the attached comments, please contact the Intergovernmental Review (IGR) Program, attn.: Anita Au, Senior Regional Planner, at (213) 236-1874 or IGR@scag.ca.gov. Thank you.

A1-2

Sincerely,

Frank Wen, Ph.D.
Manager, Planning Strategy Department

**COMMENTS ON THE NOTICE OF AVAILABILITY OF A
DRAFT ENVIRONMENTAL IMPACT REPORT FOR
ARICA AND VICTORY PASS SOLAR PROJECTS [SCAG NO. IGR10451]**

SUMMARY

Pursuant to Senate Bill (SB) 375, SCAG is the designated Regional Transportation Planning Agency under state law and is responsible for preparation of the Regional Transportation Plan (RTP) including the Sustainable Communities Strategy (SCS). SCAG’s feedback is intended to assist local jurisdictions and project proponents to implement projects that have the potential to contribute to attainment of Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) goals and align with RTP/SCS policies.

Based on SCAG staff review, the DEIR does not reference the most recently adopted 2020 Connect SoCal. SCAG staff recommends including references to Connect SoCal as described in the following sections.

CONNECT SOCIAL GOALS

The SCAG Regional Council fully adopted [Connect SoCal](#) in September 2020. Connect SoCal, also known as the 2020 – 2045 RTP/SCS, builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health. The goals included in Connect SoCal may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project. Among the relevant goals of Connect SoCal are the following:

A1-3

SCAG CONNECT SOCIAL GOALS	
Goal #1:	<i>Encourage regional economic prosperity and global competitiveness</i>
Goal #2:	<i>Improve mobility, accessibility, reliability and travel safety for people and goods</i>
Goal #3:	<i>Enhance the preservation, security, and resilience of the regional transportation system</i>
Goal #4:	<i>Increase person and goods movement and travel choices within the transportation system</i>
Goal #5:	<i>Reduce greenhouse gas emissions and improve air quality</i>
Goal #6:	<i>Support healthy and equitable communities</i>
Goal #7:	<i>Adapt to a changing climate and support an integrated regional development pattern and transportation network</i>
Goal #8:	<i>Leverage new transportation technologies and data-driven solutions that result in more efficient travel</i>
Goal #9:	<i>Encourage development of diverse housing types in areas that are supported by multiple transportation options</i>
Goal #10:	<i>Promote conservation of natural and agricultural lands and restoration of habitats</i>

September 20, 2021
Ms. Rodriguez

SCAG No. IGR10451
Page 3

Connect SoCal Strategies

To achieve the goals of Connect SoCal, a wide range of land use and transportation strategies are included in the accompanying twenty (20) technical reports. To view Connect SoCal and the accompanying technical reports, please visit the [Connect SoCal webpage](#). Connect SoCal builds upon the progress from previous RTP/SCS cycles and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that helps the SCAG region strive towards a more sustainable region, while meeting statutory requirements pertinent to RTP/SCSs. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

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A1-3
Cont.

SCAG Staff Comments

SCAG staff recommends that you review 2020 Connect SoCal and consider its adopted goals and policies when finalizing the proposed project.

DEMOGRAPHICS AND GROWTH FORECASTS

A key, formative step in projecting future population, households, and employment through 2045 for Connect SoCal was the generation of a forecast of regional and county level growth in collaboration with expert demographers and economists on Southern California. From there, jurisdictional level forecasts were ground-truthed by subregions and local agencies, which helped SCAG identify opportunities and barriers to future development. This forecast helps the region understand, in a very general sense, where we are expected to grow, and allows SCAG to focus attention on areas that are experiencing change and may have increased transportation needs. After a year-long engagement effort with all 197 jurisdictions one-on-one, 82 percent of SCAG's 197 jurisdictions provided feedback on the forecast of future growth for Connect SoCal. SCAG also sought feedback on potential sustainable growth strategies from a broad range of stakeholder groups – including local jurisdictions, county transportation commissions, other partner agencies, industry groups, community-based organizations, and the general public. Connect SoCal utilizes a bottom-up approach in that total projected growth for each jurisdiction reflects feedback received from jurisdiction staff, including city managers, community development/planning directors, and local staff. Growth at the neighborhood level (i.e., transportation analysis zone (TAZ) reflects entitled projects and adheres to current general and specific plan maximum densities as conveyed by jurisdictions (except in cases where entitled projects and development agreements exceed these capacities as calculated by SCAG). Neighborhood level growth projections also feature strategies that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California's GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Connect SoCal's Forecasted Development Pattern is utilized for long range modeling purposes and does not supersede actions taken by elected bodies on future development, including entitlements and development agreements. SCAG does not have the authority to implement the plan -- neither through decisions about what type of development is built where, nor what transportation projects are ultimately built, as Connect SoCal is adopted at the jurisdictional level. Achieving a sustained regional outcome depends upon informed and intentional local action. To access jurisdictional level growth estimates and forecasts for years 2016 and 2045, please refer to the [Connect SoCal Demographics and Growth Forecast Technical Report](#). The growth forecasts for the region and applicable jurisdictions are below.

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A1-4
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	Adopted SCAG Region Wide Forecasts				Adopted Riverside County Forecasts			
	Year 2020	Year 2030	Year 2035	Year 2045	Year 2020	Year 2030	Year 2035	Year 2045
Population	19,517,731	20,821,171	21,443,006	22,503,899	2,492,601	2,852,599	2,995,509	3,251,705
Households	6,333,458	6,902,821	7,170,110	7,633,451	784,783	930,216	987,738	1,086,113
Employment	8,695,427	9,303,627	9,566,384	10,048,822	822,826	961,268	1,008,943	1,102,721

SCAG Staff Comments

In Section 3.13 Population and Housing starting on page 3.13-1 of the DEIR, SCAG staff recommends including a reference to the population, housing, and employment trends and forecasts based on the most recently adopted SCAG 2020 Connect SoCal Regional Growth Forecasts to recognize the county's planned growth.

A1-4
Cont.

MITIGATION

SCAG Staff Comments

SCAG staff recommends that you review the [Final Program Environmental Impact Report \(Final PEIR\)](#) for Connect SoCal for guidance, as appropriate. SCAG's Regional Council certified the PEIR and adopted the associated Findings of Fact and a Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on May 7, 2020 and also adopted a PEIR Addendum and amended the MMRP on September 3, 2020 (please see the [PEIR webpage](#) and scroll to the bottom of the page for the PEIR Addendum). The PEIR includes a list of project-level performance standards-based mitigation measures that may be considered for adoption and implementation by lead, responsible, or trustee agencies in the region, as applicable and feasible. Project-level mitigation measures are within responsibility, authority, and/or jurisdiction of project-implementing agency or other public agency serving as lead agency under CEQA in subsequent project- and site- specific design, CEQA review, and decision-making processes, to meet the performance standards for each of the CEQA resource categories.

A1-5

Response to Comment Letter A1

Southern California Association of Governments
Frank Wen, PhD, Manger, Planning Strategy Department
September 20, 2021

- A1-1** This comment indicates that the Draft Environmental Impact Report (EIR) did not address the most recently adopted 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal) and that detailed comments are provided in the attachment to the letter. Responses A1-3 through A1-5 provide details regarding the comments in the attachment to the comment letter. The comment does not raise an issue related to the adequacy of the EIR; therefore, no further response is required.
- A1-2** California Department of Fish and Wildlife (CDFW) acknowledges this comment as a conclusion to the comment letter and the Southern California Association of Governments’ (SCAG’s) request for a copy of the Final EIR to be sent to IGR@scag.ca.gov. CDFW will provide SCAG with notification when the Final EIR is available. The comment does not raise an issue related to the adequacy of any specific section or analysis in the Draft EIR; therefore, no further response is required.
- A1-3** CDFW acknowledges SCAG as the designated Regional Transportation Planning Agency under state law that is responsible for preparation of the RTP, including the SCS. The 2020-2045 RTP/SCS charts a path toward a more mobile, sustainable, and prosperous region by making key connections between transportation networks, planning strategies, and people. The goals and policies included in the RTP/SCS are focused on land use and transportation projects, as energy projects would not generate a substantial number of daily trips during permanent operation. However, per Appendix C, Minimum Criteria for Classification of Projects as Regionally Significant, of SCAG’s Intergovernmental Review Procedures Handbook (SCAG 2012), “new or expanded electrical generating facilities and transmission lines” qualify as regionally significant projects. Therefore, RTP/SCS consistency analysis has been included for the proposed Arica Solar Project and Victory Pass Solar Project (Projects), but does not change the significance conclusions in the EIR.

As part of the development of Connect SoCal, SCAG adopted a set of 10 high level goals. As SCAG recommended consideration of goals in the Connect SoCal Plan, the table below provides a consistency discussion for the proposed Projects relative to these 10 goals. This table has also been added to Section 3.16, Transportation (in Section 3.16.3, Impact Analysis), in the EIR, as Table 3.16-2. As shown in the table, the Projects are consistent with applicable 2020 Connect SoCal goals.

Connect SoCal Goal	Consistency Discussion
Goal #1: Encourage regional economic prosperity and global competitiveness.	The construction and operation of the Projects include the procurement of goods and services and worker wages that would occur both locally and regionally, resulting in economic benefits.
Goal #2: Improve mobility, accessibility, reliability, and travel safety for people and goods.	The Projects would have no impact on this goal but would ensure the safety of people and goods during construction and operation by following existing transit laws. Applicant Proposed Measure (APM) TRA-1 through APM TRA-4 would reduce effects of the additional goods and people required during construction and would ensure roads and transportation facilities were repaired at the end of construction.

Connect SoCal Goal	Consistency Discussion
Goal #3: Enhance the preservation, security, and resilience of the regional transportation system.	The Projects would have no effect on security of the transportation network. APM TRA-4 (Repair Roadways and Transportation Facilities Damaged by Construction Activities) would ensure any damage and deterioration attributed to the Projects would be repaired.
Goal #4: Increase person and goods throughput and travel choices within the transportation system.	The Projects would not impact the transportation system as a whole but would increase use of roads during construction. There are limited travel choices in the Desert Center region, but the Projects would encourage carpooling of construction workers (APM TRA-1 and TRA-2), which would provide some travel choice.
Goal #5: Reduce greenhouse gas emissions and improve air quality.	The Projects would develop renewable energy, which would reduce greenhouse gas emissions and improve air quality by offsetting the need for conventional power generation.
Goal #6: Support healthy and equitable communities.	The Projects would develop renewable energy, which would reduce greenhouse gas emissions and improve air quality by offsetting the need for conventional power generation. Economic benefits, from the procurement of goods and services and worker wages, would occur both locally and regionally during the Projects' construction and operation. The Applicants are committed to using union labor and would request that the Engineer, Procurement, and Construction contractor hold local job fairs to attract labor from the nearby communities and include employment opportunities for tribal members, access to any necessary job training programs to ensure performance and experience requirements can be met, and an opportunity for tribal enterprises to bid on sourcing construction materials.
Goal #7: Adapt to a changing climate and support an integrated regional development pattern and transportation network.	The Projects would have no effect on regional development patterns of the transportation network. The Projects would develop renewable energy, which would reduce greenhouse gas emissions and improve air quality by offsetting the need for conventional power generation.
Goal #8: Leverage new transportation technologies and data-driven solutions that result in more efficient travel.	The Projects will design a Traffic Commute and Control Plan that would use data to determine which times are best to avoid at given intersections to avoid inefficient travel. There are limited travel choices in the Desert Center region, but the Projects would include carpooling of construction workers (APM TRA-1 and TRA-2) which would provide for more efficient travel. With APM-TRA-1, impacts would be less than significant.
Goal #9: Encourage development of diverse housing types in areas well supported by multiple transportation options.	As solar projects, the Projects would generate temporary and short-term construction trips and nominal permanent operational trips for the solar sites. Therefore, the Projects would have no effect on housing development.
Goal #10: Promote conservation of natural and agricultural lands and restoration of critical habitats.	The Projects are located on lands allocated by BLM for renewable development and avoid lands allocated by BLM for conservation, all in accordance with BLM's DRECP, which is designed to balance conservation and renewable energy development. The Projects include APMs and would implement mitigation to reduce significant effects to natural habitat.

Source: SCAG 2020.

A1-4 This comment describes SCAG's approach to developing population, household, and employment forecasts for Connect SoCal to determine the transportation needs in the region and provides the adopted SCAG regionwide forecasts and the adopted Riverside County forecasts in 5-year increments from year 2020 through 2045. EIR Section 3.13, Population and Housing (refer to Table 3.13-2, Population Estimates, Projections, and Average Annual Growth Rates) includes population growth forecasts based on California Department of Finance estimates through 2060. Although the forecasts adopted by SCAG in Connect SoCal are slightly

higher, these forecasts do not change the impact conclusions of the EIR. As described in Section 3.13.3, the Projects consist of large-scale solar power facilities to be connected to the existing power grid and would not induce future population growth in the region either through construction or operation. During operation, a maximum of up to 6 workers would be part of the regular operations and maintenance workforce for each Project. Intermittently, approximately 10 to 15 workers may be on call for additional repairs or replacement of equipment and panel cleaning; however, the small number of employees during operation of the Projects would not substantially increase the population in surrounding communities. Additionally, the Projects would not include the extension of infrastructure or roads into undeveloped areas where future population-inducing growth could occur. Also, as solar projects, the Projects would have no effect on housing development. The permanent employment of the Projects would not conflict with the growth projections of Connect SoCal. Therefore, the projects would remain consistent with the South Coast Air Quality Management District's Air Quality Management Plan. As shown in Response A1-3, the project would not conflict with the goals within Connect SoCal and thus impacts to energy and greenhouse gas emissions would remain less than significant.

A1-5 This comment recommends review of project-level performance-standards-based mitigation measures in the Connect SoCal Final Program EIR and PEIR Addendum, and that they be considered for guidance, as appropriate. The commenter acknowledges that it is ultimately up to the lead agency to determine the appropriateness of the mitigation measures based on project-specific circumstances. Sections 3.1 through 3.19 of the Draft EIR provide a detailed impact analysis of 18 environmental topics, and, where necessary, include the consideration of Applicant Proposed Measures (APMs) and/or project-level mitigation measures that would reduce potential impacts. After review of the Connect SoCal Final Program EIR and PEIR Addendum mitigation measures, it appears that many of them are similar to the Projects' APMs, such as APM AIR-1 and APM AIR-2 that require, but are not limited to, limiting idling, stabilizing loose materials, revegetating disturbed land, properly tuning and maintaining construction equipment, reducing track out, and reducing greenhouse gas emissions. In addition, under Mitigation Measure (MM) BIO-2, the EIR requires the Applicants to develop and implement a Worker Environmental Awareness Program, and MM BIO 6, MM BIO-7, and MM BIO-13 require compensatory mitigation lands for potential impacts to biological resources. Please refer to the EIR Executive Summary, Table ES-2, for a complete list of all project APMs and MMs. Furthermore, the Connect SoCal mitigation measures would not reduce impacts to air quality during construction further than what is proposed with implementation of APMs.

References

SCAG (Southern California Association of Governments). 2012. *Intergovernmental Review Procedures Handbook*.

SCAG. 2020b. *Plan Performance: Performance Measures*. Adopted May 7, 2020. https://scag.ca.gov/sites/main/files/file-attachments/fconnectsocial_performance-measures.pdf.

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Comment Letter B1



September 6, 2021

Bureau of Land Management Arica and Victory Pass Solar Projects
Attention: Miriam Liberatore, Bureau of Land Management 3040 Biddle Road Medford
OR 97504
e-mail: mliberat@blm.gov

California Department of Fish and Wildlife, Inland Deserts Region
Attention: Magdalena Rodriguez, Project Manager
Mailing Address: 3602 Inland Empire Boulevard, Suite C-220, Ontario, California 91764
via email: Magdalena.Rodriguez@wildlife.ca.gov

Dear BLM and CDFW:

The National Audubon Society protects birds and the places they need, today and tomorrow. Audubon works throughout the Americas using science, advocacy, education, and on-the-ground conservation. State programs, nature centers, chapters, and partners give Audubon an unparalleled wingspan that reaches millions of people each year to inform, inspire, and unite diverse communities in conservation action. A nonprofit conservation organization since 1905, Audubon believes in a world in which people and wildlife thrive.

The Project: Arica Solar, LLC and Victory Pass I, LLC seek authorization to construct two photovoltaic solar projects on public lands. Each project would be approximately 2,000 acres in size, generate up to 265 MW of electricity with up to 200 MW of battery storage, and be sited entirely on BLM-managed public lands. The Arica and Victory Pass solar projects would result in an estimated combined private infrastructure investment of \$689 million, \$5.9 million in annual operational economic benefit, and together power approximately 132,000 homes.

As Lead Agency for National Environmental Policy Act, BLM has released a N.O.P. of an Environmental Assessment (EA) for the Project tiered to the Desert Renewable Energy Conservation Plan (DRECP). The projects are in the Riverside East Development Focus Area of that plan promising more efficient state and federal permitting bringing emissions reductions online faster to meet California's clean energy and climate goals while protecting our desert lands and wildlife.

As Lead Agency for California Environmental Quality Act, California Department of Fish & Wildlife has released a N.O.P. for a Draft Environmental Impact Report (DEIR) for the Project. The projects are in BLM lands in the Riverside East Development Focus Area of the Desert Renewable Energy Conservation Plan adopted by the Department of Interior in 2016. The Plan

promised more efficient state and federal permitting bringing emissions reductions online faster to meet California’s clean energy and climate goals.

Audubon was a stakeholder for eight years in the development of the DRECP and fully supports the FEIS and ROD for the DRECP and the Conservation and Management Actions (CMA) for siting renewables in that Plan.

While BLM has subsequently issued guidance seeking to disclaim its authority to require compensatory mitigation, this guidance contravenes the true scope of BLM’s authority to place conditions on the use of public lands and BLM is further bound by its commitments in the DRECP. Further BLM has committed to honor state requirements for compensatory mitigation, which also affect renewable energy development under the DRECP.

Our comments on the EA and the DEIR are as follows:

1. Both the DEIR and the EA misstate the protections for migratory birds in federal and state laws.

The DEIR misstates California Fish and Game Code Section 3513. It was amended by AB454 (2019-2020) and should read:

3513. (a) It is unlawful to take or possess any migratory nongame bird as designated in the federal Migratory Bird Treaty Act (16 U.S.C. Sec. 703 et seq.) before January 1, 2017, any additional migratory nongame bird that may be designated in that federal act after that date, or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the United States Secretary of the Interior under that federal act before January 1, 2017, or subsequent rules or regulations adopted pursuant to that federal act, unless those rules or regulations are inconsistent with this code.

THE EA fails to include Fish and Game Code Section 3513 in its list of California laws in Appendix H.

Additionally, on May 7, 2021, the Biden Administration took the first step to revoke the Trump Administration’s Migratory Bird Treaty Act (“MBTA”) Rule. In January 2021, the U.S. Fish and Wildlife Service (“USFWS”) published a final rule that limited the MBTA’s prohibition on “takings” to only those purposeful “takes” that result in the injury or death of a migratory bird. The rule quickly fell under the scrutiny of the Biden Administration, with the USFWS in February delaying the effective date of the final rule to March 8, 2021. Now, the Biden Administration has proposed to revoke the Trump-era rule all together and return to interpreting the MBTA as prohibiting incidental take, not just purposeful take. This announcement follows the recent revocation of the 2017 opinion from the then-Department of the Interior Principal Deputy Solicitor Daniel H. Jorjani finding that the MBTA does not prohibit the incidental take of migratory birds. The USFWS accepted public comment on the proposed revocation through

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June 7, 2021. The January 2021 MBTA rule remains in effect until its revocation is finalized. Should the revocation be completed before the FEIR or FEA is released, compliance under the MBTA “incidental take” provision must be included in the documents.

This relates to the EA in that it requires compliance with “federal and state laws” in the preparation and implementation of a BBCS. The MBTA should be expressly included in the FEIR, FEA, and BBCS and any other document relating to migratory birds for the project as the project life is potentially fifty years.

2. The EA rightly considers funding conservation of migratory birds rather than costly protocol level post-construction monitoring in some cases and in some well-documented areas of development that may reach a “data plateau.”

We appreciate the inclusion in the EA of the following requirement in the BBCS in response to our scoping comments:

A 2-year O&M monitoring and reporting program for potential bird and bat fatalities, or if the BBCS finds that sufficient data exists from surrounding utility-scale solar projects or other studies to effectively predict the bird and bat fatalities, a plan for use of the costs of the 2-year O&M monitoring as funds for conservation measures as mitigation for the predicted impacts on migratory birds in their full life-cycle – at their breeding grounds, migratory pathways, or wintering territories. (EA, p. 31)

3. The DEIR’s has two conflicting estimates of mortality of birds and should be corrected with the correct estimate used as thresholds in the BBCS.

Based on monitoring data compiled for and by BLM for the Palen Solar Power Project, bird mortality for the Projects, in combination, is expected to range from a low of 0.4 birds per acre per year up to 1.7 birds per acre per year (BLM 2018). For the 2,724-acre area that includes both Projects, the expected Project-related bird mortality, based on BLM’s review of monitoring data compiled for the Palen Solar Power Project, may range from 1,090 to 4,631 birds per year. Over the 50-year operational life of the Projects, the total expected bird mortality ranges from 54,480 to 231,540 birds. (DEIR P. 3.4-32)

Using the average and range from the fatality monitoring studies of 1.3 birds/MW/Year (WEST 2020), the predicted mortality value for the Arica Solar Project site is 261 bird fatalities per year. The predicted mortality value for the Victory Pass Project site is 346 bird fatalities per year (West 2020). Based on studies of the gen-ties associated with other desert solar projects, the Applicants estimated approximately 60 birds per kilometer per year may collide with the lines. Seven detections of fatalities of special-status yellow warblers have been reported during surveys of the gen-tie lines at the desert solar sites (WEST 2020). The predicted mortality value for the gen-tie line is 300

B1-2
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B1-4

bird fatalities per year. The Applicants' total combined predicted mortality value for the Projects is 907 bird fatalities per year. (DEIR, p. 3-4-3

↑ B1-4
| Cont.

4. The EA and DEIR use preparation of a BBCS as a mitigation measure to reduce impacts but the BBCS is not provided for comment by the public.

Neither the DEIR nor the EA however, provide a draft of the BBCS for review by the public, and they should be for the FEIR and the FEA in order to conclude that the mitigation measures contained in the BBCS reduce the impact to less than significant.

It is our opinion that using preparation of a BBCS as a mitigation measure without providing a draft of the BBCS is actually deferred mitigation, as there is no ability to evaluate or estimate the effectiveness of the BBCS without its inclusion in environmental review.

Other DEIS and EIS have provided the BBCS for review (see Alta East Wind Project for example) and environmental review of all solar and wind projects should provide this document.

— B1-5

5. Audubon appreciates the avoidance of microphyll woodlands and the compliance with DRECP Land Use Plan Amendment CMA by these projects.

— B1-6

Sincerely,

Garry George
Director, Clean Energy Initiative
AUDUBON
garry.george@audubon.org

Response to Comment Letter B1

Audubon

Garry George, Director, Clean Energy Initiative

September 6, 2021

The commenter provides their evaluation and review comments of both the Draft Environmental Impact Report (EIR) prepared by the California Department of Fish and Wildlife (CDFW) and the Environmental Assessment (EA) prepared by Bureau of Land Management (BLM) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). CDFW, as the lead agency under the California Environmental Quality Act (CEQA), is responsible for the evaluation of comments on environmental issues received on the Draft EIR. In accordance with CEQA Guidelines Section 15088, the following provides responses to the comments received on the environmental issues on the Draft EIR. BLM, as the lead agency under the National Environmental Policy Act, will separately consider the comments provided on the EA by the commenter.

B1-1 The commenter states that the Draft EIR misstates the protections for migratory birds under California Fish and Game Code Section 3513. The commenter recommends the EIR be updated to reflect amended Assembly Bill 454 language. Section 3.4.1, Regulatory Framework, subheading State Laws, Regulations, and Policies, of the Final EIR has been updated to reflect the policy text provided in the comment letter. The edits to the state regulations clarify, but do not change the overall migratory bird evaluation in the EIR. The following edits were made to the EIR:

Birds (California Fish and Game Code Sections 3503, 3503.5, and 3513). California Fish and Game Code Section 3503 prohibits take, possession, or the needless destruction of the nest or egg of any bird, except as otherwise provided by the code or regulation made pursuant thereto. Section 3503.5 provides it is unlawful to take, possess, or destroy birds of prey, or to take, possess, or destroy the nest or eggs of any such bird, except as otherwise provided by the code or related regulation. Section 3513 prohibits take or possession of any migratory nongame bird, as designated in the federal MBTA ~~and its implementing regulations, except as provided by rules and regulations adopted by the U.S. Secretary of the Interior under the federal act (16 USC 703 et seq.) before January 1, 2017, any additional migratory nongame bird that may be designated in that federal act after that date, or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the U.S. Secretary of the Interior under that federal act before January 1, 2017, or subsequent rules or regulations adopted pursuant to that federal act, unless those rules or regulations are inconsistent with this code.~~

B1-2 The commenter states that the Final EIR and relevant supporting documents should include the Migratory Bird Treaty Act. EIR Section 3.4.1, subheading Federal Laws, Regulations, and Policies, has been updated to include the most recent information released by the Department of Interior on October 4, 2021, regarding the Migratory Bird Treaty Act, as outlined below:

On January 7, 2021, USFWS published a final rule defining the scope of the MBTA as it applied to conduct resulting in the injury or death of migratory birds protected by the MBTA. In a publication released on October 4, 2021, USFWS revoked that rule, effective December 3, 2021. The immediate effect of this final rule is to return to implementing the MBTA as prohibiting incidental take and applying enforcement discretion, consistent with judicial precedent and longstanding agency practice prior to 2017.

This edit does not change the overall migratory bird evaluation in the EIR. None of the EIR appendices reference the MBTA; therefore, no additional edits are required in those documents under CEQA. The Bird and Bat Conservation Strategy (BBCS) is an attachment to the BLM Plan of Development document and BLM will consider the comments regarding current regulations in the EA and BBCS. The comment does not raise an issue related to the adequacy of the EIR; therefore, no further response is required.

B1-3 The commenter states that the EA rightly considers funding conservation of migratory birds rather than costly protocol-level post-construction monitoring in the wildlife Applicant Proposed Measures (APMs). BLM will consider this comment under the National Environmental Policy Act process. The comment does not raise an issue related to the adequacy of the EIR; therefore, no further response is required.

B1-4 The commenter states that the Draft EIR includes two conflicting estimates of mortality of birds that should be reconciled and replaced with a correct estimate that is used as a threshold in the BBCS. The two estimates included in the Draft EIR do not conflict and they are not inaccurate. They are mortality estimates from two different sources that, in combination, informed CDFW's analysis of and determination under CEQA that the Projects would result in a less-than-significant impact. CDFW understands there is limited monitoring data regarding bird mortality, but as more projects come online more data will become available. The Desert Harvest, Palen, and Athos Projects come online in the next few years and the Desert Harvest and Palen Projects are expected to be operating for over or close to a year prior to the start of construction of the Arica and Victory Pass Projects. Until such time as these data are available, using several sources of data (in this case the Palen Environmental Impact Statement and the WEST memo) is the best and most reasonable scientific data available to meaningfully inform analysis of potential effects. Thresholds in the BBCS to trigger adaptive management are currently estimated to be at 1.3 fatalities/year. That threshold triggering adaptive management and future conservation measures may be subject to revision in coordination with USFWS and CDFW as new data and other information are obtained.

B1-5 The commenter states that the BBCS was not provided for comment by the public during public review of the EA and Draft EIR. The commenter says a draft of the BBCS should have been included with the agencies' public review draft environmental analyses to support a determination that measures contained in the BBCS reduce related effects to less than significant. The commenter expresses an opinion that using preparation of the BBCS as a mitigation measure without providing a draft of the BBCS is deferred mitigation.

CDFW as CEQA lead agency did not conclude the BBCS would reduce related effects to less than significant. CDFW determined as stated in the public review Draft EIR that the Projects' avian mortality effects would be less than significant without mitigation (refer to EIR Section 3.4.3, Impact Analysis, last paragraph under the Special-Status and Native Birds subheading). The Draft EIR acknowledges that the BBCS would simply provide further evidence to support that determination. The BBCS is not the basis for CDFW's lead agency significance determination and not including the BBCS in the Draft EIR is not deferred mitigation as the commenter contends.

Refer to APM BIO-25 in EIR Section 3.4.3, which describes the BBCS. This measure outlines the initial goals of the BBCS and states that the BBCS shall specify monitoring and conservation measures to document bird mortality that will be incorporated into the Projects by the Applicants. As stated in the Draft EIR, incorporation of APM BIO-25 would further reduce this less-than-significant effect on special-status bird species to the extent feasible.

While the draft BBCS was not included with the public review Draft EIR, the BBCS was posted on August 6, 2021, and made available to the public as an Appendix to the Plan of Development documents on the BLM e-planning website at the same time as the EA was made public: refer to Appendix C.2 of the POD documents for each Project in the following links:

- Arica Solar Project: https://eplanning.blm.gov/public_projects/1502789/200388120/20043713/250049904/Arica%20POD%20Appendices%20Part%201.pdf
- Victory Pass Solar Project:
https://eplanning.blm.gov/public_projects/1502795/200388112/20043717/250049908/Victory%20Pass%20POD%20Appendices%20Part%201.pdf

B1-6 CDFW acknowledges that the commenter appreciates the avoidance of microphyll woodland and compliance with the Desert Renewable Energy Conservation Plan Land Use Plan Amendment Conservation Management Actions. This comment does not raise environmental issues. Therefore, no further response is required.

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Comment Letter B2



DESERT TORTOISE COUNCIL
4654 East Avenue S #257B
Palmdale, California 93552
www.deserttortoise.org
eac@deserttortoise.org

Via email only

17 September 2021

Magdalena Rodriguez
California Department of Fish and Wildlife
3602 Inland Empire Blvd. Suite C-220
Ontario, CA 91764
Magdalena.Rodriguez@wildlife.ca.gov

RE: Arica and Victory Pass Solar Projects Draft Environmental Impact Report Comments

Dear Ms. Rodriguez,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats known to be occupied by Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments pertain to enhancing protection of this species during activities authorized by the California Department of Fish and Wildlife (CDFW). Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed project.

We also appreciate that CDFW contacted the Council directly for the opportunity to provide feedback on the draft environmental impact report (DEIR). As an Affected Interest, the Council provided scoping comments on this project on October 31, 2020 (Desert Tortoise Council 2020), which is incorporated by reference, and provided in a link in the footnote¹.

¹ https://www.dropbox.com/s/ql6vjid9gao5k35h/Arica%20Solar%20and%20Victory%20Pass%20Solar%20Projects_10-31-2020.pdf?dl=0

Unless otherwise noted, all page numbers referenced in the following comments refer to the DEIR with the title in the subject heading, dated August 2021.

Our primary concern with the proposed project is the inclusion of desert tortoise critical habitat on the southern portions of the Victory Pass site within the impact footprint. To our knowledge, this sets a precedent within the California Desert Conservation Area Plan (CDCA Plan) area as the first solar project that would be developed in designated desert tortoise critical habitat. Given the latest available data (particularly Allison and McLuckie 2018), tortoises are declining in all but the northeastern recovery unit. Until such time tortoise populations stabilize and eventually increase, we do not believe that the intentional development of designated critical habitats, which are deemed “essential,” is prudent. We therefore recommend that the southern boundary of the Victory Pass site be reconfigured to exclude designated critical habitat. Otherwise, it is our understanding that the project, as proposed, would result in the irreversible adverse modification of critical habitat, which is unwarranted and would set a dangerous precedent.

B2-1

We appreciate that most of our concerns described in our scoping comments (Desert Tortoise Council 2020) have been addressed in the DEIR. The few additional comments given herein are helpful suggestions to enhance what already appears to be a sound protection program, intended to further protect tortoises and desert resources.

B2-2

With regards to Section 2.5.3 Reclamation of Disturbed Areas on page 2-15, the Council produced a comprehensive discussion of best management practices intended to promote successful restoration of desert habitats (Abella and Berry 2106). This document is available in the footnoted link² and is submitted as a supplementary document to this comment letter.

B2-3

With regards to APM BIO-6 A Worker Environmental Education Program (WEEP; used interchangeably with WEAP in the DEIR) on page 2-21 and 3.4-48, we find that project-specific hard hat stickers given to all workers at the time of the WEEP training will allow biologists to identify those workers who have and have not attended the program. If a sticker is not displayed on a worker’s hard hat, we assume the person has not been trained and arrange for training as needed.

B2-4

When we tried to open the appendices, we were confronted with an unsolicited advertisement to purchase WinZip software, which we were unwilling to purchase. As such, we were not able to read any of the appendices, which did affect our review of the project, particularly the biological resource inventories and formal translocation plan, assuming one is in the appendices. The inaccessibility to appended documents should be addressed for future projects.

B2-5

We did not see any specific approaches to either relocating or translocating tortoises, depending on the distance they are displaced from the site (e.g., where *relocation* pertains to tortoises moved less than 300 meters and *translocation* refers to tortoises moved more than 300 meters). Our inability to review these documents is alleviated by the revelation that Ironwood Consulting, comprised of reputable and experienced biologists, was responsible for the surveys and will likely oversee translocation.

B2-6

² <https://www.dropbox.com/s/nx1b5m2b5ehya12/%23Abella%20and%20Berry%202016.pdf?dl=0>

We appreciate this opportunity to provide input and trust that our comments will help protect tortoises during any authorized project activities. Herein, we ask that the Desert Tortoise Council be identified as an Affected Interest for this and all other CDFW projects that may affect species of desert tortoises, and that any subsequent environmental documentation for this project is provided to us at the contact information listed above. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this project.

B2-7

Regards,



Edward L. LaRue, Jr., M.S.
Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

cc: California State Clearinghouse, state.clearinghouse@opr.ca.gov

Literature Cited

Abella S.R. and K.H. Berry. 2016. Enhancing and restoring habitat for the desert tortoise (*Gopherus agassizii*). *Journal of Fish and Wildlife Management* 7(1):xx-xx; e1944-687X. doi: 10.3996/052015-JFWM-046.

Desert Tortoise Council. 2020. Scoping Comments for Arica Solar (DOI-BLM-CA-D060-2020-0009-EIS) and Victory Pass (DOI-BLM-CA-D060-2020-0010-EIS) Solar Projects. Letter to the BLM and CDFW, dated October 31, 2020. 10 pp.

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Response to Comment Letter B2

Desert Tortoise Council

Edward L. LaRue, Jr., MS, Ecosystems Advisory Committee, Chairperson

September 17, 2021

B2-1 The commenter recommends that the southern boundary of the Victory Pass Project site be reconfigured to avoid desert tortoise critical habitat. The Project Applicants, in close consultation with the Bureau of Land Management, reviewed the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment Conservation Management Actions and redesigned the Project, reducing the Project footprint from 3,800 acres to approximately 2,724 acres (including the gen-tie right-of-way and access road) to meet requirements of the Conservation Management Actions. Currently, approximately 118 acres of critical habitat within the Victory Pass Project site would be impacted. As described in EIR Section 3.4, Biological Resources (in Section 3.4.3, Impact Analysis, subheading Special-Status Wildlife), the gen-tie right-of-way is located on 26.0 acres of designated critical habitat but would impact fewer acres during construction. The access roads would impact up to 7 acres of land. With the exception of the gen-tie south of Interstate (I) 10, this critical habitat is not within the Chuckwalla Areas of Critical Environmental Concern and is not designated as a Tortoise Conservation Area in the DRECP. Due to its location north of I-10, this critical habitat land is partially isolated from the remainder of the critical habitat unit that is located south of I-10. The long-term function of the critical habitat near the Project site is compromised by its proximity to the I-10, other existing development, and its location within a DRECP-designated Development Focus Area, which further compromises its future habitat value.

Furthermore, the DRECP allows for impacts to desert tortoise critical habitat by providing a specific mitigation ratio for impacts to desert tortoise critical habitat (statement included in Final EIR Section 3.4, Biological Resources (in Section 3.4.3, Impact Analysis, subheading Special-Status Wildlife). The project was designed in accordance with the DRECP Land Use Plan Amendment and will not set a new or unwarranted precedent for more development in the critical habitat because there is limited overlap between critical habitat and the Bureau of Land Management (BLM) allocations for Development Focus Areas and Variance Process Lands. The DRECP, pg. IV.7-134, states that “For desert tortoise, approximately 8,000 acres of impact designated critical habitat would result from renewable energy and transmission development under the Preferred Alternative located in the Chuckwalla, Fremont-Kramer, Ord-Rodman, and Superior-Cronese critical habitat units.”

In addition, based on Mitigation Measure (MM) BIO-6, the proposed Arica Solar Project and Victory Pass Solar Project (Projects) would conserve approximately 590 acres (or 5:1 mitigation ratio for actual impacts) of suitable habitat for desert tortoise within the Chuckwalla critical habitat unit, consistent with LUPA-COMP-1.

B2-2 The commenter appreciates that the EIR adequately addressed the majority of their scoping comments provided in October 2020, and provided additional comments on the Draft EIR to enhance an already sound desert tortoise and desert resource protection program (refer to Responses B2-3 through B2-6). This comment does not raise environmental issues. Therefore, no further response is required.

B2-3 This comment provides a link to supplementary information regarding restoration of desert tortoise habitat (Abella and Berry 2016). California Department of Fish and Wildlife (CDFW) acknowledges receipt of this additional information in the record. Following future decommissioning of the Projects, the BLM Plan of Development (POD) for each project includes a Decommissioning and Reclamation Plan (refer to POD Appendix L [Arica Solar, LLC 2021a; Victory Pass I, LLC 2021]). The BLM requires reclamation of the sites, future monitoring and reporting of reclamation activities implemented on each of the Project sites, and an adaptive management approach, which are outlined in the PODs. The decommissioning of the Projects is anticipated 50 years from now, and the future decommissioning and reclamation activities will consider all enhanced habitat restoration methods available at that time.

B2-4 The commenter indicates that the EIR uses the Worker Environmental Educational Program (APM BIO-6) and Worker Environmental Awareness Program (MM BIO-2) interchangeably. Furthermore, the comment requests that Projects-specific hard hat stickers are provided to all workers completing the worker training. The EIR included MM BIO-2 to further expand upon APM BIO-6, providing additional details regarding what should be included in the worker training program. The Final EIR Executive Summary, Table ES-2, and Section 3.4.4 have been revised to update the last bullet in MM BIO-2 to include the issuance of hard hat stickers as follows:

- Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines. Along with their signature, each worker will receive a sticker for their hard hats indicating they received the training.

This edit to MM BIO-2 does not change the overall scope, applicability, or effectiveness of the measure in reducing the potentially significant impact. It provides a simpler way to identify that workers on the Project sites have completed the training/educational program prior to entering the construction areas.

B2-5 The commenter states they were not able to access the Draft EIR appendices from CDFW CEQA Notices webpage during the public review period. CDFW uploaded the Draft EIR and all supporting Draft EIR Appendices to its CEQA Notices webpage on August 6, 2021. CDFW appreciates mention from the commenter that it was not able to access the Appendices, albeit with related word only from this commenter. CDFW has confirmed the appendices are available on its CEQA Notices webpage. The portion of the CDFW CEQA Notices webpage for this Project also included the CDFW project manager and their email address for any questions from the public, including access issues. We urge the commenter to reach out directly to the project manager should any similar issue arise inadvertently in the future. We note the Draft EIR and all Appendices were accessible during the public review period and remain accessible to the public electronically through CEQAnet at the State Clearinghouse within the Governor's Office of Planning and Research (<https://ceqanet.opr.ca.gov/2020100076/3>). CDFW appreciates the comment and will consider this for future projects. This comment does not raise specific environmental issues, however, and no further response is required.

B2-6 The commenter states that they were not able to review specific approaches for either relocating or translocating tortoises for the proposed Projects. The Incidental Take Permit applications (EIR Appendix A) include a summary of the impacts, jeopardy analysis, and mitigation measures. Furthermore, MM BIO-9 (Desert Tortoise Protection) states that desert tortoises would be handled or translocated according to a Desert Tortoise Relocation Plan,

which is pending approval by CDFW and U.S. Fish and Wildlife Service (USFWS). Details regarding implementation of this Relocation Plan are provided in MM BIO-9, including that if a tortoise or an occupied tortoise burrow is located during clearance surveys, work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord or has been translocated off the site under authorization by USFWS and CDFW.

The current USFWS guidelines address all movement of desert tortoise as translocation. Both translocation within 300 meters and beyond 300 meters are included in the Draft Desert Tortoise Protection and Translocation Plan now available as part of the BLM POD found on the BLM e-planning website; refer to POD Appendix C.3 (Arica Solar, LLC 2021b).

B2-7 CDFW acknowledges the Desert Tortoise Council's request to be named as an Affected Interest for this and all other CDFW projects that may affect desert tortoise species. CDFW confirmed receipt of this comment letter on September 20, 2021. This comment does not raise environmental issues. Therefore, no further response is required.

References

- Abella, S.R., and K.H. Berry. 2016. "Enhancing and Restoring Habitat for the Desert Tortoise (*Gopherus agassizii*)." *Journal of Fish and Wildlife Management* 7(1): e1944-687X. doi: 10.3996/052015-JFWM-046.
- Arica Solar, LLC. 2021a. "Appendix L." In *Plan of Development: Arica Solar Project*. August 6, 2021. https://eplanning.blm.gov/public_projects/1502789/200388120/20043710/250049901/Arica%20POD%20Appendices%20Part%202.pdf.
- Arica Solar, LLC. 2021b. "Appendix C.3." In *Plan of Development: Arica Solar Project*. August 6, 2021. https://eplanning.blm.gov/public_projects/1502789/200388120/20043713/250049904/Arica%20POD%20Appendices%20Part%201.pdf.
- Victory Pass I, LLC. 2021. *Plan of Development: Victory Pass Project*. August 6, 2021. https://eplanning.blm.gov/public_projects/1502795/200388112/20043716/250049907/Victory%20Pass%20Solar%20Project%20POD.pdf.

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Comment Letter B3



September 20, 2021

California Department of Fish and Wildlife
Inland Deserts Region
Attention: Magdalena Rodriguez, Project Manager
3602 Inland Empire Boulevard, Suite C-220
Ontario, California 91764
Sent via email to: Magdalena.Rodriguez@wildlife.ca.gov

Re: Draft Environmental Impact Report for the proposed Arica and Victory Pass Solar Projects

Dear Magdalena:

Thank you for the opportunity to submit comments on the Draft Environmental Impact Report (DEIR) for the proposed Arica and Victory Pass solar projects. This comment letter is submitted by Defenders of Wildlife (Defenders) on behalf of its 2.2 million members and supporters in the U.S., including 323,000 in California; and the Sierra Club on behalf of its 2.5 million members and supporters in the U.S.

Defenders is a national conservation organization founded in 1947 and dedicated to protecting all native animals and plants in their natural communities. It uses science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

The Sierra Club is a national nonprofit organization dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives.

Brief Project Description

Arica solar project (Arica): Arica is a proposed 265 MW photovoltaic generating facility, generation tie (gen-tie) line and associated infrastructure, including energy storage, located on approximately

1,355 acres of public land managed by the Bureau of Land Management (BLM) in the Riverside East Development Focus Area (DFA) designated in the Desert Renewable Energy Conservation Plan (DRECP). The Project includes construction, operation and decommissioning.

Victory Pass solar project (Victory Pass): Victory Pass is a proposed 200 MW photovoltaic generating facility with up to 200 MW of battery storage, gen-tie line and associated infrastructure, located on approximately 1,310 acres of public land in the DFA designated in the DRECP. The Project includes construction, operation and decommissioning.

The two solar projects would share some infrastructure, including access road(s) and a gen-tie line from a shared switching station to the existing Southern California Edison Red Bluff Substation. Approximately 52 acres are within the shared gen-tie corridor, and less than seven acres involve access roads.

DEIR Comments

Our comments on the biological resources components of the DEIR for Arica and Victory Pass are as follows:

After careful review of the DEIR, we conclude that all likely and potential impacts to biological resources have been identified, and that all appropriate impact avoidance, minimization and compensatory mitigation measures have been appropriately applied. As a result, all impacts to biological resources would be less than significant once the projects are completed. It is noteworthy that the applicant designed both projects to comply with the DRECP, including all Conservation Management Actions (CMAs). DRECP CMAs were designed by BLM through a collaborative interagency process involving California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service and California Energy Commission. Their purpose was to avoid and minimize impacts to sensitive resources to the maximum extent practicable, and mitigate those unavoidable impacts to less than significant; and to allow for streamlined environmental review and permitting for projects located within DFAs.

It is also noteworthy that the applicant modified project boundaries after biological surveys were completed to comply with the CMAs requiring avoidance of dry desert wash woodland (LUPA-BIO-RIPWET-1) and sensitive plants (LUPA-BIO-PLANT-2). The applicant also included 25 mitigation measures for biological resource impacts as part of the overall project design for consistency with the DRECP, which ensured that the environmental review by the CDFW would be efficient and easy to comprehend by the public. The applicant's compliance with the 25 mitigation measures it proposed will become mandatory once the CDFW issues discretionary permits (incidental take permits for the threatened desert tortoise and streambed alteration agreements), each of which will include additional impact avoidance, minimization and compensatory mitigation requirements.

We assume that Alternative 5 (I-10 Viewshed Avoidance) will not be selected because it would involve placing solar panels within approximately 230 acres of microphyll woodland and an unspecified amount of its corresponding 200 foot protective setback or buffer for Victory Pass. This, in turn, would result in the project not complying with the DRECP CMAs that were designed



to protect microphyll woodland. The BLM Environmental Assessment for Arica and Victory Pass was based on both projects fully complying with the DRECP and its CMAs. Therefore, we suggest that Alternative 5 may not meet the definition of a reasonable alternative under the California Environmental Quality Act.

↑
B3-2
Cont.

Conclusion

Defenders and the Sierra Club appreciate the logical organization and clarity of the DEIR for Arica and Victory Pass. Both projects, designed by the applicant to fully comply with the DRECP and its CMAs, demonstrate the value of the DRECP in ensuring that projects can be analyzed and permitted in an expedited manner, are economically viable and minimize all impacts to biological resources to a less than significant level.

↑
B3-3

We hope that all future projects proposed within DFAs are designed by the applicants to be fully compliant with the DRECP and its CMAs, as are Arica and Victory Pass. It is refreshing to see two of the first three projects proposed in the Riverside East DFA that are fully subject to the DRECP meet this standard.

Sincerely,



Jeff Aardahl
Senior California Representative
Defenders of Wildlife
jaardahl@defenders.org



Jenny Binstock
Senior Campaign Representative
Sierra Club
jenny.binstock@sierraclub.org

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Response to Comment Letter B3

Defenders of Wildlife and Sierra Club

Jeff Aardahl, Senior California Representative, Defenders of Wildlife

Jenny Binstock, Senior Campaign Representative, Sierra Club

September 20, 2021

- B3-1** This comment summarizes that the Environmental Impact Report (EIR) identified impacts appropriately, designed the Arica Solar Project and Victory Pass Solar Project (Projects) consistent with the Desert Renewable Energy Conservation Plan (DRECP) and DRECP Conservation Management Actions, and proposed additional mitigation measures to further reduce impacts to biological resources. The comment does not raise an issue related to the adequacy of the EIR; therefore, no further response is required.
- B3-2** The California Department of Fish and Wildlife (CDFW) acknowledges the commenters statements regarding Alternative 5 and that, if selected, it would not comply with the DRECP Conservation Management Actions and, therefore, may not meet the definition of a reasonable alternative under the California Environmental Quality Act (CEQA). Alternative 5 is a viable alternative for consideration as it complies with CEQA Guidelines Section 15126.6(b), which requires an EIR to identify ways to mitigate or avoid the significant effects that a project may have on the environment, focusing on alternatives to the project that are capable of avoiding or substantially lessening a significant effect of the project, even if the alternative would impede to some degree the attainment of the project objectives, or would be more costly. EIR Table 4-1 provides a comparison of impacts between the alternatives to the proposed Projects to help determine the environmentally superior alternative. In this case, Alternative 5 would substantially lessen visual impacts along the Interstate 10 corridor. EIR Section 4.1.6, Alternative 5: I-10 Viewshed Avoidance, does describe that the Projects would require a land use plan amendment by the Bureau of Land Management because they would not avoid the desert dry wash woodland. The Bureau of Land Management has authorized renewable solar projects in the Desert Center region that required a plan amendment, so this alternative is likely feasible. Given the potential biological impacts and inconsistency with the DRECP Land Use Plan Amendment, Alternative 5 would potentially require additional National Environmental Policy Act compliance if this alternative were chosen. Consistent with CEQA, the EIR does provide a reasoned, balanced, and thorough evaluation of the physical impacts pertaining to the proposed Projects and alternatives to provide CDFW the opportunity to make an informed decision regarding the proposed Projects and proposed alternatives.
- B3-3** CDFW appreciates these conclusionary statements.

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Comment Letter B4



CENTER for BIOLOGICAL DIVERSITY

Because life is good.

*protecting and restoring natural ecosystems and imperiled species through
science, education, policy, and environmental law*

VIA EMAIL

September 20, 2021

Magdalena Rodriguez
California Department of Fish and Wildlife
3602 Inland Empire Blvd., Suite C-220
Ontario CA, 91764
Magdalena.Rodriguez@wildlife.ca.gov

Re: Comments on the Proposed Draft Environmental Impact Report for the Arica and Victory Pass Solar Projects SCH# 2020100076

Dear Magdalena Rodriguez:

These comments are submitted on behalf of the Center for Biological Diversity (Center) regarding the Draft Environmental Impact Report for the Arica and Victory Pass Solar Projects dated August 2021 and issued by the California Department of Fish and Wildlife (CDFW). Previously, the Center submitted comments to the Bureau of Land Management on its Draft Environmental Assessment, and we attach those comments here (Attachment).

The development of renewable energy is a critical component of efforts to reduce greenhouse gas emissions, avoid the worst consequences of global warming, and to assist California in meeting its ambitious emission reductions goals. The Center strongly supports the development of renewable energy production, and the generation of electricity from solar power, in particular. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitats and should be sited in proximity to the areas of electricity end-use in order to reduce the need for extensive new transmission corridors and the efficiency loss associated with extended energy transmission. Only by maintaining the highest environmental standards regarding local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.

We remain concerned about the implementation of the Desert Renewable Energy Conservation Plan (DRECP) in permitting this and other projects. The Center participated throughout the DRECP planning process and supports full implementation of the DRECP and adherence to the Conservation Management Actions (CMAs). We are concerned that the requirements of the DRECP within the Riverside-East Development Focus area, where the two projects are located, are not being fully implemented to protect conservation values while allowing significant amounts of commercial-scale solar energy development. Our concerns are detailed below.

The proposed action alternative - Alternative B - includes the disturbance on 2,665 acres of habitat for a variety of desert plants and animals in the Colorado Desert. The projects are located on BLM-managed public lands within the Riverside East Development Focus Area (DFA) designated by



*CBD Comments on Arica and Victory Pass Draft EIR
September 20, 2021*

the DRECP. The Arica solar project is a proposed 265 MW solar project with 200 MW of battery storage. It is proposed to cover 1,355 acres. The Victory Pass project is a proposed 200 MW solar project with 200MW of battery storage. It is proposed to cover 1,310 acres. The DEIR states that because of the reduction in the proposed project areas, increased density of the panels will require complete removal of all on-site vegetation in the solar project areas. The projects will share a 3.2-mile overhead gen-tie line that will include an additional 50 acres for the gen-tie ROW corridor and is anticipated to develop 10-15 acres within that ROW corridor.

B4-2
Cont.

Almost half of the Arica project lies within the DRECP's modeled habitat for Mojave fringe-toed lizard and the DEIR confirms occupancy (at pg. 3.4-12). The southwest corner of the Victory Pass project is proposed to have panels placed in the BLM-identified Wildlife Connectivity Corridor, one of only two wildlife connectivity corridors within the DFA, significantly compromising the functionality of this requisite corridor, particularly in conjunction with the directly adjacent Oberon Project and proposed Easley projects to the north of corridor. The gen-tie and part of the Victory Pass solar project will impact federally designated critical habitat for the threatened desert tortoise.

B4-3

Project Objectives

For CEQA review, the project objectives frame the alternatives analysis, the purpose of which is to enable the agency or commission to fulfill the statutory requirement that feasible alternatives that avoid significant impacts of a project must be implemented.

[I]t is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

(Public Res. Code § 21002.) The statutory language and case law make it quite clear that the Legislature intended public agencies to utilize CEQA's environmental review process and procedures to make determinations regarding feasible alternatives and mitigation measures based on a robust analysis. Nothing in CEQA states that the project objectives utilized by the agency must meet all the applicant's proffered objectives. The statutory definition of "feasible" does not even mention the applicant's objectives. (Pub. Res. Code § 21061.1.) Nothing in CEQA states that an alternative may be found infeasible solely due to a conflict with one or more of the applicant's objectives. In fact, the CEQA Guidelines expressly provide that a feasible alternative may impede achievement of the project objectives to some degree. (See 14 C.C.R (CEQA Guidelines) § 15126.6(a), (b).) Framing project objectives too narrowly or too specifically would artificially limit the range of reasonable, feasible alternatives and could preclude consideration of a reasonable range of alternatives. See *City of Santee v. County of San Diego* (1989) 214 Cal. App. 3d 1438, 1455.

B4-4

The DEIR identified both the project proponent's Objectives and the CDFW's objectives and states the CDFW's objectives as:

"CDFW's additional project objectives include the following:

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- Protect and conserve fish and wildlife resources and minimize environmental impacts and land disturbance by, among other things, siting the facility on relatively flat lands with high solar insolation and near established utility corridors, an existing substation with available capacity to facilitate interconnection, and accessible roads.
 - Promote environmentally responsible development that minimizes incidental take by implementing species-specific minimization and avoidance measures.
 - Protect and conserve the resources of the State of California and mitigate any impacts on these resources, consistent with CDFW’s mission, its status as California’s trustee agency for fish and wildlife, and the public trust doctrine.
 - Assist in the implementation of the Desert Renewable Energy Conservation Plan. Together with federal agencies, CDFW staff is working to ensure that the state can expedite siting and permitting of renewable energy projects that will assist in achieving greenhouse gas reduction targets set forth in Assembly Bill 32 while minimizing the impacts to natural resources and further mitigating the impacts of climate change (CDFW 2021).
- (DEIR at 1-3.)

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B4-4
Cont.

The habitat fragmentation, loss of connectivity for terrestrial wildlife, destruction of carbon sequestration of soils, and introduction of predators and invasive weed species associated with the proposed project in the proposed location may run contrary to an effective climate change adaptation strategy. Siting the proposed project in the proposed location impacting the sand transport corridor, dune ecosystems, occupied habitat, important habitat linkage areas, and other fragile desert resources could undermine a meaningful climate change adaptation strategy by ignoring the need for significant avoidance, minimization and mitigation from any project built on any part of the proposed site. The way to maintain healthy, vibrant ecosystems is not to fragment them and reduce their biodiversity.

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B4-5

The following sections identify issues that need to be re-considered by CDFW before the project can be approved, including changes to the layout of the proposed projects to truly achieve CDFW’s objectives.

Failure to Adequately Analyze and Mitigate Impacts to Mojave Fringe-toed Lizard

We have grave concerns about the impacts to Mojave fringe-toed lizards and their habitat as detailed in our letter to BLM. We refer you to those comments here.

In addition, MM- 6 states:

“The Arica Project compensatory mitigation is 1,355 acres and the Victory Pass Project compensatory mitigation is 2,243.5 acres. The California Department of Fish and Wildlife (CDFW) will calculate and identify the final amount of required compensatory mitigation as provided by this measure, and may consider additional minimization measures that may reduce the final amount of required compensatory mitigation, prior to issuance of the Permits and final approval of the Projects under CEQA.”

DEIR at pg. ES-27.

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B4-6

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The DEIR needs to identify the contemplated “additional minimization measures” that could reduce the need for mitigation in order to adequately disclose to decisionmakers the ultimate impact to the species.

↑ B4-6
Cont.

We remain concerned that adequate mitigation habitat that is “biologically superior or equivalent to the impacted habitat” (DEIR at pg. ES-27) may not even be available for permanent conservation due to the existing permitted projects’ need for mitigation for their direct and indirect impacts to the sand transport corridor and Mojave fringe-toed lizard habitat. Will the mitigation even be feasible to protect the species habitat in perpetuity?

↓ B4-7

Focusing on the “Colorado Desert Recovery Unit” is appropriate for desert tortoise mitigation. However, the focus for Mojave fringe-toed lizards needs to be the sand transport corridor that originates in Joshua Tree National Park and runs through numerous solar sites and proposed sites to the agricultural area in the Palo Verde Valley. Securing conservation of this sand transport corridor and preventing impact to its natural aeolian function is crucial to keep this genetically distinct clade of Mojave fringe-toed lizards (Murphy, Trépanier, and Morafka 2006; Gottscho 2010), which are also the most southerly distribution of Mojave fringe-toes lizards, extant in their habitat.

**Failure to Adequately Analyze and Mitigate Impacts to Wildlife
Connectivity/Corridor**

We continue to be very concerned about the impacts to BLM designated multiple species connectivity corridor as detailed in our letter to BLM. We refer you to those comments here.

↓ B4-8

Bio-4 seems to give up on maintaining the BLM-designated multiple species connectivity corridor identified in the DRECP, which is one of only two connectivity corridors identified within the Development Focus Area, instead, Bio-4 would allow development on 55 acres within the corridor, further fragmenting wildlife connectivity (See Attachment 1 in Center comments on BLMDEA).

The DEIR fails to ensure the functionality of this multi-species wildlife corridor over the long-term. The CDFW must ensure that the function of this important multi-species corridor is retained, in order to do so, CDFW should require changes in the proposed project layout to remove infrastructure from the multi-species linkage and a supplemental DEIR may be needed to fully analyze that less-impactful alternative.

↓ B4-9

Figure 2.2 in Appendix B of the Oberon EA is troubling because it reveals the potential extent of cumulative impacts from other existing and proposed renewable energy projects in the western Chuckwalla Valley. One of those is the Easley Project, which is located just to the north of the Athos and Victory Pass projects. The Athos project, which is not on BLM-managed land and is currently under construction, has already constricted over half of the northern part of the linkage on the west. The proposed Easley project’s southern or northern areas have the potential to block the northern part of the linkage, and it could thereby eliminate the functionality of the multi-species linkage. The CDFW must consider an alternative that fully complies with the DRECP and maintains the wildlife linkages and must analyze all the known direct, indirect, and cumulative impacts to the multi-species wildlife linkage. Because the proposed alternative does

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not meet the spirit of the CMAs in minimizing impacts to wildlife connectivity, CDFW must consider an alternative that does provide those protections.

↑ B4-9
| Cont.

Alternatives Analysis Fails to Include Reasonable Range of Alternatives

As explained above, the purpose of alternatives analysis in an environmental review document under CEQA is to enable the agency to fulfill the statutory requirement that feasible alternatives that avoid significant impacts of a project must be implemented.

As required under Section 15126.6 of the CEQA Guidelines, the environmentally superior alternative is identified as the No Project alternative in the DEIR. However, four of the five alternatives that are included in the alternatives analysis propose changes to the gen-ties or the access roads. None of the alternatives contemplate a reconfiguration or reduction in the solar arrays to minimize impacts to the environment, and particularly to the multi-species wildlife corridor. None of these alternatives meaningfully address the fragmentation of allowing 55 acres of solar arrays to be built in the BLM-designated wildlife corridor. The fifth alternative would cause even more impacts to the multispecies wildlife corridor.

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| B4-10
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The DEIR needs to analyze an alternative that will eliminate impacts to the multispecies wildlife connectivity corridor by removing the 55 acres of panels within the corridor's boundaries. Further, as discussed above, CDFW needs to consider an alternative that will avoid impacts to MFTL and the sand habitat.

The Analysis of Cumulative Impacts in the DEIR Is Inadequate

Cumulative impacts analysis is a critical part of any CEQA analysis.

[t]he cumulative impact analysis must be substantively meaningful. "A cumulative impact analysis which understates information concerning the severity and significance of cumulative impacts impedes meaningful public discussion and skews the decisionmaker's perspective concerning the environmental consequences of the project, the necessity for mitigation measures, and the appropriateness of project approval.

(Joy Road Area Forest and Watershed Assoc. v. Cal. Dept. of Forestry (2006) 142 Cal. App. 4th 656, 676.) Where the impacts of a project are "cumulatively considerable" the agency must also examine alternatives that would avoid those impacts and mitigation measures for those impacts. (CEQA Guidelines §15130(b)(3).)

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| B4-11
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The DEIR identifies many of the cumulative projects but does not meaningfully analyze the cumulative impacts to resources in the California desert from the many proposed projects (including renewable energy projects and others). Moreover, because the initial identification and analysis of impacts is incomplete, the cumulative impacts analysis cannot be completed. For example, because the identification of Mojave fringe-toed lizards on- and off-site is incomplete, the cumulative impacts are also therefore inadequate.

Figure 2.2 in Appendix B of the Oberon EA identifies the potential extent of cumulative impacts from other existing and proposed renewable energy projects in the western Chuckwalla

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Valley. One of those is the Easley Project, which is located just to the north of the Athos and Victory Pass projects and is not considered in this DEIR. As detailed above, the Athos project, which is not on BLM-managed land and is currently under construction, has already constricted over half of the northern part of the linkage on the west and the proposed Easley project's southern or northern areas have the potential to block the northern part of the linkage, thereby eliminating the functionality of the multi-species linkage. The DEIR did not fully consider these cumulative impacts and must do so in order to determine if the proposed projects comply with the DRECP including the maintenance of the wildlife linkages. A supplemental or revised DEIR is needed to analyze all the known direct, indirect, and cumulative impacts to the multi-species wildlife linkage and the Mojave fringe-toed lizard and other plants and animals currently inhabit the larger Chuckwalla Valley area.

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B4-11
Cont.

Conclusion

Thank you for your consideration of these comments. Considering the shortcomings in the DEIR, we urge the CDFW to revise and re-circulate the DEIR before making any decision regarding the proposed project. In the event CDFW chooses not to revise the DEIR and provide adequate analysis, it should reject the proposed project because it has failed to establish that significant impacts cannot be avoided through well-designed feasible alternatives to the projects. Please feel free to contact me if you have any questions about these comments or the documents provided.

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B4-12

Sincerely,



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Attachment – Center for Biological Diversity's comments on Arica & Victory Pass Draft Environmental Assessment.

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References

- Gottscho, Andrew David. 2010. "Coalescent Analysis of Fifteen Nuclear Loci Reveals Pleistocene Speciation and Low Genetic Diversity in the Mojave Fringe-Toed Lizard, *Uma scoparia*." Humboldt Master's Thesis. Pgs. 92
<https://scholarworks.calstate.edu/downloads/k643b354g?locale=en>
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<https://doi.org/10.1016/j.jaridenv.2006.09.023>.

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VIA EMAIL AND E-PLANNING Website

September 7, 2021

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Re: Comments on the Proposed Draft Environmental Assessment for the Arica and Victory Pass Solar Projects DOI-BLM-CA-D060-2020-0009-EA (Arica Solar), DOI-BLM-CA-D060-2020-0010-EA (Victory Pass Solar)

Dear Mr. Anderson:

These comments are submitted on behalf of the Center for Biological Diversity and the Mojave Desert Land Trust regarding the Draft Environmental Assessment for the Arica and Victory Pass Solar Projects dated August 2021 and issued by the Bureau of Land Management (“BLM”).

The development of renewable energy is a critical component of efforts to reduce greenhouse gas emissions, avoid the worst consequences of global warming, and to assist California in meeting its ambitious emission reductions goals. The Center for Biological Diversity (the “Center”) strongly support the development of renewable energy production, and the generation of electricity from solar power, in particular. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitats and should be sited in proximity to the areas of electricity end-use in order to reduce the need for extensive new transmission corridors and the efficiency loss associated with extended energy transmission. Only by maintaining the highest environmental standards with regard to local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.

The Center participated regularly in the processes that resulted in the BLM’s adoption of the Desert Renewable Energy Conservation Plan (DRECP). We support adherence to the Conservation Management Actions (CMAs) in the DRECP and are concerned about the implementation of the requirements within the Riverside-East Development Focus area where the two projects are located. Our concerns are detailed below.

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The proposed action alternative - Alternative B - includes the disturbance on 2,665 acres of habitat for a variety of desert plants and animals in the Colorado Desert. The projects are located on BLM-managed public lands within the Riverside East Development Focus Area (DFA) designated by the Desert Renewable Energy Conservation Plan (DRECP). The Arica solar project is a proposed 265 MW solar project with 200 MW of battery storage. It is proposed to cover 1,355 acres. The Victory Pass is a proposed 200 MW solar project with 200MW of battery storage. It is proposed to cover 1,310 acres. Because of the reduction in the proposed project areas, increased density of the panels will require complete removal of all on-site vegetation in the solar project areas. The projects will share a 3.2-mile overhead gen-tie line that will include an additional 50 acres for the gen-tie ROW corridor and is anticipated to develop 10-15 acres within that ROW corridor.

Almost half of the Arica project lies within the DRECP's modeled habitat for Mojave fringe-toed lizard and the DEA confirms occupancy (at pg. 80). The southwest corner of the Victory Pass project is proposed to have panels placed in the BLM-identified Wildlife Connectivity Corridor, one of only two wildlife connectivity corridors within the DFA, significantly compromising the functionality of this requisite corridor. The gen-tie and part of the Victory Pass solar project will impact federally designated critical habitat for the threatened desert tortoise.

Failure to Adequately Analyze and Mitigate Impacts to Mojave Fringe-toed Lizard

The DEA states that 794 acres of modeled Mojave fringe-toed lizard habitat will be directly "impacted by construction of the solar fields" (at pg. 85) of the proposed Arica solar project. Figure 2 of Appendix F-1 of the DEA shows the overlap of the proposed Arica project with the sand transport corridor which creates habitat for the lizard. Figure 5 of Appendix F-1 shows that a majority of the proposed Arica project site is "Active Eolian Sources Qyf". The DEA relies on the determination that "This is consistent with the DRECP EIS Table IV.7-20 (page IV.7-130) which estimated 6,000 acres of impacts to MFTL habitat" (at pg. 85). However, the DEA fails to identify the number of acres of the sand transport corridor that have already been affected by existing and permitted projects in the DFA. It fails to analyze the development of the proposed Arica project on the "Active Eolian Sources Qyf" which appears to be greater than the 794 acres identified in the DEA. Figure 6 of Appendix F-1 shows that a majority of the proposed Victory Pass project site is "Active Eolian Sources Qyf". No quantification of the actual acreage of impact to "Active Eolian Sources Qyf" is provided for either project. The DEA fails to provide a cumulative impact analysis to the sand transport corridor functionality when coupled with all the existing and permitted projects' direct impacts. The DEA conjectures that the design of the solar fields will not impede saltation or fluvial sand transport yet provides no documentation of the success of such designs. It also fails to evaluate the impacts from the perimeter site fencing of the proposed projects which is known to reduce sand migration particularly if wind-blown detritus builds up along the upwind fencing.

The DEA fails to provide an analysis of the down-wind impacts of the projects on the sand transport corridor that create and maintain dune habitat. Appendix F-1 (at pg.8) states

"The primary off-site impact could be the disruption of sand being transported to the sand transport corridor. Potential indirect impacts of a solar facility could be sand shadows that extend beyond a project boundary. Sand shadows are defined as areas where the upwind supply of sand is cut off by fences and other infrastructure, and therefore, existing sand can be eroded downwind without replacement from upwind sources, resulting in the loss of the fine sand upon which dune habitats are dependent."

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The DEA needs to fully analyze the off-site impacts including cumulative off-site impacts from existing and permitted projects.

The DEA proposes to mitigate the direct impacts to Mojave fringe-toed lizard habitat as follows:

“...direct impacts to habitat would be compensated for at a ratio of 1:1 as required in MM BIO-6 (Compensation for Special-Status Species Habitat Impacts). MM BIO-6 further requires that compensation lands provide habitat value that is comparable to the habitat impacted.”

DEA at pg. 86

Other solar energy projects proposed to impact Mojave fringe-toed lizard habitat have identified mitigation ratios of 5:1 and 3:1 for direct impacts to all occupied Mojave fringe-toed lizard habitat and lesser ratios for indirect impacts. For example, Desert Sunlight project was required to mitigate any unavoidable impacts to the Mojave fringe-toed lizard habitat up to 5:1 for direct impacts to all occupied Mojave fringe-toed lizard habitat and lesser ratios for indirect impacts (Desert Sunlight FEIS at 4.4-40). The Desert Harvest project (Desert Harvest FEIS at Wil-4) was also required to produce a Mojave Fringe-toed Lizard Protection Plan. The DEA provides no explanation for failing to require a Mojave Fringe-toed Lizard Protection Plan for this proposed project which clearly is sited in Mojave fringe-toed lizard habitat. The DEA fails to identify why only a 1:1 mitigation ratio is being required for direct impacts. The DEA fails to evaluate or propose mitigation for indirect impacts which is wholly inadequate because indirect impacts will impact Mojave fringe-toed lizard habitat. As Barrows et al. (2006)¹ found, edge effects are significant for fringe-toed lizards and, in addition, the increase in predators associated with developed edges may also have a significant adverse effect on fringe-toed lizards and other species, therefore additional mitigation is warranted.

Due to the DEA’s failure to analyze off-site impacts, the proposed mitigation is inadequate. The DEA also fails to identify if adequate “comparable” habitat is even available for permanent conservation due to the existing and permitted projects’ need for mitigation for their direct and indirect impacts to the sand transport corridor and Mojave fringe-toed lizard habitat. Is the proposed mitigation even feasible?

Failure to Adequately Analyze and Mitigate Impacts to Wildlife Connectivity/Corridor

Wildlife connectivity corridors are place-based areas that are often unmitigable if impacts occur. The DRECP identified and established three wildlife connectivity corridors in the Riverside-East DFA (DRECP at Figure H-1). The attached Figure (Attachment 1) shows the overlap of Victory Pass’ solar field into the BLM’s Wildlife Connectivity Corridor designated as required by the DRECP. Figure 3.12-5 appears to be a much larger connectivity corridor than BLM’s GIS-layer that is publicly available and that was part of the DRECP in the Proposed LUPA and Final EIS at Figure H-1.

The DEA states:

¹ Barrows et al. 2006

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“Within the Cadiz Valley and Chocolate Mountains ecoregion subarea, where the Project areas are located, landscape-level habitat linkages cover approximately 905,000 acres as noted in the DRECP EIS Section III.7.8 (page III.7-231). These linkage areas are primarily located along the desert valleys, providing connectivity between isolated mountain ranges within the ecoregion sub-area. The Projects are located within the Palen McCoy Mountains–Chocolate Mountains linkage (see DRECP EIS Figure III.7-26). Approximately 59 acres of the western portion of the Victory Pass Project overlaps with the easternmost edge of the multiple-species linkage area identified in the DRECP (BLM, 2016)”.

DEA at pg. 81.

The above paragraph suggests that there is plenty of room for wildlife to connect in the area (905,000 acres). The DEA fails to identify that *within* the Riverside East DFA, this corridor is narrowly constrained and only one of two wildlife connectivity corridors that have been designated within the DFA. The DEA fails to identify the acres of BLM’s Wildlife Connectivity Corridor that is within the two project areas. A revised draft need to adequately identify the number of acres of the BLM-designated wildlife corridor within the project boundary and the impact from fencing off 59 acres.

Regarding mitigation to offset impacts to BLM’s Wildlife Connectivity Corridor the DEA states:

“The direct and indirect effects would be avoided, minimized, or offset through habitat compensation and a series of APMs and CMAs provided in full in Appendix E. This section of the EA identifies MMs to ensure effective mitigation of each potential impact. The full text of the mitigation measures (MM) appears in Appendix E.”

DEA at pg. 81

The proposed AMPs, MMs and CMAs in Appendix E (both E-1 and E-2) do not mention wildlife connectivity or propose avoidance, minimization or any mitigation. Because wildlife connectivity is hyper-focused on local landscape parameters and that local wildlife rely on, impacts are difficult to avoid, minimize and mitigate. The reason BLM identified the connectivity was to safeguard existing wildlife corridors through the DFA. Encroaching on the BLM-designated Wildlife Connectivity Corridor, particularly the cumulative impacts (i.e. Oberon project directly west of Victory Pass) which were not addressed in the EA will likely render the corridor useless to wildlife and defeat the purpose of the BLM’s designation.

Failure to Adequately Analyze and Mitigate Impacts to Wildlife Habitat Management Areas

Even after the DRECP was adopted some aspects of the CDCA/NECO plan remain in effect overall. Under the NECO plan, Wildlife Habitat Management Areas (WHMAs) “address other special status species and habitat management” (NECO at 2-2). NECO also states that “The existing restricted areas, DWMA’s, and WHMAs form the Multi-species Conservation Zone” (NECO at 2-2) which is the conservation basis of the NECO plan. The proposed project area overlaps one of the multi-species WHMA that includes the Mule Mountains. Management emphasis for the Mule Mountain WHMA is on active management of specific species and habitats mitigation, and restoration from authorized allowable uses. The overlap of the proposed project is not addressed in the DEA/DEIR. The NECO Plan goals and objectives for “Other Special Status Animal and Plant Species, Natural Communities, and Ecological Processes” are very specific and focus on conservation:

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Goals for special status animal and plant species, natural communities, and ecological processes are as follows:

- **Plants and Animals.** Maintain the naturally occurring distribution of 28 special status animal species and 30 special status plant species in the planning area. For bats, the term "naturally occurring" includes those populations that might occupy man-made mine shafts and adits.
- **Natural Communities.** Maintain proper functioning condition in all natural communities with special emphasis on communities that a) are present in small quantity, b) have a high species richness, and c) support many special status species.
- **Ecological Processes.** Maintain naturally occurring interrelationships among various biotic and abiotic elements of the environment.

The objectives are to

- a. protect and enhance habitat
- b. protect connectivity between protected communities

(NECO Plan at 2-52.) Further, the NECO Plan adopted action items to promote the objectives to "Protect and enhance habitat" (NECO Plan at 2-55), and "Protect connectivity between protected communities" (NECO Plan at 2-58). *See also* NECO Plan ROD at D-1, D-3.

For the first objective, to protect and enhance habitat, the first "action" is to:

Designate seventeen multi-species WHMAs (totaling 555,523 acres) such that approximately 80 percent of the distribution of all special status species and all natural community types would be included in the Multi-species Conservation Zone (Map 2-21 Appendix A). See Appendix H for a description of the process used to define the WHMA and the concept of conservation zones.

(NECO Plan at 2-55.) For the second objective, to protect connectivity, one of the actions states that: "The fragmenting affects of projects should be considered in the placement, design, and permitting of new projects." (NECO Plan at 2-58.) Other relevant "actions" include:

Require mitigation of impacts of proposed projects in suitable habitat within the range of a special status species and within natural community types using commonly applied mitigation measures and conduct surveys in the proposed project area for special status species as follows (also see range maps 3-6a-f and 3-7a-f Appendix A):

(NECO Plan at 2-55.)

Thus under the NECO plan, the impacts to multiple species WHMA and to sand and playa areas and Mojave fringe-toed lizard should be avoided. The DEA does not mention, much less analyze impacts to the WHMA as required by the NECO plan (as well as NEPA). Attachment 2 shows that most of the Arica project lies within a WHMA. A revised EA must identify this WHMA and analyze impacts from the proposed project on it.

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The Analysis of Cumulative Impacts in the DEA/DEIR Is Inadequate

A cumulative impact is “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7. The Ninth Circuit requires federal agencies to “catalogue” and provide useful analysis of past, present, and future projects. *City of Carmel-By-The-Sea v. U.S. Dept. of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997); *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 809-810 (9th Cir. 1999).

“In determining whether a proposed action will significantly impact the human environment, the agency must consider ‘[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.’ 40 C.F.R. § 1508.27(b)(7).” *Oregon Natural Resources Council v. BLM*, 470 F.3d 818, 822-823 (9th Cir. 2006). NEPA requires that cumulative impacts analysis provide “some quantified or detailed information,” because “[w]ithout such information, neither courts nor the public . . . can be assured that the Forest Service provided the hard look that it is required to provide.” *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998); *see also id.* (“very general” cumulative impacts information was not hard look required by NEPA). The discussion of future foreseeable actions requires more than a list of the number of acres affected, which is a necessary but not sufficient component of a NEPA analysis; the agency must also consider the actual environmental effects that can be expected from the projects on those acres. *See Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 995-96 (9th Cir. 2004) (finding that the environmental review documents “do not sufficiently identify or discuss the incremental impact that can be expected from each [project], or how those individual impacts might combine or synergistically interact with each other to affect the [] environment. As a result, they do not satisfy the requirements of the NEPA.”) Finally, cumulative analysis must be done as early in the environmental review process as possible, it is not appropriate to “defer consideration of cumulative impacts to a future date. ‘NEPA requires consideration of the potential impacts of an action before the action takes place.’” *Neighbors*, 137 F.3d at 1380 quoting *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1313 (9th Cir. 1990) (emphasis in original).

The DEA fails to adequately identify the numerous cumulative projects and does not meaningfully analyze the cumulative impacts to resources in the California desert from the many proposed projects (including renewable energy projects and others). Moreover, because the initial identification and analysis of impacts is incomplete, the cumulative impacts analysis cannot be completed.

Conclusion


Thank you for your consideration of these comments. In light of the shortcomings in the DEA, we urge the BLM to revise and re-circulate the DEA before making any decision regarding

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the proposed plan amendment and right-of-way application. In the event BLM chooses not to revise the DEA and provide adequate analysis, the BLM should reject the right-of-way application and the plan amendment. Please feel free to contact us if you have any questions about these comments or the documents provided.

Sincerely,



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Reference: Attachment 3

Barrows, C.W., M.F. Allen and J.T. Rotenberry 2006. Boundary processes between a desert sand dune community and an encroaching suburban landscape. *Biological Conservation* 131: 486-494.
<https://pdfs.semanticscholar.org/574f/b229ffc6f8d19d7dba74349c6fb40530d3b.pdf>

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Solar In The Desert

<https://cbdnet.info/portal/apps/View/index.html?webmap=3291ed1d4d30489891aa7202ad493b18>



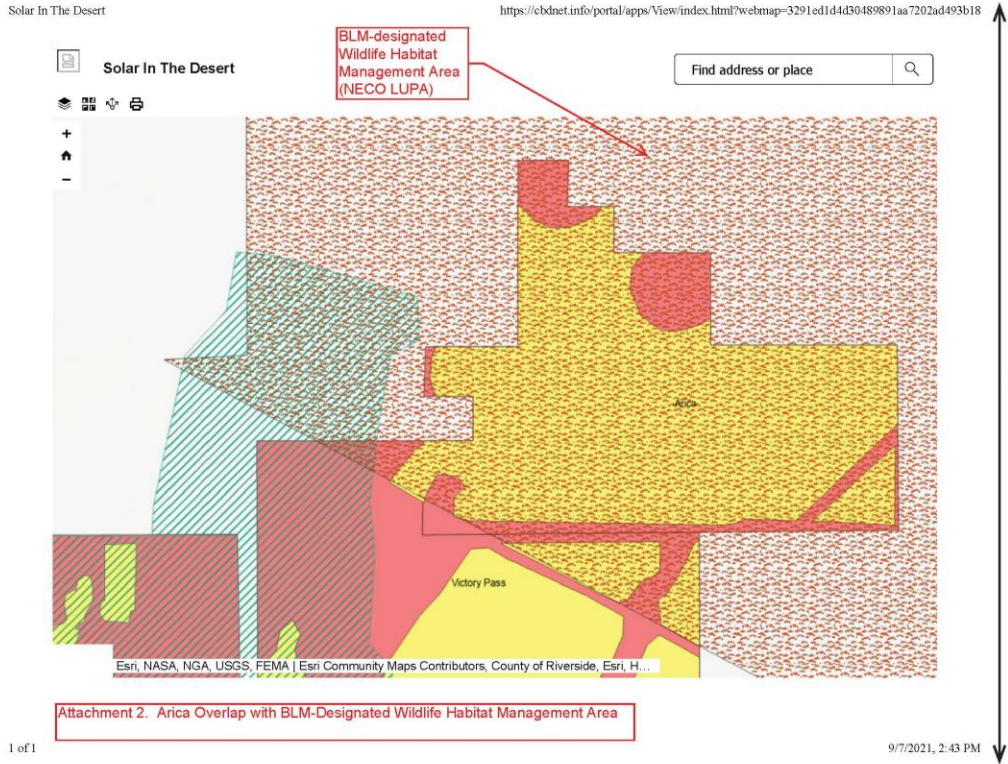
Attachment 1. Victory Pass Overlap with BLM-Designated Wildlife Connectivity Corridor

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Boundary processes between a desert sand dune community and an encroaching suburban landscape

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ARTICLE INFO

Article history:

Received 3 September 2005

Received in revised form

6 December 2005

Accepted 20 December 2005

Available online 8 June 2006

Keywords:

Edge effect

Anthropogenic boundary processes

Desert aeolian sand community

Flat-tailed horned lizard

Loggerhead shrike: Predation

ABSTRACT

In contrast to the body of work in more mesic habitats, few studies have examined boundary processes between natural and anthropogenic desert landscapes. Our research examined processes occurring at boundaries between a desert sand dune community and an encroaching suburban habitat. We measured responses to an anthropogenic boundary by species from multiple trophic levels, and incorporated measures of habitat suitability, and temporal variation, at multiple spatial scales. At an edge versus core habitat scale the only aeolian sand species that demonstrated an unambiguous negative response to the anthropogenic habitat edges was the flat-tailed horned lizard (*Phrynosoma mcallii*). Conversely loggerhead shrikes (*Lanius ludovicianus*) demonstrated a positive response to that edge. At a finer scale, species that exhibited a response to a habitat edge within the first 250 m included the horned lizards along with desert kangaroo rats (*Dipodomys deserti*). The latter species' response was confined to 25 m from the edge. For the flat-tailed horned lizard, edge effects were measured up to 150 m from the habitat boundary. Three potential causal hypotheses were explored to explain the edge effect on horned lizards: (1) invasions of exotic ant species reducing potential prey for the lizards; (2) road avoidance and road associated mortalities; and (3) predation from a suite of avian predators whose occurrence and abundance may be augmented by resources available in the suburban habitat. We rejected the exotic ant hypothesis due to the absence of exotic ants within the boundary region, and because native ant species (prey for horned lizards) did not show an edge effect. Our data supported the predation and road mortality hypotheses. Mechanisms for regulating population dynamics of desert species are often "bottom-up," stochastic processes driven by precipitation. The juxtaposition of an anthropogenic edge appears to have created a shift to a "top-down," predator-mediated dynamic for these lizards.

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1. Introduction

Primary mechanisms that distinguish processes at habitat boundaries include: (1) abiotic gradients unique to those boundaries, (2) access to spatially separated resources and

(3) species interactions (Wiens et al., 1985; Murcia, 1995; Laurance et al., 2002; Ries et al., 2004). Collectively these mechanisms create a conceptual framework for understanding ecological boundary responses. Additionally, understanding factors that control the occurrence and dynamics of popula-

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doi:10.1016/j.biocon.2005.12.024

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tions in relatively unfragmented habitat provide a context from which to evaluate how those drivers are impacted at boundaries. In arid ecosystems highly variable and unpredictable precipitation often regulates biological processes (Noy-Meir, 1973). Support for this axiom can be found across a broad range of taxa and regions (Mayhew, 1965, 1966; Pianka, 1970; Ballinger, 1977; Whitford and Creusere, 1977; Seely and Louw, 1980; Dunham, 1981; Abts, 1987; Robinson, 1990; Brown and Ernest, 2002; Germano and Williams, 2005). Population dynamics of desert species are often characterized as being regulated from the bottom-up, by resource availability mediated by annual rainfall (Brown and Ernest, 2002). In contrast, Faeth et al. (2005) described a shift in the processes controlling population dynamics in a suburban desert environment. There irrigated landscapes regulated productivity and resulted in a predation controlled, top-down community. These different population regulating processes meet at the boundary between natural desert and anthropogenic habitats. The extent to which processes generated by anthropogenic habitats encroach on the natural desert and impact components of that community is the subject of this paper.

In contrast to the body of work in more mesic habitats, few studies have examined boundary processes between natural and anthropogenic desert landscapes (e.g., Germaine et al., 1998; Germaine and Wakeling, 2001; Boal et al., 2003; Gutzwiller and Barrow, 2003). Here we examined processes and species occurring at boundaries between an aeolian sand landscape and encroaching suburban and abandoned agricultural field habitats. Distinguishing between variance in abundance imposed by the heterogeneity of the available habitats and what if any effects the proximity of an edge has on the distribution of native species is critical in determining the ecological importance of those edges (Bolger et al., 1997; Fagan et al., 2003). We incorporated measures of habitat suitability and temporal variation at multiple spatial scales to identify whether components of an aeolian sand community have altered their distributions in response to the presence of anthropogenic habitat edges.

Much of the previous research on edges has focused on temperate and tropical habitats (Janzen, 1983; Wilcove, 1985; Laurance, 1991; Murcia, 1995; Laurance et al., 2002; Watson et al., 2004) where boundary-mediated ecological flow processes extend from 10 to 400 m into interior habitats (i.e., Kapos, 1989; Camargo and Kapos, 1995; Laurance et al., 2002). Fewer studies have investigated edge effects in semi-arid environments, with much of that work focusing on coastal sage scrub in southern California (Bolger et al., 1991; Bolger et al., 1997; Kristan et al., 2003). In this habitat, moisture gradients at suburban-natural community boundaries have limited the invasion of non-native ants to 100 m or more into the natural communities from mesic refuges in the suburban landscape, with a corresponding negative cascade affecting overall native species richness (Suarez et al., 1998). Increased predation is another factor identified at sage scrub boundaries (Bolger et al., 1991; Bolger et al., 1997; Crooks and Soulé, 1999; Suarez et al., 2000; Suarez and Case, 2002; Unfried, 2003). Collectively these findings define the range of anthropogenic boundary impacts described to date. Our objective was to determine whether any of these impacts also influence the distribution and abundance of species in desert habitats.

2. Methods

2.1. Study area

Aeolian sand habitats were studied within the Thousand Palms Preserve (33°47'N, 116°20'W) in the Coachella Valley near Palm Desert, Riverside County, California. The Preserve includes approximately 1300 ha of contiguous sand dunes and hummocks. The Coachella Valley is an extremely arid shrub desert with a mean annual rainfall of 79–125 mm (most recent 60 year means, Western Regional Climate Center, Palm Springs and Indio reporting stations). The lowest rainfall year occurred in 2002, with just 4–7 mm recorded across the valley floor. Temperatures range from a low approaching 0 °C in the winter to highs exceeding 45 °C commonly recorded during July and August.

Study plots were designed to enable analyses at both a coarse scale (edge versus interior plots) and at a finer scale along the habitat edges (within plot distance from the habitat edge). Additionally, study plots were established to identify effects from two separate edge types. Fourteen study plots were established within the Preserve: three were located along a 2.4-km boundary with a suburban golf course community, six were located along a 3.2-km boundary with an abandoned agricultural area and sparse rural housing (Fig. 1), and five control plots were centrally located in “core” habitat, greater than 500 m from roads. There was a four-lane paved road separating the Preserve from the suburban habitat and a two-lane paved road separating the Preserve from an area of abandoned agriculture. All study plots were located in a stratified random manner. Plots were stratified so as to include both active sand dune and sand hummock habitat in a proportion corresponding to the aerial extent of those different habitat types. Edge plots were established adjacent to paved roads, but randomly located along the roadway.

Each of the 14 study plots consisted of a cluster of 5–8, 10 m × 100 m belt transects. Edge plots included seven transects, with the first centered on a barbed wire boundary fence and running parallel to the fence and adjacent paved road. A second transect was established parallel to the first, but was 25 m interior from the edge. Additional parallel transects were placed at 50, 100, 150, 200, and 250 m from the edge. Core plots consisted of similar clusters of belt transects with the same dimensions as the edge sites. Core plots were >500 m from any roadway, residence, or habitat discontinuity and included five to eight parallel belt transects separated by 50–150 m. Each transect was marked with a short wooden stake at the beginning, middle, and end so that their position with respect to the boundaries of the belt transect could be readily determined. Each study plot covered approximately 2.5 ha. Surveys were repeated six times at each plot between June and July each year from 2002 through 2004. Data collected in 2002 focused on flat-tailed horned lizards, *Phrynosoma mcallii*. Data collected in 2003 and 2004 included all species encountered.

2.2. Survey protocol

The fine aeolian sand of the Thousand Palms Preserve presented an opportunity unique to sand dunes to quantify the

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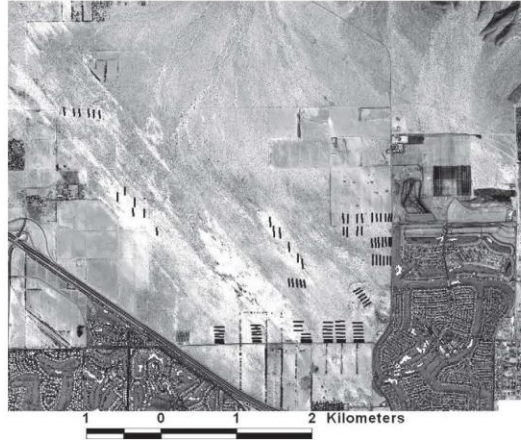


Fig. 1 – Satellite image depicting distribution of plots, extent of aeolian sand habitat, juxtaposition of suburban golf course development and abandoned agricultural fields, and roads.

occurrence and abundance of all terrestrial species occurring along transects with more or less equal detectability. Each vertebrate species could be identified to species and age class by their diagnostic tracks left in the sand. Ground-based species left easily identifiable tracks, and so their ability to avoid detection by differences in activity times, cryptic coloration, or stealthy behavior was nullified. Because late afternoon and evening breezes would wipe the sand clean the next day's accumulation of tracks could not be confused with those from the previous day. On those days when the wind did not blow, tracks from the current day could be distinguished from those from previous days by whether or not the tracks of nocturnal arthropods crossed over the vertebrate's track. Lizard track identification criteria were developed by spending several weeks prior to surveys, following tracks until animals were located and the species and age class was confirmed. Tracks from other diurnal vertebrates were confirmed as they were encountered during pre-survey field work. Nocturnal or otherwise cryptic species' tracks were confirmed by comparisons with foot sizes and configurations from museum specimens.

Surveys would begin after the sand surface temperature had risen sufficiently so that diurnal reptiles were observed to be active, usually ≥ 35 °C. Surveys continued until late morning when the high angle of the sun reduced the observer's ability to distinguish and identify tracks. One or two observers working in tandem completed a survey on a given study plot in 30–45 min, recording all fresh tracks observed within the 10-m wide belt of each 100 m transect. Tracks were followed off transect if it was necessary to confirm a species' identification and to insure that the same individual was not crossing the same transect repeatedly, thus avoiding an inflated count of the individuals active on that transect. Data for separate transects were considered independent for most

species. In addition to tracks, we recorded any sightings of animals along transects and recorded any bird vocalizations heard during a survey. Wide ranging predators such as coyotes (*Canis latrans*), greater roadrunners (*Geococcyx californianus*), American kestrels (*Falco sparverius*), and loggerhead shrikes (*Lanius ludovicianus*), had ranges much larger than the transect dimensions, and so were recorded as present on a study plot, rather than on individual transects.

Harvester Ants (*Pogonomyrmex* spp.) were sampled using dry pitfall traps in April of each year. Previous arthropod sampling efforts (Barrows, unpublished data) have indicated that in most years ant numbers reached peak numbers in April. This was also the period when lizards eating ants would be consuming the resources necessary for egg production in the ensuing months. Three pitfall traps were placed on each transect; one at both ends and another at the transect middle. The traps were collected within 24 h of being set out to avoid any mortality of vertebrates that happened into the traps. Ant data were presented as the total count per transect.

2.3. Habitat measures

Vegetation density and plant species composition were measured on each transect each year. All perennial shrubs were counted within the 10-m \times 100 m belt transects. Annual plants were counted and cover estimated in a 1 m² sampling frame placed at 12 locations along the midline of the belt transect.

Sand compaction has been described as a key habitat variable for Coachella Valley fringe-toed lizards, *Uma inornata*, (Barrows, 1997), and may be important for other psammophilic species. Sand compaction was measured at 25 points, approximately four m apart, along the midline of each belt transect

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using a hand-held penetrometer with an adapter foot for loose soils (Ben Meadows Company, Janesville, WI, USA).

2.4. Data analysis

A one-way analysis of variance (ANOVA) was employed to conduct coarser scale analyses, examining edge versus core differences, and to include wider ranging bird species. Here edge plots adjacent to the preserve edge (including transects ranging from 0 to 250 m from that edge) were compared with core plots (>500 m from the preserve edge). A two-way ANOVA was conducted to partition finer scale variance in species abundance between the treatment (distance from the preserve edge) and variance associated with habitat heterogeneity between each of the edge plots.

For the nine edge plots, data for those species that showed statistically significant variation with respect to distance to edge (0–250 m) were then subjected to multiple linear regression to determine whether environmental variation coincident with the edge distance could explain that observed variance. All variables were tested for normality and transformed with natural logs when necessary. Dependent variables were means of the six surveys on each transect per year for each species. Independent variables included measures of sand compaction (kg/cm^3 for each year, shrub density (shrubs/m^2), and linear distance from the Preserve edge. Total observations equaled 63 (seven transects/plot over nine plots), and since one or two variables were included in the regression analyses, model over fitting was avoided. Linear regression analyses were performed using SYSTAT 10.0 (SYSTAT, Wilkinson, 1990). A threshold of $\alpha = 0.05$ for statistical significance was used throughout this paper.

3. Results

Of the nine species tested with ANOVAs at the edge versus core scale, only the flat-tailed horned lizard and the loggerhead shrike showed a statistically significant effect, although their responses were opposite (Table 1). Shrikes were more common along the edge whereas the horned lizards were more abundant in the core. At the finer scale, for those nine plots situated along the Preserve boundary, distance from the Preserve edge was found to be a significant source of variance for the flat-tailed horned lizard, and the desert kangaroo rat, *Dipodomys deserti* (Table 2).

These statistical results are corroborated by the patterns of temporal and spatial species' abundance for the seven sand dune occurring species included in our analysis (Fig. 2a–g). There were no consistent responses to proximity of the habitat boundary for Coachella Valley round-tailed ground squirrels (*Spermophilus tereticaudus chlorus*), sidewinders (*Crotalus cerastes*), western shovel-nosed snakes (*Chionactis occipitalis*), and harvester ants (*Pogonomyrmex* spp., including *Pogonomyrmex californicus* and *Pogonomyrmex magnacanthus*). The abundance of both fringe-toed lizards and desert kangaroo rats appeared to be reduced along the immediate habitat edge in both 2003 and 2004, but not at distances ≥ 25 m from that boundary in either year. In contrast, abundance of flat-tailed horned lizards was reduced at distances from the habitat edge of 150 m in 2002, and 100 m in 2003 and 2004.

For the nine edge plots, Pearson's correlations were calculated for distance from the habitat edge and sand compaction and shrub density. Edge distance was not correlated with sand compaction ($r = 0.001$ to 0.135 , all $P = 0.0335$ – 0.995), and was only moderately negatively correlated with shrub

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Table 1 – Analysis of variance (ANOVA) of the abundance of nine species at the larger, edge versus core, scale						
Species	Source of variation	SS	df	MS	F	P-value
Coachella Valley fringe-toed lizard	Edge effect	1.404	1	1.404	0.871	0.361
	Error	33.850	21	1.612		
Flat-tailed horned lizard	Edge effect	1.294	1	1.294	8.464	0.007
	Error	3.975	26	0.153		
Sidewinder	Edge effect	0.008	1	0.008	0.564	0.465
	Error	0.208	14	0.015		
Shovel-nosed snake	Edge effect	0.032	1	0.032	0.211	0.650
	Error	3.344	22	0.152		
Round-tailed ground squirrel	Edge effect	0.302	1	0.302	3.941	0.063
	Error	1.379	18	0.077		
Desert kangaroo rat	Edge effect	0.078	1	0.078	0.125	0.727
	Error	11.781	19	0.620		
Harvester ants	Edge effect	13.209	1	13.209	0.551	0.467
	Error	455.486	19	23.973		
Greater roadrunner	Edge effect	0.009	1	0.009	0.096	0.760
	Error	2.169	22	0.099		
Loggerhead shrike	Edge effect	1.131	1	1.131	18.871	0.0002
	Error	1.558	26	0.060		

The error term represents variation among plots. P-values ≤ 0.05 indicate a statistically significant amount of the variance in the distribution of that species is explained by that treatment (edge effect).

Table 2 – Two-way ANOVAs were employed to determine sources of variance at a smaller, within edge plot, scale

Species	Source of variation	SS	df	MS	F	P-value
Coachella Valley fringe-toed lizard	Edge effect	11.569	6	1.928	1.629	0.150
	Within group (error)	91.107	77	1.183		
Flat-tailed horned lizard	Edge effect	1.549	6	0.258	9.545	0.007
	Boundary type	0.319	1	0.319	11.810	0.014
	Error	0.162	6	0.027		
Sidewinder	Edge effect	0.008	6	0.001	0.585	0.735
	Boundary type	<0.0001	1	<0.0001	0.010	0.923
	Error	0.014	6	0.002		
Shovel-nosed snake	Edge effect	0.109	6	0.018	2.073	0.198
	Boundary type	0.005	1	0.004	0.550	0.486
	Error	0.053	6	0.009		
Round-tailed ground squirrel	Edge effect	0.075	6	0.013	1.345	0.364
	Boundary type	0.197	1	0.197	21.085	0.004
	Error	0.056	6	0.009		
Desert kangaroo rat	Edge effect	2.683	6	0.447	15.529	0.002
	Boundary type	3.323	1	3.323	115.400	<0.0001
	Error	0.173	6	0.029		
Harvester ants	Edge effect	8.789	6	1.465	1.890	0.229
	Boundary type	13.114	1	13.114	16.921	0.006
	Error	4.650	6	0.775		

Here variance is partitioned between edge effects and between plots occurring along two boundary types. Coachella Valley fringe-toed lizards did not occur along the boundary that included the four-lane road, so only a one-way ANOVA was calculated for edge effect. P-values ≤ 0.05 indicate a statistically significant amount of the variance in the distribution of that species is explained by that treatment (edge effect or boundary type).

density ($r = 0.235, P = 0.043$). However, sand was consistently more compacted along the immediate Preserve boundary than it was 25 m interior of that boundary (paired t-test, $P = 0.048$).

Multiple regression models were run for the two species for which the within-plot ANOVAs indicated significant edge correlations. Shrub density did not explain a significant amount of the variance in abundance for either species, and so was not included in the models. For flat-tailed horned lizards, a model including edge distance and sand compaction was highly significant ($F = 27.204; df = 2/46; P < 0.0001$), accounting for over 50% of the total variation in lizard abundance ($R^2 = 0.542$). Both sand compaction and edge distance contributed significantly to the overall model ($P = 0.004/ <0.0001$). For desert kangaroo rats, however, the overall regression was not statistically significant ($F = 2.116; df = 2/ 53; P = 0.131, R^2 = 0.074$).

Boundaries between the natural desert and anthropogenic landscapes evaluated here were of two types. One was adjacent to a suburban golf course community, but separated by a well used four-lane road with curbs. The other boundary was adjacent to abandoned agricultural fields with tree rows surrounding each parcel, and was separated by a low use, two-lane road without curbs. The abundance of flat-tailed horned lizards, round-tailed ground squirrels, desert kangaroo rats and harvester ants differed between habitats adjacent to the two boundary types (Table 2). For species other than horned lizards, abundances within boundary types were not statistically different on transects extending away from the preserve edge; no difference in their response to the edge

was detected. For the horned lizards there were differences in abundance with respect to the preserve edge. No horned lizards were located closer than 100 m from the boundary adjacent to the suburban landscape; here lizard abundance did not reach an apparent asymptote until 200 m from the preserve edge (Fig. 3). Some horned lizards were located right to the edge of the boundary along the abandoned agricultural fields. Abundance appeared asymptotic 100 m from the preserve edge.

4. Discussion

We identified negative responses to anthropogenic boundaries for flat-tailed horned lizards, and desert kangaroo rats. Data for the horned lizards were the most consistent from the standpoint of different scales (edge versus core plots and within-plot edge distances) and linear regression results. For the kangaroo rat, edge effects were apparent only at the finer scale, within-plot analyses and relatively weak regression results. This pattern may be explained by environmental variation associated with preserve habitat boundary. Historic road grading created low berms along the road-preserve boundaries. Rare flood events create pooled standing water and silt deposition along those berms, resulting in significantly more compacted sediments within 10–20 m of that boundary. The edge effect for desert kangaroo rats appeared to be confined to <25 m from the preserve boundary, coincident with the effects of roadside berms.

Flat-tailed horned lizards typically occupy sand compaction conditions found throughout the nine edge plots. Edge

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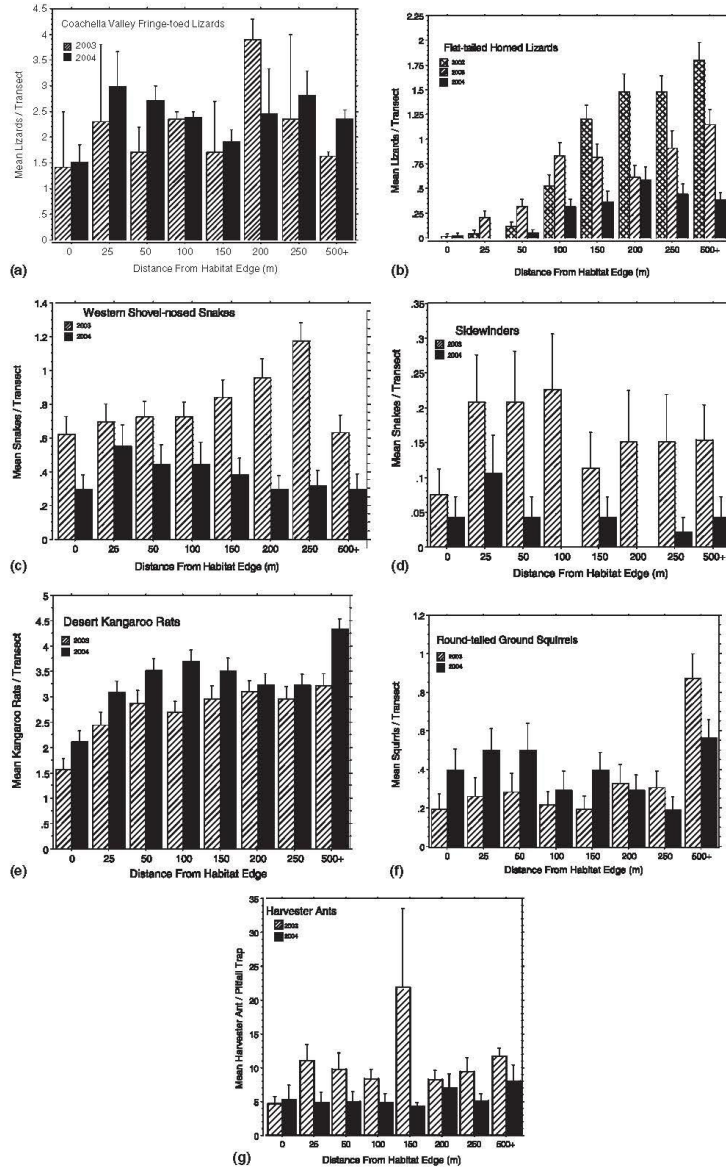


Fig. 2 – (a–g) Mean counts and one standard error (indicated by the error bar) of species occurring on sand dunes and sand hummocks in the Coachella Valley at various distances from an anthropogenic habitat edge. Data for each year are the combined means for the plots on which the species occurred, with six repetitions per transect per plot. Data collected at >500 m represent the combined core plots.

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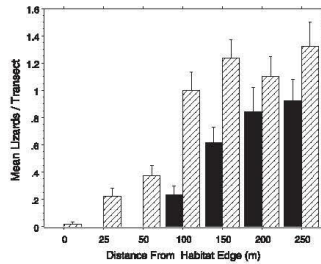


Fig. 3 – Mean counts and one standard error (indicated by the error bar) of flat-tailed horned lizards at distances from two boundary types. Solid black bars represent data summarized from three plots adjacent to a four-lane road, with curbs, bounded by a suburban golf course community. Diagonally lined bars represent data summarized from five plots adjacent to a two-lane curbsless road, bounded by abandoned agricultural fields and tree-row windbreaks. Both summaries include data combined from 2002 and 2003. Data for each year are the combined means for the plots on which the species occurred, with six repetitions per transect per plot.

effects for this species were measured up to 150 m from the habitat boundary, well beyond the impact of the roadside berms. This lizard's range has been reduced and fragmented in recent years (Turner and Medica, 1982) and this preserve may represent the only remaining habitat for flat-tails in the northern one-third of their original distribution. Deciphering causal factors for the flat-tail's absence along the preserve boundary may provide important directions for future management and preserve design strategies. Three non-exclusive hypotheses were evaluated to explain this edge effect.

(1) *Road mortality – road avoidance hypothesis.* Like many reptiles, flat-tailed horned lizards will use the margins of paved roads, most likely for thermoregulation (Norris, 1949; Turner and Medica, 1982). We did observe the horned lizards occasionally cross the two lane road, indicating that the road itself was not a barrier. Impacts of roads on wildlife populations include direct mortality and road avoidance (Forman and Alexander, 1998). If there is a road impact here we would expect the response from the lizards to be stronger adjacent to larger, busier roadways. In fact, we found consistent differences in lizard-edge relationships between edges adjacent to a busy four-lane road and a less used two-lane road. While edge effects were apparent along each road type, lizards adjacent to the four-lane road demonstrated a more pronounced and abrupt edge effect than those along the two-lane road, and so the data are consistent with a road effect hypothesis. No statistical difference in shrike abundance was found between plots along the two-lane and four-lane roads, eliminating shrike predation as a confounding variable. The lack of an edge effect in any of the three nocturnal species included in our analysis may be in part a reflection of reduced vehicle traffic during the night.

(2) *Invasive alien ant hypothesis.* Flat-tailed horned lizards' prey is almost exclusively harvester ants (Pianka and Parker, 1975; Turner and Medica, 1982). The reduction in harvester ants from 2003 to 2004 in the aeolian sand habitat, which coincided with a similar reduction in flat-tails, supports a hypothesis that the population dynamics of these two taxa are linked.

Suarez and Case (2002) and Fisher et al. (2002) have identified the invasion of non-native Argentine ants (*Linepithema humile*) as a leading factor in the disappearance of coast horned lizards (*Phrynosoma coronatum*) from fragmented habitats in coastal southern California. Suarez et al. (1998) described Argentine ants being able to invade up to 100 m into semi-arid natural habitats, greatly reducing native ant populations within that same 100 m belt. Coast horned lizards that were limited to Argentine ants for prey had negative or zero growth rates, and so could not maintain populations unless native ant populations were present (Suarez et al., 2000; Suarez and Case, 2002).

Argentine ants were known to occur invade mesic habitats (Holway, 2005) including suburban golf courses in the Coachella Valley. Similarly, introduced fire ants (*Solenopsis invicta*) have also been identified in the Coachella Valley and elsewhere are associated with roads, suburban development and edges (Forys et al., 2002). No non-native ant species were collected within any plots on the Thousand Palms Preserve. The extreme aridity of this habitat may be a barrier to invasion of ant species otherwise problematic to more mesic habitats. These data, and the lack of any edge effect apparent in the native harvester ants, indicate that alien ant invasions are not a cause for the observed edge effect in the horned lizard population.

(3) *Enhanced predation hypothesis.* Increased predation along habitat edges is often identified as a causal factor for reducing nesting success for birds along forest edges (Andrén et al., 1985; Wilcove, 1985; Angelstam, 1986; Andrén and Angelstam, 1988; Burkey, 1993; Estrada et al., 2002; Maina and Jackson, 2003; Aquilani and Brewer, 2004). If increased levels of predation along the habitat margins are responsible for reduced flat-tail numbers there, then increased numbers of predators should be evident.

Comparing edge versus core plots, counts of loggerhead shrikes were consistently higher on the edge of aeolian sand habitat. The higher numbers of shrikes at edge plots versus core locations in our study area was consistent with an enhanced predator hypothesis. However, if predation rates are an important causal factor, then why were other species not similarly impacted? Of the six vertebrate species measured, three are primarily nocturnal and so would not be subjected to predation pressure from the diurnal shrikes; however Daley et al. (2000) did record shrike predation on four kangaroo rats. Of the diurnal potential prey species, the ground squirrels' large size puts them outside of the prey range of shrikes. The two lizards are within the shrikes' prey size, and flat-tailed horned lizards are regularly preyed on by shrikes (Young et al., 2004). Whereas both lizards are cryptically colored, flat-tailed horned lizards are slower moving and often respond to threats by remaining motionless (Norris, 1949). Fringe-toed lizards respond to threats by running extremely fast or diving into the loose sand (Stebbins, 1944).

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Although predators were not quantified in 2002, flat-tailed horned lizards were commonly observed being preyed upon by American kestrels during site visits that year. Carcasses of marked horned lizards that had disappeared from study plots were located 0.7 km away in a palm tree planted on the edge of a golf course and frequented by kestrels. In 2003 and 2004 when predator occurrence was quantified, there were few observations of kestrels, but shrike observations were common. While kestrels and shrikes are native to the deserts of southern California, their abundance in the sand dune habitats of the Coachella Valley is likely enhanced by suburban development. In a pre-development landscape there were no trees growing in or around the Coachella Valley sand dunes. American kestrels are obligate hole or ledge nesters. Whereas there were once no nest sites for kestrels within 10 km of the dunes, today palm trees and other exotic vegetation planted in the neighboring suburban developments provide abundant nest sites on ledges formed by the large leaf petioles and in the thick “skirts” of dead palm leaves. While shrikes nest in native desert shrubs, trees in suburban areas as well as tree windbreaks planted at the margins of agricultural fields provide more sheltered nest sites. Power poles bordering the preserve provide elevated perch sites for both the kestrels and shrikes to see prey and then launch their hunting sorties. Flat-tailed horned lizards may be subjected to levels of predation along edges that they would not likely have experienced in a pre-development landscape.

By collecting data on multiple species from multiple trophic levels we have rejected the alien ant hypothesis and found support for both the predation and road affect hypotheses. Dynamics of the flat-tailed horned lizard population occupying a 100–200 m boundary region of the available habitat appears to have shifted from a bottom-up process where the lizard numbers are regulated by native ant abundance, to a top-down process where the lizards are limited by predation, and possibly road mortality. This shift in regulatory processes may contribute to a habitat “sink” (Pulliam, 1988) along the preserve boundary. For 2003 and 2004 combined, the horned lizards’ mean reproductive success ranged from 0 to 0.2 hatchlings/adult at distances from 0 to 150 m from the habitat edge; at 200 m from the edge and in core plots, mean reproductive success averaged 0.8 hatchlings/adult (Barrows, unpubl. data). Without immigration from the preserve core, flat-tailed horned lizards may not be able to sustain populations in the boundary region.

These results demonstrate the utility of community based research designed to evaluate hypotheses regarding processes that regulate the abundance of species (Barrows et al., in press). Rather than having broad impacts from indeterminate causes, boundary effects here were found to have a narrow scope and likely causes were identified. These findings can allow managers to focus adaptive management strategies aimed at reducing the boundary effect for flat-tailed horned lizards and so improve the viability of this remnant population. In the face of increasing suburban expansion into natural desert communities in the southwestern US and elsewhere in arid regions of the world, managers otherwise face decisions with little or no baseline from which to predict species responses.

Acknowledgement

Funding was provided by the Coachella Valley Association of Governments, the County of Riverside, and the California Department of Fish and Game. We particularly thank James Sullivan, Kim Nicol and Eric Loft. Donna Thomas, Marisa Sripracha, Thomas Prentice, Brandon Mutrux, Darrell Hutchinson, Kathleen Fleming, and Monica Swartz provided essential support in collecting and summarizing data. Invaluable editorial suggestions were provided by Katherine Barrows. Research on flat-tailed horned lizards was conducted under California Department of Fish and Game Scientific Collecting Permit 801015-01.

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COALESCENT ANALYSIS OF FIFTEEN NUCLEAR LOCI REVEALS
PLEISTOCENE SPECIATION AND LOW GENETIC DIVERSITY IN THE MOJAVE
FRINGE-TOED LIZARD, *UMA SCOPARIA*

By
Andrew David Gottscho

A Thesis
Presented to
The Faculty of Humboldt State University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts
Biological Sciences

March, 2010

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By

Andrew David Gottscho

We certify that we have read this study and that it conforms to acceptable standards of scholarly presentation and is fully acceptable, in scope and quality, as a thesis for the degree of Master of Arts.

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ABSTRACT

COALESCENT ANALYSIS OF FIFTEEN NUCLEAR LOCI REVEALS
PLEISTOCENE SPECIATION AND LOW GENETIC DIVERSITY IN THE MOJAVE
FRINGE-TOED LIZARD, *UMA SCOPARIA*

Andrew D. Gottscho

Analyzing DNA sequence data from multiple unlinked nuclear loci in a coalescent Isolation-with-Migration (IM) model is a statistically powerful method for estimating population divergence times, effective population sizes, and gene flow. This approach was used to reconstruct the evolutionary history of the Mojave fringe-toed Lizard, *Uma scoparia*, which is restricted to windblown sand habitats in the Mojave and Colorado Deserts of southern California and western Arizona, a region that is thought to have undergone dramatic climatic change during and since the Pleistocene epoch. To shed light on the origin of this species, I analyzed 15 nuclear loci (621,694 total bp) representing twenty localities of *U. scoparia* and four localities from its sister species to the south, *U. notata*. I found a latitudinal gradient in heterozygous SNPs and indels, low nucleotide diversity in *U. scoparia* ($\pi = 0.148\%$, $SD = 0.167\%$), particularly relative to *U. notata* ($\pi = 0.469\%$, $SD = 0.366\%$), and reciprocal monophyly in 3/15 gene trees. Using the IM model, I estimated with 95% confidence that *U. scoparia* and *U. notata* speciated in the Pleistocene epoch (~1 – 1.4 mya, 95% CI ~0.7 mya – 2.1 mya) without significant gene flow ($2Nm < 1$), an estimate that is robust to violations of the no-recombination assumption. I also found that *U. notata* has 2-5 times the effective population size of *U.*

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scoparia. These findings suggest that *U. scoparia* originated in the Pleistocene epoch and was confined to a Colorado Desert refuge during glacial maxima; northern populations represent a recent range expansion.



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ACKNOWLEDGEMENTS

I would like to thank the U.S. Army at Fort Irwin National Training Center, the Joshua Tree National Park Association, Community Foundation, Needles Field Office of the Bureau of Land Management (BLM), Humboldt State University, and Judith and Alistair McCrone for funding this research. Brad Hollingsworth of the San Diego Natural History Museum kindly provided a tissue sample that I used to create my genomic library, and Robert Murphy of the Royal Ontario Museum donated the *U. inornata* sample used in this study. Cameron Rognan, Jeff Jarvis, Collin Grant, Jennifer Taylor, Bonnie Riddell, Mitch Mulks, Kendra Gietzen, Sharyn Marks, Bryan Jennings and Barry Sinervo helped collect tissue samples. Bryan Jennings, Sean Reilly, Mitch Hart, Anthony Baker, and Maria Harper provided assistance with laboratory work. Jim Andre and Tasha La Doux at the Granite Mountains Reserve and Bill Presch at the Zzyzx Desert Studies Center provided us with a place to sleep and eat while collecting tissue samples, and taught me much about desert natural history. Adam Leache provided helpful tips for data analysis, and Robert Reynolds assisted with my geologic interpretations. Bryan Jennings and Sharyn Marks advised me throughout the duration of this project, and Ed Metz and Jeff White helped revise my thesis. I would like to thank the California Department of Fish and Game, Arizona Department of Game and Fish, BLM, and National Park Service for providing me with permits to collect DNA samples.



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INTRODUCTION

Recently separated allopatric populations or species are of great interest to evolutionary biologists who are interested in the mechanisms of speciation, but these sibling taxa also pose several challenging questions. How has the physical and climatic landscape influenced population divergence and gene flow? At what point during the continuous speciation process should a geographically disjunct population be considered an incipient species or a full species? The answers to these questions have important implications not only for speciation theory, but also for biodiversity conservation in the face of anthropogenic impacts like habitat fragmentation and global climate change.

To address these questions, many phylogeneticists and phylogeographers have relied on mitochondrial DNA (mtDNA) or microsatellite loci to estimate population divergence times or gene flow (Avice 1998; Brito and Edwards 2009). For a single locus, mtDNA harbors a disproportionately large amount of information regarding demographic history due to its high mutation rate (relative to autosomal nuclear DNA) and its small effective population size (Jennings and Edwards 2005; Moore 1995; Avice 1998). However, a single gene tree does not necessarily reflect the true population history, which can be confounded by deep coalescence (i.e. incomplete lineage sorting), branch length heterogeneity, and gene flow (Bruto and Edwards 2009; Edwards 2009). In other words, ancestral populations often have many polymorphisms, and the sorting of these polymorphisms into descendent populations is a stochastic process; the topology of any one gene tree does not necessarily reflect the topology of the true species tree. Recent




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studies have demonstrated a random nature to the coalescent process, which leads to high heterogeneity among gene trees (Edwards 2009). Because gene divergence usually occurs before population divergence, mtDNA studies may overestimate population divergence due to ancestral polymorphisms, yet the extent of overestimation is impossible to measure from one locus (Jennings and Edwards 2005; Edwards and Beerli 2000; Beerli and Edwards 2002). Because it is maternally inherited, mtDNA cannot be used to assess male gene flow; this is significant because existing studies suggest that males may disperse more than females (Doughty *et al.* 1994).

Microsatellites, although useful for identifying individual organisms, nevertheless suffer from high mutation rates (and thus high homoplasy), and contain insufficient information for their gene trees to be reconstructed. Additionally, they are afflicted with ascertainment bias, defined as a distortion of the true frequency of a phenomenon due to non-random sampling (Jennings and Edwards 2005). Recent bottleneck events in one or both populations can increase estimates of genetic divergence, even with substantial gene flow, and vicariance events involving large subpopulations on either side of an impermeable barrier could incorrectly be interpreted as a sign of high gene flow (Hey *et al.* 2004; Zhivotovsky 2001). Most microsatellite studies have made heavy use of summary statistics like F_{ST} . However, a given F_{ST} value can be explained by assuming short divergence times and little gene flow or long divergence times and strong gene flow (Nielsen and Wakeley 2001).


Fortunately, a coalescent-based Isolation with Migration (IM) model that uses a Markov Chain Monte Carlo (MCMC) approach is now available to analyze multiple



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unlinked nuclear loci to distinguish between ancestral lineage sorting and gene flow as explanations for genetic divergence (Wakeley 1996; Nielsen and Wakeley 2001; Hey *et al.* 2004). This model assumes panmictic populations (random mating), no intra-locus recombination, and no natural selection. By analyzing multiple non-coding regions of the nuclear genome, this method has several key advantages over mtDNA and microsatellite methods (Brito and Edwards 2009). Because anonymous loci represent random segments of nuclear DNA, they represent variation across the entire genome better than any one marker does (Lee and Edwards 2008). Unlike microsatellites, anonymous loci do not suffer from ascertainment bias. Since non-coding loci comprise approximately 90% of the genome, they can be harvested in virtually unlimited amounts. Most non-coding DNA presumably isn't under natural selection, and therefore meets coalescent assumptions of neutrality. With multiple loci, one can estimate confidence intervals for demographic parameters, including population divergence times, effective population sizes, and gene flow (Hey *et al.* 2004). Finally, unlike mitochondrial DNA, which is maternally inherited, nuclear DNA can be used to estimate gene flow due to male-biased dispersal (Brito and Edwards 2009).

Fringe-toed lizards (genus *Uma*, family Phrynosomatidae) are restricted to sand dunes, hummocks, flats, and other fine windblown (aeolian) sand habitats in the deserts of North America (Stebbins 1944; Norris 1958). *Uma* possess a number of morphological and behavioral adaptations for life in this extremely hot, arid, and exposed landscape (Figure 1; Stebbins 1944; Carothers 1986; Luke 1986). Two disjunct eastern species, *U. exsul* and *U. paraphygas*, occur in the Chihuahuan desert of central Mexico, separated




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from their western kin by the Sierra Madre Occidental. *Uma* to the west of the Sierra Madre Occidental diverged into a northern form, *U. scoparia*, and its sister southern form, the *U. notata* species complex. This split corresponds precisely with a long yet narrow chain of mountains that lies parallel to the San Andreas Fault in California's Riverside and Imperial Counties. In some areas, such as around Joshua Tree National Park, the two species approach within thirty miles of each other (Figure 2). There are two easily recognized morphological differences between the *U. notata* species complex and *U. scoparia* (Figure 3).

The *U. notata* species complex occurs to the south of these mountains, in the lower Colorado River Valley, and is composed of three closely allied yet allopatric subspecies: the Colorado Desert fringe-toed lizard, *U. n. notata* in the lower Colorado Desert of California and Baja Norte, Mexico; *U. n. inornata* in the Coachella Valley of Riverside County, California; and *U. n. rufopunctata* in southwest Arizona and Sonora, Mexico, east of the Colorado River (Trepanier and Murphy 2001; Norris 1958). Together, these subspecies occupy the lower Colorado and Sonoran Desert life zones of North America.

The focal species of this study, the Mojave Fringe-toed Lizard, *Uma scoparia*, ranges approximately from the Colorado River at Parker, Arizona, north to southern Death Valley, California, and west to Barstow and Twenty-nine Palms. Although most of this area is considered the Mojave Desert, the species' common name is a misnomer, as the southern part of its range near the Colorado River is widely considered to be part of the Colorado Desert biome, or at least a transition zone between the two desert biomes (Brown 1994). Within the Mojave Desert, *U. scoparia* occupies low, hot, arid valleys in




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the creosote bush shrub desert, below the Joshua tree/pinyon pine/juniper zone (personal observation).

The taxonomy within the *Uma notata* species complex has been dynamic over the past sixty years (Heifetz 1941; Norris 1958; Carpenter 1963; Mayhew 1964; Adest 1977; Trepanier and Murphy 2001). Norris (1958) pointed out that because all the western forms of *Uma* are allopatric, the taxonomic problem is of the most difficult sort, and species designations may be subjective. In particular, *U. n. inornata*, listed as endangered (Chen *et al.* 2006), is widely granted full species status (Stebbins 2003), whereas *U. n. rufopunctata* has only recently been elevated to a full species (Trepanier and Murphy 2001). Because I am examining the deepest divide in the western forms, between *U. scoparia* and *U. notata*, and the morphological, genetic, and geological evidence concur that all subspecies of *U. notata* are more closely related to each other than any are to *U. scoparia* (Norris 1958; Trepanier and Murphy 2001), I will treat the *U. notata* species complex as one species in my model (see Materials and Methods for more discussion on this point). Herein, I will refer to the entire *U. notata* species complex as such, or simply as *U. notata*. I will refer to the *U. notata* and *U. scoparia* clade as “western *Uma*” to distinguish them from the Chihuahuan species.

There is an extensive literature on the effects of the Pleistocene epoch on shaping genetic diversity and promoting speciation in terrestrial animals (Avisé *et al.* 1998; Hewitt 1996, 2000, 2004; Klicka and Zink 1997; Edwards and Beerli 2000). Recent evidence supports the idea that desert-adapted floral and faunal communities in western North America were fragmented into isolated refugia during Pleistocene glacial maxima.




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Particularly, studies on the composition of fossilized packrat (*Neotoma*) middens have shown that much of southwestern North America, particularly the valleys of the Mojave Desert, contained open coniferous woodland that is currently restricted to higher elevations or latitudes (Bentancourt *et al.* 1990a, 1990b; Thompson and Anderson 2000). Although glaciers did not intrude into the range of *Uma*, the climate was considerably more mesic, and numerous permanent lakes and streams graced the region, most notably Lake Manix in the vicinity of Barstow, CA and Lake Manly in Death Valley (Enzel *et al.* 2003). In parts of the Mojave Desert, fossils of giant sloths, horses, and other large herbivorous mammals have been found; these animals could not have survived in the modern desert climate (Norris 1958).

However, *Neotoma* midden studies also demonstrated that much of the lower Colorado Desert retained a desert flora and fauna during glacial maxima (Cole 1986). They were southerly enough, and low elevation enough to retain a climate suitable for desert-adapted species, including the creosote bush and the Joshua tree. These studies have also suggested that a smaller northern refuge was also present in Death Valley, which also has a low-elevation, hyper-arid climate. Recent paleoclimatic niche modeling also supports the idea that both the lower Colorado Desert and Death Valley sheltered isolated desert communities during the Pleistocene epoch (Jezkova *et al.* 2009).

A strong connection existed between Pleistocene climatic cycles and sand dune formation. There are three essential requirements for sand dune formation: 1) a source of sand, typically supplied by rivers or oceans, 2) exposure to wind, and 3) a place for the sand to settle out, often at the base of a mountain range or another obstacle that causes a



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reduction in wind velocity. During mesic Pleistocene glacial maxima, the Mojave and Colorado Deserts had more permanent lakes and streams that transported sand to the inter-mountain basins. During more arid cycles of the Pleistocene and Holocene, the water dried up, exposing the sand to the wind, creating dune systems (Lancaster and Tehakerian 2003; Enzel *et al.* 2003).

Given the dynamic nature of eolian systems, and the specialization of *U. scoparia* for this habitat, the historical biogeography of this species has generated much interest. Norris (1958) found clinal morphological variation between the northwestern, intermediate, and southern populations of *U. scoparia*. He presented considerable evidence suggesting that *U. notata* and *U. scoparia* diverged in the recent geological past, yet the two forms have been separated long enough for fixed differences to have developed in several morphological traits (Figure 3). He also found that northern *U. scoparia* had surprisingly minor levels of morphological variation, despite the fact that they occur in isolated metapopulations. Based on this evidence and his knowledge of the climate and geology of the region, Norris hypothesized that *U. scoparia* originated during the early Pleistocene in the Colorado Desert, was displaced from the northern part of its range during glacial maxima, and then colonized the Mojave Desert by migrating northward along the edges of stream courses.


Murphy *et al.* (2006) constructed a mitochondrial gene tree for *U. scoparia*, and found that the most basal split is between the Amargosa River in the north, and all other populations in the south. A population at Red Pass Dune (located in the Mojave River drainage just upstream from the Amargosa River) possesses mitochondrial haplotypes

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from both the Amargosa River population and the Mojave River population. The authors postulated that the Amargosa River population was likely isolated from the other populations 500,000 years ago, and that Death Valley was a Pleistocene refuge for this species. Based on these mtDNA data, Murphy *et al.* defined two distinct population segments (as defined in the Endangered Species Act) within *U. scoparia*: the Amargosa River population and the Red Pass Dune population, located at the northern end of the Mojave River drainage. These findings of distinct northern lineages are similar to those of other habitat associates of *Uma*, including the desert pocket mouse (*Chaetodipus penicillatus*; Jezkova *et al.* 2009), the sidewinder (*Crotalus cerastes*), and the speckled rattlesnake (*C. mitchelli*; Douglas *et al.* 2006).

Here, I reconstruct the evolutionary history of *U. scoparia* by analyzing fifteen nuclear loci (620,000 bp total) in a coalescent IM model in an attempt to distinguish between the alternate hypotheses of Norris (1958) and Murphy *et al.* (2006). I aim to 1) estimate the population divergence time (speciation time) between *U. scoparia* and *U. notata*, 2) estimate gene flow since speciation between *U. scoparia* and *U. notata*, 3) determine ancestral and modern effective population sizes, 4) determine the location of any Pleistocene refugia within western *Uma* by categorizing heterozygous single nucleotide polymorphisms (SNPs) and heterozygous indels by population, and 5) examine the gene trees for any evidence of a divergent Amargosa River population.

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MATERIALS AND METHODS

Field Collections

DNA samples were collected throughout the range of *Uma scoparia* between March and June 2008; in May 2009, I collected samples from three representative populations of *U. notata* in the Colorado Desert of California and southwestern Arizona (Table 1; Figure 2). I actively searched for lizards in dune habitat during the day, usually in the mornings and late afternoons, when I found them to be most active. After stalking them carefully, my field assistants and I captured most of the lizards with a fishing pole noose. A few of the lizards were captured by hand by tracking the lizard to the burial site. This method was most effective in the early morning following a spell of windy weather that cleared the dunes of old tracks. Tail tips (usually less than 1 cm) were removed at an inter-vertebral break point and preserved in 100% ethanol for DNA analysis. Date and time of capture, snout-vent length, sex, and general weather conditions were noted. A GPS unit was used to record latitude, longitude, and elevation. Sand surface temperatures in the sun and shade and lizard body temperatures were recorded using an infrared temperature gun. Finally, each lizard was photographed and released at the same location within minutes of capture.

Genomic Data Acquisition


For reasons stated earlier, multiple anonymous nuclear loci are the molecular markers of choice. I assume that these loci recombine amongst themselves freely, since



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they are from random portions of the nuclear genome (Edwards and Beerli 2000; Arbogast *et al.* 2002). To design primers for these loci, a small-insert genomic library was created. Genomic DNA was extracted from liver tissue of an *Uma scoparia* using standard phenol-chloroform methods (Maniatis *et al.* 1982). Pressured nitrogen was used to nebulize the DNA into fragments between 1 and 4 kb in length. This was accomplished by placing a nebulization vessel on ice, filling it with approximately 6.8 µg DNA and 750 µL shearing buffer, and running the gas at 14 PSI for approximately 30 seconds. After nebulization, the liquid was transferred to a 1.5 mL microcentrifuge tube. Eighty µL of 3 molar sodium acetate, 4 µL of 20 mg/mL glycogen, and 700 µL 100% isopropyl alcohol were added and mixed, and placed in a -80° C freezer for 15 minutes. After that, I centrifuged the mixture at 12,000 RPM for 15 minutes at 4° C. The pellet was washed with cold 80% ethanol, and the centrifugation step repeated. The fluid was decanted and the tube spun dry until a DNA pellet was observed. I re-suspended the pellet with 55 µL of distilled water, and then I ran the re-suspended mixture on a 1% agarose gel with a ladder to confirm that the nebulization step produced DNA fragments of the appropriate size (1 – 4 kb).

The nebulized DNA was then blunt-end repaired by adding blunting buffer, BSA, dNTPs, T4 polymerase, and Klenow polymerase. This mixture was incubated for 30 minutes at room temperature, followed by an incubation at 70° C for 20 minutes. To dephosphorylate the blunt-ended mixture, I added dephosphorylation buffer and calf intestinal phosphatase (CIP), and incubated the mixture at 37° C for 60 minutes. I then centrifuged the mixture to create a pellet, which was subsequently washed with ethanol,




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dried, and resuspended with water. The blunt-ended fragments of DNA were then ligated into a blunt-end TOPO vector before being transformed into chemically-competent *Escherichia coli* cells (Invitrogen, Carlsbad, CA). Clones were then picked at random with a toothpick, plasmids were purified using a mini-prep kit (Qiagen, Valencia, CA), and sequenced using vector primers from both ends. I then designed polymerase chain reaction (PCR) primers nested within each lizard-insert sequence. The inserts in eight clones were fully sequenced. A Genbank BLAST search was conducted to determine whether any of the sequences were homologous with coding DNA.

Out of the eight primer pairs tested, only five successfully amplified their target loci in PCR reactions. Recent empirical data suggest that as the number of loci in an IM analysis increases from five to fifteen, the 95% confidence intervals for parameter estimates narrow rapidly; beyond fifteen loci, confidence in parameter estimates are not much improved (Lee and Edwards 2008; Jennings and Edwards 2005). Therefore, I attempted other ways to acquire primers for nuclear loci in order to reach the optimum number, fifteen. First, I ordered primers for four introns that have been used successfully in studies of other phrynosomatid lizards, bringing my total to nine loci (Leache 2009; Leache and McGuire 2006). However, I still needed six more loci.

A recent study on turtles demonstrated that anonymous loci primers can be used on increasingly distantly related taxa with varying degrees of success (Thomson *et al.* 2008). Generally speaking, most anonymous loci primers tend to be fairly specific to the taxa on which they were developed, at least compared to introns; this is because the primer sequences are usually located in non-coding regions of the genome which are free



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to mutate without the constraints of natural selection. However, if enough loci from one organism are tested on a distantly related organism, a fraction of them are likely to successfully amplify the target sequence. Therefore, I decided to test 38 anonymous loci primers that successfully amplified PCR products for several fence lizard (*Sceloporus*) species, which are also in the family Phrynosomatidae (Rosenblum *et al.* 2007). I used a gradient thermocycler to test each primer pair at 12 different annealing temperatures between 50-60° C, in some cases up to 67° C. Six loci successfully amplified their targets in both *U. notata* and *U. scoparia*, bringing my total to fifteen loci. The primer sequences and annealing temperatures are given in Table 2.

The following PCR settings were used to directly sequence the fifteen nuclear loci: 1) 94° for 5 minutes, 2) 94° for 20 seconds, 3) annealing temperature (Table 2) for 20 seconds, 4) 72° for 1 minute, 5) go to step 2 thirty-five times, 6) 72° for 3 minutes. The success of the PCR reactions was verified by running the products out on a 2% agarose gel, staining it with ethidium bromide, and imaging it with UV light. DNA sequencing was outsourced to the University of Washington High-Throughput Genomics Center.


Designation of Populations

In order to categorize population level genetic diversity, as well as to conduct IM analyses, it is necessary to make *a priori* population designations (Table 1). Fortunately, in the case of *Uma*, these populations are easily defined by the landscape topography, at least on a regional scale – mountains are natural barriers that define the course of sand

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dune movement due to wind action (Muhs *et al.* 2003). I group all subspecies of *U. notata* as one population; none of these subspecies are separated by mountain ranges, and gene flow was likely common before humans fragmented dune ecosystems and dammed the Colorado River in the past century. Although this may violate the assumption of panmictic populations in the IM model (Hey *et al.* 2004), recent empirical data suggest that the model is robust to violations of this assumption (Strasburg and Rieseberg 2009). Furthermore, I am principally concerned with the speciation of *U. scoparia*, not the intra-specific history of the *U. notata* species complex.

Within *U. scoparia*, I define three populations, stratified by latitude. The southern Colorado River (Colorado) population includes the Amboy, Cadiz, Dale, Pinto, Palen, Rice, and Bouse localities. All of these populations are either in the Colorado River drainage, or in a sand transport corridor that directly connects to the Colorado River (Muhs *et al.* 2003). This region is generally considered an ecological transition zone from true Colorado Desert, to Mojave Desert (Brown 1994). To the north of the Colorado population, separated by a low divide, is the Mojave River (Mojave) population, which includes the following localities: Lenwood Road, Coyote Dry Lake, Bitter Springs, Red Pass Dune, West Red Pass, The Whale, Cronese Lakes, Afton Canyon, Razor Road, and Kelso Dunes. Lizard metapopulations at all of these locales were almost certainly interconnected by the Mojave River during the late Pleistocene and early Holocene (Enzel *et al.* 2003). Finally, the Amargosa River population, as defined by Murphy *et al.* (2006), consists of Ibex Dunes, Dumont Dunes, and Coyote Holes. This population represents the northern range limit for *Uma*.




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Sequence Processing and Data Characteristics

I first used FinchTV v1.4.0 (Geospiza, Inc.; Seattle, WA, USA; <http://www.geospiza.com>) to browse through all sequences and dispose of those with moderate to high levels of background noise, which would interfere with the detection of SNPs in directly sequenced PCR products. I then used CodonCode Aligner v3.5.2 (CodonCode Inc.; Dedham, MA, USA; <http://www.codoncode.com/aligner>) to align and convert the remaining high-quality .abi files into contigs. One of the main advantages of CodonCode aligner is that it allows for the automatic resolution of heterozygous indels, as well as base calling for heterozygous SNPs (double peaks in the chromatogram). Heterozygous SNPs and indels are important because they are a reliable proxy for measuring genetic diversity, especially with large sample sizes (Abdulla *et al.* 2009; Novembre *et al.* 2008; Wakeley *et al.* 2000). I trimmed the ends of the contigs that had a high degree of mutations due to background noise in the chromatograms, then I used the “Change Bases” command to automatically call bases as ambiguities when the second peak was more than 50% of the height of the first peak. All segregating sites were manually verified to ensure that bases calls were accurate, and I made manual edits as necessary, which is critical to prevent excess noise from biasing the dataset.

I counted all heterozygous SNPs and indels (insertions or deletions), and categorized them by population and by locus. This enabled me to calculate the total SNPs per population. This raw number is not meaningful by itself, however, due to my uneven sample sizes among loci and populations. Therefore, to correct for the uneven sampling, I



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divided the total SNPs by the total number of base pairs analyzed per population. This gave me a frequency of SNPs per population (Total SNPs/Total Base Pairs = SNP Frequency).

Determination of Haplotype Sequences and Recombination


The program PHASE v2.1 was used to infer haplotypes (Stephens *et al.* 2001; Stephens and Scheet 2005). This program reconstructs haplotype sequences of heterozygous individuals mainly based on other homozygous sequences at the same locus. However, PHASE is not infallible, so it calculates a probability value for each inferred allele. Generally, most authors only use inferred haplotype sequences with 90% probability or greater; however, this may bias against unique SNPs in the dataset (Becquet and Przeworski 2009). To illustrate this point, let us consider a directly sequenced PCR product that has one unique heterozygous SNP. In this case, PHASE (or the user) can easily determine the haplotype sequence. However, if the sequence has two SNPs, one of which is unique to that sequence, then there are two possible ways of inferring the haplotypes, each with a 50% probability. Therefore PHASE will incorrectly estimate the phase of unique SNPs 50% of the time. To include all inferred alleles with 50% probability or higher in an IM analysis will inevitably create four gamete types (essentially a false recombination event), which will bias the estimates of demographic parameters. If one deals with this by excluding all inferred alleles with less than 90% confidence, the number of recombination events is drastically reduced, but a new bias emerges against unique SNPs, which are a biologically real component of the data. This

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is particularly important if one population in the analysis has an unusually high number of unique SNPs, as might be expected in a Pleistocene refuge. By excluding recombination, one is biasing the data by removing unique, real polymorphisms; and by including recombinant alleles, one is violating the assumptions of the IM model.

To deal with this paradox, I decided to run my analysis both ways to see how robust the results are to these violations and biases. First I used PHASE to reconstruct all alleles with 50% confidence or greater, thereby preserving a complete dataset with all unique SNPs. I conducted the first IM analysis including all of these data. For the second analysis, I first used the 4-gamete test in DNAsp 5.10 to detect recombination events in the complete dataset (Librado and Rozas 2009; Hudson and Kaplan 1985). For loci that did not pass the test, I ran PHASE again, this time only preserving alleles with 90% confidence or greater. This removed most, but not all, of the detected recombination events. The final few recombination events were dealt with by either truncating the locus to the shortest non-recombining block or removing one or two “problem” alleles.

The number of alleles per population per locus is given in Table 3. I used the program DNAsp 5.10 (Librado and Rozas 2009) to calculate nucleotide diversity (π), the number of segregating sites (S), and the number of fixed differences (F_{sn}) between *U. scoparia* and *U. notata*, as well as between the Amargosa and Mojave populations within *U. scoparia* (F_{am}). Tajima’s D test for neutrality was calculated to ensure that the loci are not under natural selection and therefore meet the molecular clock assumption of the IM model (Hey *et al.* 2004).



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Mutation Models and Gene Tree Reconstruction

I used FindModel, a web implementation of ModelTest, to find the best mutation model (Posada and Crandall 1998). To reconstruct my gene trees I used the maximum-likelihood phylogenetic software Garli v1.0, which uses a rapid stochastic algorithm to simultaneously determine the topology, branch lengths and substitution model parameters that maximize the log-likelihood (Zwickl 2006; Lewis 1998). For each locus, I conducted six independent runs of Garli, and I checked that they all came up with the same best tree. I used the midpoint rooting method with the software FigTree v 1.3.1.


Coalescent Demographic Analyses

The program IM was used to estimate effective population sizes, population divergence time, and gene flow between *U. scoparia* and *U. notata* (Hey and Nielsen 2004; Nielsen and Wakeley 2001). The IM program assumes that the loci are unlinked and free from natural selection and recombination, and that the populations are panmictic. Six population parameters scaled by mutation rate (μ) were estimated: the effective population sizes for the ancestral population (θ_A , $\theta = 4N\mu$) and for the two daughter populations (θ_1 and θ_2); the divergence time between the two descendent populations (t); and migration rates between daughter populations (m_1 , m_2), in the coalescent. Since the coalescent goes backward in time, m_1 is the rate at which genes enter population 1 from population 2 as time goes forward (Hey *et al.* 2004). I applied the HKY mutation model to my data. In IM, several preliminary runs were made until prior boundaries were

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optimized (Reilly 2009). The final simulations were carried out with a geometric heating scheme, six chains, 5 million steps, and a burn-in of 2 million steps. Effective sample size (ESS) values were monitored to ensure proper mixing of the Markov chain. The following priors were used: -q1 12 -q2 12 -qA 12 -t 5 -m1 5 -m2 5 -b 2000000 -L 5000000 -fg -n6 -g1 0.8 -g2 0.9.

To convert model parameter estimates from the IM program into demographic quantities (population size, migration rate, and divergence time), I started with a mutation rate of 2.2×10^{-9} substitutions/site/year for mammalian nuclear DNA (Kumar and Subramanian 2002). This mutation rate was multiplied by the number of base pairs in each locus to calculate the per-locus mutation rate μ (substitutions/year). The geometric mean of all four per-locus mutation rates was taken to calculate the divergence time by dividing the time parameter by the mutation rate ($t = t/\mu$). To convert the effective population size parameter (θ) to population size in terms of number of breeding adults (N), I used the equation $N = \theta/(4G\mu)$, where G is the number of years until sexual maturity. To estimate the population migration rate $2Nm$ (the effective rate at which genes come into a population per generation), I used the equation $2Nm = \theta * m/2$. A $2Nm$ value less than one indicates that gene flow is not significant (Wright 1931).



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RESULTS

Analysis of Heterozygosity


I examined 273,480 bp of directly sequenced nuclear DNA, before inferring the haplotypes, to categorize heterozygous SNPs and indels by population (Table 4; Figure 4). I excluded locus Uma7r from the analysis because it had an atypically large number of heterozygous SNPs (179), with few homozygotes, in violation of what one would expect from a locus in Hardy-Weinberg equilibrium. All other loci had between 0 and 59 total SNPs. Within the remaining fourteen loci, *U. notata* had the highest heterozygous SNP frequency of any population (0.33% of 60,836 bp were SNPs). Within *U. scoparia*, the southern Colorado population had the highest SNP frequency (0.09% of 81,578 bp). The northern Mojave and Amargosa populations had similarly low frequencies of SNPs (0.05% of 73,369 bp and 0.07% of 57,697 bp respectively). Using SNP frequencies as a proxy for genetic diversity, *U. notata* is about three times more diverse than southern *U. scoparia*, and *U. notata* is approximately five times more diverse than either northern (Mojave & Amargosa) *U. scoparia* population. The occurrence of heterozygous indels, which were rare in this study, is consistent with the pattern of heterozygous SNPs. *Uma notata* had five heterozygous indels, the Colorado population of *U. scoparia* had three, and the Mojave and Amargosa populations had zero.

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Data Characteristics

After using PHASE and SeqPhase to infer all haplotypes with 50% probability or higher, I had 621,694 bp of data, the characteristics of which are summarized in Table 5. The total length of all sites is 7,496 bp, and the mean locus length is 500 bp (SD = 150 bp). I found a total of 171 segregating sites in all 15 loci, 14 (8.2%) of which are fixed differences between *U. notata* and *U. scoparia*, which translates to a 0.19% sequence divergence between the two species (14 fixed differences / 7496 total bp). There were zero fixed differences between the Amargosa and Mojave populations (0% sequence divergence). The average number of segregating sites per locus was 11.4 (SD = 4.75), or 2.69% of the total base pairs on average (SD = 1.89%). The mean nucleotide diversity (π) of *U. notata* (0.00469, SD = 0.00366) was approximately three times higher than that of *U. scoparia* (0.00148, SD = 0.00167). None of the results of Tajima's *D* test were significant, with the exception of locus Uma08, indicating that the majority of my loci are not under natural selection and thus meet the assumptions of the IM model.

For the no-recombination analysis, a total of 35 recombination events were detected; most of these were caused by PHASE error, because by subsequently excluding all alleles with less than 90% confidence, I removed all but 8 of these recombination events. The final recombination was dealt with by excluding 12 allele sequences and truncating two loci to the shortest non-recombining block. I also excluded locus Uma07, because recombination was so common in this locus.



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Characteristics of Gene Trees

The fifteen midpoint-rooted gene trees are given in Figures 5-19. Three loci (RAG-1, Sun08, and Uma06) show reciprocal monophyly between the two species. Four of the loci (Sun07, Sun10, Sun18, and Uma05) had monophyletic *U. scoparia* nested within *U. notata*, so that *U. notata* is paraphyletic with respect to *U. scoparia*. In seven of the loci (BDNF, PNN, R35, Sun12, Sun28, Uma03, and Uma08), the outgroup was composed entirely of *U. notata*, while the ingroup had a mixture of *U. notata* and *U. scoparia* alleles, so that neither species was monophyletic. The fourteen gene trees mentioned so far all have an outgroup of pure *U. notata*, and *U. scoparia* is always either reciprocally monophyletic or nested within the *U. notata* genealogy. The sole exception to this pattern occurs in Locus Uma07 (Figure 18), which has an unusually large number of SNPs; in this case *U. notata* is nested in several locations within the *U. scoparia* lineage.

One of the most striking aspects of the gene trees is the lack of population structure within *U. scoparia*; most of the gene trees have a bush-like topology. The most extreme example is in locus BDNF (Figure 5), in which all 56 *U. scoparia* alleles representing the entire species range are 100% identical. By contrast, *U. notata* had much more structure even within a single locality, especially at the Algodones Dunes.

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Coalescent Analyses


I conducted two separate IM analyses, the first including all of my data with recombination, and the second a pared-down dataset with no recombination that biases against unique SNPs. All parameters were estimated well, because all the posterior probability distributions were shaped as single, symmetrical, narrow peaks. The raw parameter estimates and the converted demographic parameters are shown in Table 6. For the first analysis, including all data with recombination, the geometric mean of mutation rates (μ) was calculated to be 1.037×10^{-6} mutations/year. The effective population size for *U. notata* (576,529 individuals; 95% CI 428,694 – 855,761 individuals; Figure 20) was approximately five times larger than that of *U. scoparia* (123,190 individuals; 95% CI 90,338 – 162,610 individuals; Figure 21), while the ancestral population size (106,764 individuals; 95% CI 21,335 – 215,167 individuals; Figure 22) was slightly smaller than that of *U. scoparia*. The speciation time between *U. notata* and *U. scoparia* was estimated to be 1.04 million years ago (mya) (95% CI 0.71 – 1.53 mya; Figure 23). The population migration rate distributions from *U. scoparia* to *U. notata* ($2N_1m_1 = 0.0897$; Figure 24) and from *U. notata* to *U. scoparia* ($2N_2m_2 = 0.003833$; Figure 25) indicated negligible amounts of gene flow.

For the second analysis, excluding all recombination, the geometric mean of mutation rates (μ) was calculated to be 1.009×10^{-6} mutations/year. The effective population size for *U. notata* (200,979 individuals; 95% CI 137,785 – 291,994 individuals; Figure 26) was approximately three times larger than that of *U. scoparia*

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(56,878 individuals; 95% CI 41,717 – 84,697 individuals; Figure 27), while the ancestral population size (1,263 individuals; 95% CI 1,263 – 324,866 individuals; Figure 28) was much smaller than any other estimated population size. The speciation time between *U. notata* and *U. scoparia* was estimated to be 1.41 mya (95% CI 0.74 - 2.08 mya; Figure 29). Again, gene flow was negligible in both directions ($2N_1m_1 = 0.096$; $2N_2m_2 = 0.007$; Figures 30 and 31).




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DISCUSSION

I examined 621,694 base pairs of DNA (after PHASE), representing fifteen independent nuclear loci, in a coalescent IM model to reconstruct the evolutionary history of the Mojave Fringe-toed Lizard, *Uma scoparia*, a sand dune specialist native to the Mojave and Colorado deserts of California and Arizona. This study not only demonstrates that *U. scoparia* has low genetic diversity compared to its sister species, *U. notata*, whether measured by SNPs, indels, nucleotide diversity or effective population size, but it also is consistent with the hypothesis that *U. scoparia* arose via founder effect speciation in the Pleistocene epoch, a finding that is robust to violations of the no-recombination assumption. I interpret these results to mean that western *Uma* were confined to the Colorado Desert during Pleistocene glacial maxima, in support of Norris' (1958) hypothesis. It is also consistent with the hypothesis of Avise *et al.* (1998) that the Pleistocene played an important role in creating many modern sister species in vertebrates. In addition, this study demonstrates the feasibility of using multiple anonymous nuclear loci in studies of recently diverged species that still share some alleles. The six anonymous nuclear loci developed for *S. undulatus* (Rosenblum *et al.* 2007) that also amplify PCR products for *Uma*, across the most basal split in Phrynosomatidae (Wiens *et al.* 2010), should be of use to researchers interested in the evolution of lizards in this family.

The first striking pattern observed in the dataset, before using PHASE to infer haplotypes, is the asymmetrical distribution of heterozygous SNP and indels between the



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northern and southern populations of western *Uma*. In particular, I found that *U. notata* has approximately three times more heterozygous SNPs than the southern Colorado population of *U. scoparia*, which in turn has almost double the SNPs found in the Mojave River population. The SNP frequency in the Amargosa River population is intermediate between that of the Mojave River and Colorado River populations. Heterozygous indels, rare in this study, were only found in lizards in the Colorado Desert or the transition zone between the Colorado and Mojave Deserts.

This finding is especially significant because my sampling was biased towards *U. scoparia*; I only sampled *U. notata* within a subset of its full range, and therefore I likely underestimated the true genetic diversity of *U. notata*. For the most part, these raw data represent a latitudinal gradient in heterozygosity, although the SNP diversity in the northernmost Amargosa population is intermediate between the Colorado and Mojave River populations. A clear latitudinal gradient of genetic diversity has also recently been demonstrated in human populations in eastern Asia using genomic data; more than 90% of northeast Asian haplotypes were found in southeastern Asia (Abdulla *et al.* 2009). Here, the accepted explanation is that southeastern Asia was a major geographic source of northeastern populations. This pattern is essentially the same as that seen in western *Uma*.


My analysis of nucleotide diversity (π) revealed similar results. *Uma notata* (0.469%) was approximately three times more diverse than *U. scoparia* (0.148%), which is the same ratio observed in heterozygous SNP diversity between the two species. How does this nucleotide diversity compare to the genomes of other vertebrates? Genomic data

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is currently only available for a few non-model organisms, but one can make several general comparisons. The mean nucleotide diversity for nuclear DNA of *U. scoparia* is about 1.5 times higher than that of humans (0.088%) and southern elephant seals (0.09%), which are generally regarded to have low genetic diversity (Zhao *et al.* 2000; Slade *et al.* 1998). By contrast, *U. scoparia* is approximately seven times less diverse than the black salamander, *Aneides flavipunctatus* (1.1%; Reilly 2009) and about ten times less diverse than the red-backed fairy wren, *Malurus melanocephalus* (1.6%; Lee and Edwards 2008).

Between *U. scoparia* and *U. notata*, I found that the level of fixed differences in the nuclear DNA (14 out of 7,496 bp; 0.19% sequence divergence) is low. This is not surprising considering that the two species are morphologically similar and ecologically identical to one another (Stebbins 1944; Norris 1958). The fixed differences between *U. scoparia* and *U. notata* occur across the continuous mountain ranges associated with the San Andreas Fault (personal observation). By contrast, the Amargosa River population does not have a single fixed difference from the Mojave River population (0% sequence divergence), which is not unexpected given that the Mojave River overflows into the Amargosa River when its current terminus at Silver Lake reaches capacity, and no mountains exist that might have impeded the movement of sand dunes and lizards between these drainages in historical times.

The patterns in the gene trees reflect the youth of *U. scoparia*. No geographic structuring within *U. scoparia* is evident, particularly between the Mojave and Amargosa populations, which is expected given that they have 0% sequence divergence. In fact,



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most of the *U. scoparia* alleles resemble a “bush” in each gene tree. By contrast, there is more divergence within the Algodones Dunes, within a few hundred square meters, than there is in the entire Mojave Desert, suggesting founder effect speciation for *U. scoparia*. This is strikingly similar to a study that shows that some people within southern Africa are more genetically divergent from one another than Europeans are from Asians (Schuster *et al.* 2010). The widely accepted interpretation of this pattern is that modern humans originated in southern Africa and a small subset of this ancestral population migrated north to colonize the Sahara Desert, Europe, and Asia. Applying the same logic to my data, the Colorado Desert near the delta of the Colorado River was likely the center of origin for western *Uma*.

While the gene trees don’t support splitting *U. scoparia* into distinct populations, there is evidence that *U. scoparia* and *U. notata* are truly divergent: three of the fifteen gene trees show reciprocal monophyly between *U. scoparia* and *U. notata*, and seven of the fifteen trees show *U. scoparia* as a monophyletic group. *U. notata* is paraphyletic with respect to *U. scoparia* in 11 of 15 trees, yet the reverse pattern is not observed, except in Locus Uma07, which has an unusually high number of SNPs and probably can’t be trusted as a reliable marker of demographic history. Again, this strongly suggests that *U. scoparia* originated as a northward expansion of *U. notata*. These data are consistent with coalescent theory, which predicts that recently diverged species will share alleles at some loci and yet be reciprocally monophyletic at other loci, if effective population sizes are large enough, due to the stochastic nature of lineage sorting (Brito and Edwards 2009).


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Analyses of both datasets suggest a mid-Pleistocene speciation time (~1 mya for the full dataset and ~1.4 mya excluding recombination) with the 95% confidence intervals falling entirely within the Pleistocene epoch (~0.7 mya – 2.1 mya). All gene flow values, and their 95% confidence values, were not significant ($2Nm < 1$). Therefore, my finding of allopatric Pleistocene speciation is robust to violations of the recombination assumption, and the 0.3 mya bias is not large relative to the width of the confidence intervals.

Using the full dataset with recombination, the effective population size of *U. notata* is about five times larger than that of *U. scoparia*, which is consistent with the other data characteristics (SNP frequencies, indels, nucleotide diversity) suggesting that *U. notata* is more genetically diverse. Excluding recombination, the effective population sizes are smaller: *U. notata* had only double the effective population size of *U. scoparia*. This is expected because this dataset biases against unique SNPs in alleles that already have SNPs, which were primarily found in *U. notata*.

Evolutionary History of *Uma scoparia*

The geologic events leading to the speciation of *U. scoparia* and *U. notata* began well before the actual speciation event itself. The Colorado River was the main sand source for the Gran Desierto, a vast sea of dunes where the ancestor to western *Uma* probably adapted to arenicolous life. The Salton Trough, the northern end of the Gulf of California where the Colorado River currently empties into the Gulf, began to open 6 mya as the Baja peninsula continued to drift north with the Pacific Plate along the strike-



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slip San Andreas Fault system (McKibben 2008; Elders *et al.* 1972). Shortly thereafter (5 mya), the Colorado River delta was formed as sediment from the river filled the basin (McKibben 2008). This delta supplied the sand for the Gran Desierto, the most extensive dune field in North America.


The late Pliocene and Pleistocene epochs were periods of great orogeny in western North America; in particular, the Sierra Nevada Mountains, the Transverse Ranges, and the Peninsular Ranges were rapidly uplifted, creating a rain shadow to the east (Thorne 1986). The uplift of the Transverse Ranges, particularly the San Bernardino Mountains, in turn created the Mojave River (Meisling and Weldon 1989; Enzel *et al.* 2003; Lancaster and Tchakerian 2003). The first cold glacial maxima of the Pleistocene likely displaced western *Uma* to the southern Colorado Desert (Norris 1958). The actual speciation event between *U. scoparia* and *U. notata* may have been caused by dispersal north along the Colorado River, during which time *U. scoparia* clearly went through a founder effect as its effective population size was greatly reduced. As the climate became more hot and arid, *U. scoparia* continued to expand north following stream courses and sand transport corridors from the Colorado River to the newly created Mojave River, losing genetic diversity along the way (Figure 32; Norris 1958; Muhs *et al.* 2003).

The Mojave River, which supplies much of the sand presently occupied by *U. scoparia*, flows northeast from the San Bernardino Mountains and currently terminates in Silver Lake, near Baker, California (Figure 2; Enzel *et al.* 2003). The river was created over two million years ago when the Transverse Ranges were uplifted; it took over a million years to fill its upstream basins with sediment before creating Lake Manix.

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Approximately 25,000-15,000 years ago, Lake Manix overflowed its boundaries and incised Afton Canyon, subsequently creating the Cronese Lakes, Silver Lake, Soda Lake, and the Kelso Dunes (Enzel *et al.* 2003; Lancaster and Tehakerian 2003). During peak periods of flow, the Mojave River drained from the north end of Silver Lake into the Amargosa River (Enzel *et al.* 2003). Today that prehistoric drainage is still visible, and takes the form of a dry wash (personal observation). Further evidence that the Mojave River is geologically young is provided by geological dating of sand dunes; for example, the Kelso Dunes at the terminus of the Mojave River drainage are no more than 35 kya (Lancaster and Tehakerian 2003).

Since this study revealed zero genetic divergence between the geographically isolated Mojave and Amargosa populations at all fifteen nuclear loci, how did *U. scoparia* disperse between these dune systems? In considering this question, it is important to recall that sand dunes are highly dynamic and mobile entities. Norris (1958) speculated that “dune deposits were probably often more continuous than they are today. Reworking and transport of old dunes have destroyed what continuity existed and isolated the sand deposits and the biota restricted to them.” Miller and Stebbins (1964) wrote that the distribution of *U. scoparia* “doubtless has become greatly fragmented with the breaking up and sorting of the lake shore and river bank sand deposits, which must have been more continuous in the more humid past than now. Since the species is so completely restricted to aeolian sand, one can picture some of the populations carried about on their sand 'islands' as the deposits have moved over the centuries.” These moving dunes are known as bachran dunes (Norris 1958), and even large dunes may



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move dozens of meters per year. Norris also noted that blow-ups and sand shadows have allowed migration across low divides between river drainages, including the divide between the Mojave and Amargosa Rivers, which at the time of his writing was covered with sand and occupied with *Uma*, although this doesn't appear to be the case today (personal observation).

The patterns in the nuclear DNA are not entirely consistent with the patterns in mtDNA in *U. scoparia*. There are some similarities – for example, Murphy *et al.* (2006) noted that *U. scoparia* from the Cadiz Dunes in the Colorado River population have higher mtDNA haplotype diversity than do lizards from the Ibex Dunes in the Amargosa River population. However, there are important distinctions as well; Trepanier and Murphy (2001) found reciprocal monophyly between *U. notata* and *U. scoparia*, but I only found this pattern in 3/15 gene trees. Murphy *et al.* (2006) found that the basal split in the mtDNA gene tree of *U. scoparia* corresponds with a split between the Amargosa River population and all other populations, yet I did not observe an Amargosa River clade in any of the gene trees, nor did I find a single fixed difference between the Amargosa and Mojave River populations.


What could account for these discrepancies between the patterns of mitochondrial and nuclear DNA? This same question has been debated with many other organisms, particularly humans, who are also thought to have gone through a recent population bottleneck or rapid population expansion (Hey 1997; Hey and Harris 1999; Fay and Wu 1999). Compared to mtDNA, non-coding nuclear loci have low mutation rates and four times the effective population size, which means that nuclear gene trees will nearly



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always be less resolved than the corresponding mtDNA gene tree; the polymorphism patterns of loci with different population sizes may be out of phase with each another if the period of population size fluctuation is short and the fluctuation has occurred recently (Hey and Harris 1999; Fay and Wu 1999). Also, because gene divergence always predates population divergence, it is easy to over-estimate divergence times based on a single mitochondrial gene tree. Finally, mtDNA only represents part of the population history due to its maternal inheritance. If males tend to disperse to new localities while females remain near their hatch site, significant gene flow could occur among nuclear genes but not mitochondrial genes. This may be the case in iguanid lizards, including *Uma*, where most species have highly territorial males that drive out younger conspecifics of the same sex (Doughty *et al.* 2006). For all these reasons, this multi-locus coalescent study emphasizes the necessity of incorporating nuclear DNA in phylogeographic analyses.

The findings of this study are a reminder that the desert is a rapidly changing, geologically young landscape that was much different during glacial maxima of the Pleistocene. Plate tectonics and climatic cycles exert powerful influences on the creation and structure of mountain ranges and sand dunes. During repeated glacial maxima, heavy precipitation eroded sand from mountains and deposited it into stream and lake beds. Dunes were smaller in extent and had more stabilizing vegetation, and were more continuously distributed along river and lake shorelines. Soil-producing processes dominated. During more arid periods, vegetation died off and lakes and rivers became playas and washes. Thus more sand was exposed to the wind, creating expansive dune fields (e.g., Kelso Dunes). During these arid periods, dunes grew in size, yet were



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fragmented from each other. This explains the interesting patchy distribution of *Uma scoparia*. To the untrained eye, the Mojave Desert seems ancient, and its sand dunes seem like isolated islands in a sea of mountains, dry lake beds, and alluvial fans, but this is an illusion – on a geologic time scale, the desert is relatively young, and dunes are highly mobile.

Comparisons with other Mojave Desert Phylogeography Studies

It is interesting to compare the results of this study with recent phylogeography studies of other co-distributed organisms in the Mojave Desert, such as the sidewinder and speckled rattlesnakes (*Crotalus cerastes* and *C. mitchelli/stephensi*; Douglas *et al.* 2006), the desert pocket mouse (*Chaetodipus penicillatus*; Jezkova *et al.* 2009), the night lizard (*Xantusia vigilis*; Leavitt *et al.* 2007) and brittlebush (*Encelia farinosa*; Fehlberg and Ranker 2009). It appears that the Colorado Desert was the only major Pleistocene refuge for the night lizard and brittlebush. On the other hand, there is evidence of a distinct Amargosa/Death Valley lineage in the desert pocket mouse, the sidewinder and the speckled rattlesnake. This discrepancy can likely be explained by the fact that pocket mice and rattlesnakes (even the sand-adapted sidewinder) are not as restricted to sand dunes as are fringe-toed lizards, and they could have more easily dispersed over alluvial fans or low mountain ranges, unlike *Uma*. The geographic distribution of the pocket mice and rattlesnakes also extends further north than that of *Uma*, for example into northern Death Valley, southern Nevada, and the Owens Valley. Fringe-toed lizards do not occur in the upper Amargosa River dunes, or the Death Valley dunes, which should be perfectly


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suitable habitat, since these locations are occupied by most of the desert habitat associates of *Uma*, including squamates like the zebra-tailed lizard (*Callisaurus draconoides*), the desert iguana (*Dipsosaurus dorsalis*), and the sidewinder (*C. cerastes*), as well as plants including creosote (*Larrea tridentata*) and burroweed (*Ambrosia dumosa*). Therefore *U. scoparia* would probably thrive in these dunes if they could disperse there. Norris (1958) rightly pointed out that all these unoccupied dunes are separated from the present range of *U. scoparia* by unsuitable habitat – large expanses of rocky terrain, salt flats, or alluvial fans.

Future Directions

Although this study has revealed much about the evolutionary history of western *Uma*, there is much more to learn. In particular, the relationships within the *U. notata* species complex are in need of further investigation, as well as the divergence between eastern and western *Uma* (that is, across the Sierra Madre Occidental).


This study has demonstrated the utility of using multiple unlinked nuclear loci to address questions regarding speciation, phylogeography and population genetics. However, as genomics technology continues to improve, researchers will continue to gather ever-larger datasets, and intra-locus recombination will become an increasingly important issue. I believe that the future of the field lies in new sequencing methods that allow researchers to sample millions of base pairs from non-model organisms in a single day, allowing for mass-screening of SNPS. With this much data, each SNP site can be treated as an independent locus and the no-recombination assumption can be avoided



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altogether (e.g., Novembre *et al.* 2008). It will be interesting to see if the pattern observed in this study, the latitudinal gradient in heterozygosity, holds out with genomic sample sizes. As DNA sequencing costs continue to decrease, and coalescent computing techniques become more advanced, multi-locus techniques will continue to revolutionize evolutionary biology and biogeography and help us better understand the process of speciation.



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Tables and Figures



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Table 1. Sampling localities with GPS Coordinates in WGS-84 decimal degrees.
*Sample courtesy of R. Murphy at the Royal Ontario Museum, Toronto, Canada.

Locality	Species	Population Designation	Latitude	Longitude
Ibex Dunes	<i>U. scoparia</i>	Amargosa	35°41.607	116°21.958
Dumont Dunes	<i>U. scoparia</i>	Amargosa	35°40.107	116°14.505
Coyote Holes	<i>U. scoparia</i>	Amargosa	35°38.650	115°57.264
Bitter Springs	<i>U. scoparia</i>	Mojave	35°13.904	116°26.119
Red Pass Dune	<i>U. scoparia</i>	Mojave	35°14.953	116°21.807
West Red Pass	<i>U. scoparia</i>	Mojave	35°15.460	116°22.597
The Whale	<i>U. scoparia</i>	Mojave	35°13.201	116°28.158
Coyote Dry Lake	<i>U. scoparia</i>	Mojave	35°06.136	116°45.423
Cronese Lakes	<i>U. scoparia</i>	Mojave	35°08.625	116°17.561
Afton Canyon	<i>U. scoparia</i>	Mojave	35°02.604	116°25.110
Razor Road	<i>U. scoparia</i>	Mojave	35°04.968	116°09.506
Kelso Dunes	<i>U. scoparia</i>	Mojave	34°53.484	115°42.881
Lenwood Road	<i>U. scoparia</i>	Mojave	34°53.438	117°07.440
Amboy Crater	<i>U. scoparia</i>	Colorado	34°33.855	115°48.019
Cadiz Dunes	<i>U. scoparia</i>	Colorado	34°23.592	115°25.561
Dale Dry Lake	<i>U. scoparia</i>	Colorado	34°06.012	115°37.601
Pinto Basin	<i>U. scoparia</i>	Colorado	33°54.758	115°49.278
Rice Valley	<i>U. scoparia</i>	Colorado	34°03.016	114°51.815
Bouse Wash, AZ	<i>U. scoparia</i>	Colorado	34°04.454	114°16.039
Palen Dry Lake	<i>U. scoparia</i>	Colorado	33°48.139	115°11.094
Thousand Palms*	<i>U. notata inornata</i>	Notata	n/a	n/a
Borrego Springs	<i>U. n. notata</i>	Notata	33°14.846	116°17.744
Algodones	<i>U. n. notata</i>	Notata	32°59.528	115°07.934
Mohawk Dunes	<i>U. n. rufopunctata</i>	Notata	32°41.843	113°48.571

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Table 2. Polymerase Chain Reaction (PCR) primer sequences, annealing temperatures, and citations. A = annealing temperature in degrees Celcius.

Locus	Forward Primer	Reverse Primer	A	Citation
BDNF	GAC CAT CCT TTT CCT (G/T)AC TAT GGT TAT TTC ATA CTT	CTA TCT TCC CCT TTT AAT GGT CAG TGT ACA AAC	61	Leache 2009
RAG-1	CAA AGT (A/G)A GAT CAC TTG AGA AGC	ACT TG(C/T) AGC TTG AGT TCT CTT AG(A/G)CG	55	Leache 2009
PNN	ACA GGT AAT CAG CAC AAT GAY GTA GA	TCT YYT GCC TGA YCG ACT ACT YTC TGA	57	Leache 2009
R35	GAC TGT GGA YGA YCT GAT CAG TGT GGT GCC	GCC AAAATG AGS GAG AAR CGC TTC TGA GC	66.5	Leache 2009
Sun07	TTT CTG TCA CGA TGA AAA TTG TAAACT A	TAAACA CAA TGC TCA CAT TAG GAA AAA T	61	Rosenblum et al. 2007
Sun08	CTC TTG AAG TTC ACA GGG TTT TCT TAG	TAG CCT AGC TTC CTT ACA GTT TGA TAC	63	Rosenblum et al. 2007
Sun10	CAG AAA GTA AAT CCA CTG TAG CTA GGA	CTA ATA ATG GCA TAG CAA GGA GTG TAG	61	Rosenblum et al. 2007
Sun12	TAC AGA GTC TCC TCT TGA CTG GAT ATT	TTG GTA CAC TAA CTC AAG CAA ACC T	54	Rosenblum et al. 2007
Sun18	ATG ACA GAA GTT GTG GTT CAA CAG TAT	AGT GAG ATA GAA GTG GCT TTC TGA TTA C	61	Rosenblum et al. 2007
Sun28	AAT CTT ATT TCT GCA GTT GAT GTA CTT T	ATA AAT GCA ATG CCA CAA ATA TAA TAA G	57.5	Rosenblum et al. 2007
Uma03	CGC ATG AGA ATT CTG TGT TA	TGC TAA TGC TGA TGA AAA TG	59	This study
Uma05	TTG TTC CCA TAG CTG AAA CT	TTT GGT AAT GAA TCC CAC TC	50	This study
Uma06	GCT CTT ACC CTC TGT TTG AA	AGG TGA CAG ATG GAG CTA AA	50	This study
Uma07	ACA CGA TCT GAG GAG ATG AC	CTT CTC ACC CTC TTG AC AAA	57	This study
Uma08	AGG TGT TTT GAA CTG CAA CT	ACT TTC CCA GCA CAT AAA AA	59	This study

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Table 3. Population sampling: number of alleles per population per locus.

	<i>U. notata</i>	Colorado	Mojave	Amargosa	Total Alleles
BDNF	20	20	20	16	76
RAG-1	20	22	22	10	74
PNN	12	20	16	18	66
R35	18	22	20	18	78
Sun07	20	22	18	16	76
Sun08	2	14	2	6	24
Sun10	20	20	18	16	74
Sun12	18	22	16	18	74
Sun18	10	0	12	4	26
Sun28	20	22	18	14	74
Uma03	20	46	34	28	128
Uma05	18	14	16	12	60
Uma06	20	46	68	30	164
Uma07	18	52	54	32	156
Uma08	28	52	54	38	172
Total Alleles	264	394	388	276	

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Table 4. Analysis of heterozygosity by population, excluding Locus Uma07. The Colorado River, Mojave River, and Amargosa River population all belong to *U. scoparia*. N= number of sequences (before PHASE), I = number of heterozygous indels in analysis, SNPs = total heterozygous single nucleotide polymorphisms (aka ambiguities), L = number of base pairs, before removal of gaps.

LOCUS	<i>U. notata</i>			Colorado River			Mojave River			Amargosa River			L	Total SNPS per locus
	N	I	SNPs	N	I	SNPs	N	I	SNPs	N	I	SNPs		
BDNF	10	0	11	10	0	0	10	0	0	8	0	0	628	11
RAG-1	10	0	4	11	0	8	11	0	2	5	0	1	705	15
PNN	6	0	8	10	0	6	8	0	2	9	0	3	600	19
R35	9	0	25	11	0	6	10	0	6	9	0	0	577	37
Sun07	10	0	8	11	0	2	9	0	0	8	0	0	546	10
Sun08	1	0	0	7	0	1	1	0	1	3	0	1	619	3
Sun10	10	5	27	10	0	9	9	0	4	8	0	9	651	49
Sun12	9	0	21	11	0	0	8	0	2	9	0	4	419	27
Sun18	5	0	0	0	0	0	6	0	0	2	0	0	379	0
Sun28	10	0	23	11	3	18	9	0	0	7	0	2	571	43
Uma03	10	0	5	23	0	2	17	0	0	14	0	0	523	7
Uma05	9	0	25	7	0	5	8	0	6	6	0	1	298	37
Uma06	10	0	22	23	0	14	34	0	4	15	0	16	146	56
Uma08	14	0	21	26	0	3	27	0	5	19	0	2	384	31
TOTAL	123	5	200	171	3	74	167	0	32	122	0	39	7046	345

	Total SNPs	Total BP	SNPS/BP	Frequency
<i>U. notata</i>	200	60836	0.00329	0.33%
Colorado River	74	81578	0.00091	0.09%
Mojave River	35	73369	0.00048	0.05%
Amargosa River	36	57697	0.00062	0.07%

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Table 5. Data Characteristics. L = length after PHASE, after trimming some gaps, but before trimming recombination; bolded numbers have been trimmed. S = segregating sites, %S = percentage of total base pairs that are segregating, D = results of Tajima's D test, π = nucleotide diversity, R_m = minimum number of recombination events, F_{ns} = # fixed differences between *U. notata* and *U. scoparia*, F_{am} = # fixed differences between Amargosa and Mojave Populations.

* Because this dataset includes PHASED haplotypes with probabilities of 50% or greater, most of this recombination is likely an artifact of incorrect haplotype estimation.

Locus	L	S	%S	D	Stat sig?	π	π <i>U. notata</i>	π <i>U. scoparia</i>	Mut. Model	R_m^*	F_{ns}	F_{am}
BDNF	628	4	0.64%	0.45971	no	0.00159	0.00173	0	HKY+G	0	0	0
RAG-1	703	10	1.42%	-0.7639	no	0.00208	0.00057	0.00088	GTR	0	2	0
PNN	600	13	2.17%	-1.72647	no	0.00181	0.00343	0.00121	HKY	0	0	0
R35	577	13	2.25%	-0.42659	no	0.00387	0.00565	0.00155	HKY	5	0	0
Sun07	546	11	2.01%	-1.32457	no	0.00211	0.00212	0.00013	TrN	2	2	0
Sun08	613	7	1.14%	-1.15004	no	0.00193	0	0.00069	TrN + G	0	5	0
Sun10	643	22	3.42%	-1.16492	no	0.00455	0.00665	0.00157	TrN + G	4	1	0
Sun12	419	9	2.15%	-1.17765	no	0.00192	0.00564	0.00047	TrN + G	3	0	0
Sun18	379	7	1.85%	0.92327	no	0.0063	0.00375	0.00062	HKY	0	2	0
Sun28	567	14	2.47%	-0.31408	no	0.00484	0.00586	0.00154	TrN + G	5	0	0
Uma03	522	6	1.15%	-0.82323	no	0.00131	0.00241	0.00007	F81	0	0	0
Uma05	298	11	3.69%	-0.08262	no	0.00768	0.00774	0.00252	GTR + G	4	0	0
Uma06	146	12	8.22%	-0.35149	no	0.01244	0.01514	0.006	GTR + G	4	2	0
Uma07	471	13	2.76%	-0.09488	no	0.00473	0.00487	0.0043	HKY+G	6	0	0
Uma08	384	19	4.95%	-2.02247	< 0.05	0.00216	0.00482	0.00064	HKY+G	2	0	0
Total	7496	171	-	-	-	-	-	-	-	35	14	0
Mean	500	11.4	2.69%	-	-	0.00395	0.00469	0.00148	-	2.3	0.9	0
Std Dev	150	4.75	1.89%	-	-	0.00303	0.00366	0.00167	-	2.2	1.4	0

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Table 6. Results of the IM analysis.

A) With Recombination

	θ_{notata}	$\theta_{scoparia}$	$\theta_{ancestor}$	t	m_1	m_2
High Point	4.7839	1.0222	0.8859	1.0775	0.0375	0.0075
95% low	3.5572	0.7496	0.1772	0.7325	0.0075	0.0025
95% high	7.1009	1.3493	1.7854	1.5875	0.1475	0.1275

B) Without Recombination

	θ_{notata}	$\theta_{scoparia}$	$\theta_{ancestor}$	t	m_1	m_2
High Point	1.6226	0.4592	0.0102	1.4225	0.1175	0.0325
95% low	1.1124	0.3368	0.0102	0.7475	0.0375	0.0075
95% high	2.3574	0.6838	2.6228	2.0975	0.3875	0.2575

C) With Recombination - Converted Demographic Parameters

	N_{notata}	$N_{scoparia}$	$N_{ancestor}$	t (years)	$2N_1m_1$	$2N_2m_2$
High Point	576,529	123,190	106,764	1,038,835	0.0897	0.003833
95% low	428,694	90,338	21,355	706,215	0.01794	0.001278
95% high	855,761	162,610	215,167	1,530,534	0.35281	0.065165

D) Without Recombination - Converted Demographic Parameters

	N_{notata}	$N_{scoparia}$	$N_{ancestor}$	t (years)	$2N_1m_1$	$2N_2m_2$
High Point	200,979	56,878	1,263	1,409,556	0.09533	0.007462
95% low	137,785	41,717	1,263	740,698	0.02928	0.001799
95% high	291,994	84,697	324,866	2,078,414	0.30252	0.061749

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Figure 1. Habitat and adaptations of fringe-toed lizards. A) Ibex Dunes, Death Valley National Park, the northernmost locality where this genus occurs. B) Fringed toes increase traction and locomotion efficiency on loose sand. C) A shovel-shaped snout facilitates burial, and D) an ocellated pattern increases crypsis in an exposed habitat. Photographs courtesy of Cameron Rognan.

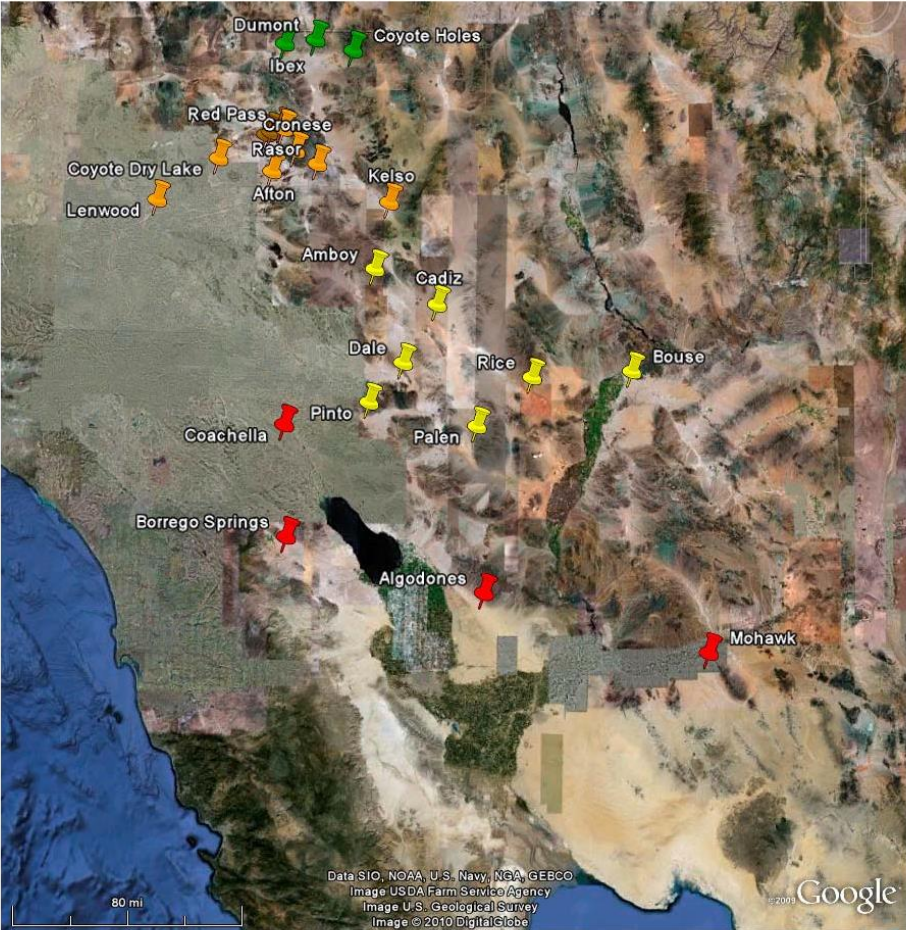


Figure 2. Sampling Localities. Red = *Uma notata* species complex, Yellow = Colorado River *U. scoparia*, Orange = Mojave River *U. scoparia*, Green = Amargosa River *U. scoparia*.

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Figure 3. Fixed and unfixed morphological differences between the *Uma notata* species complex and *U. scoparia*. *Uma notata* (left) has ocelli that coalesce to form lines over the shoulders, and it has streaked markings on the throat. The shoulder ocelli of *U. scoparia* (right) do not coalesce into lines, and it usually has crescent-shaped markings on the throat. Photographs by Cameron Rognan and the author.

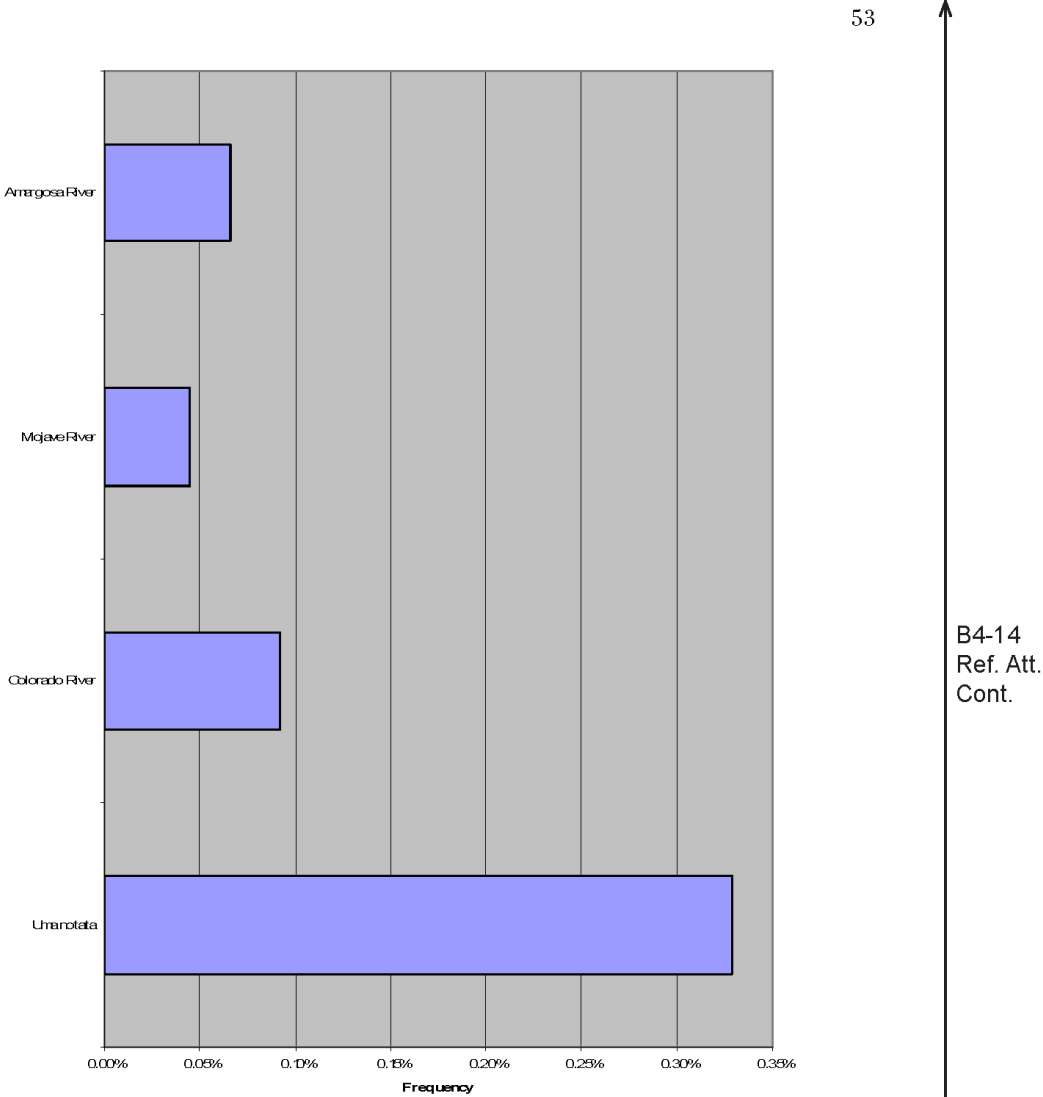
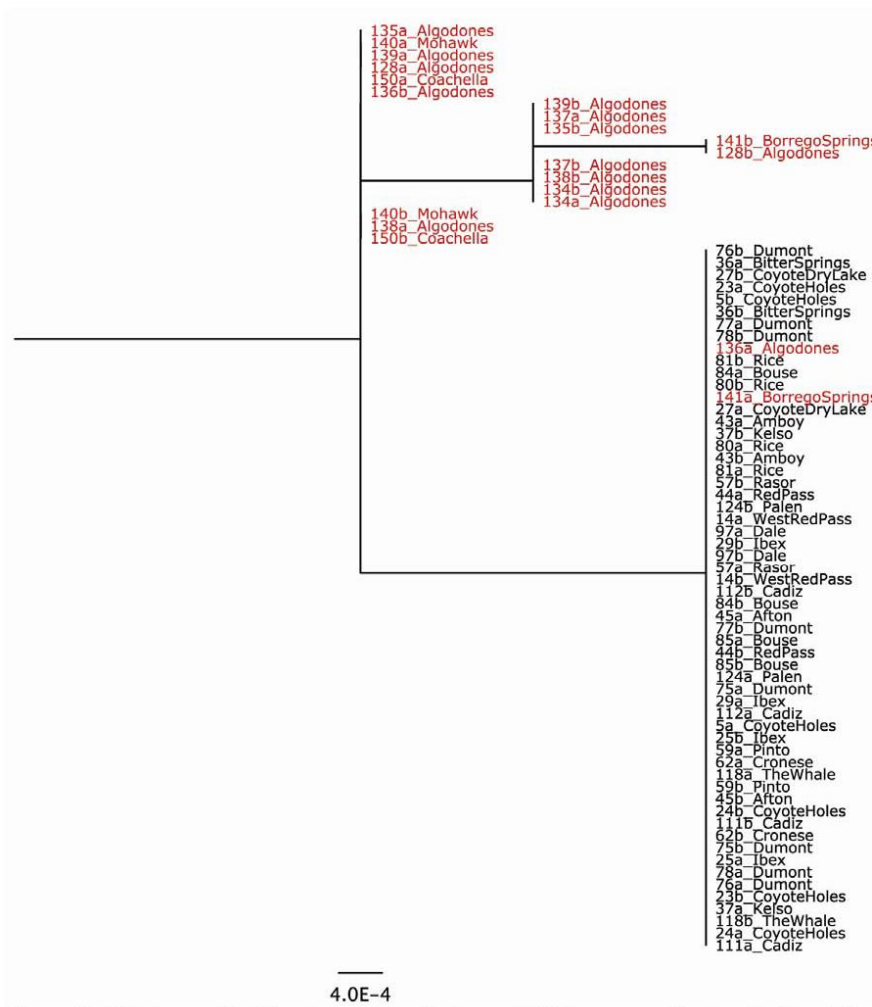
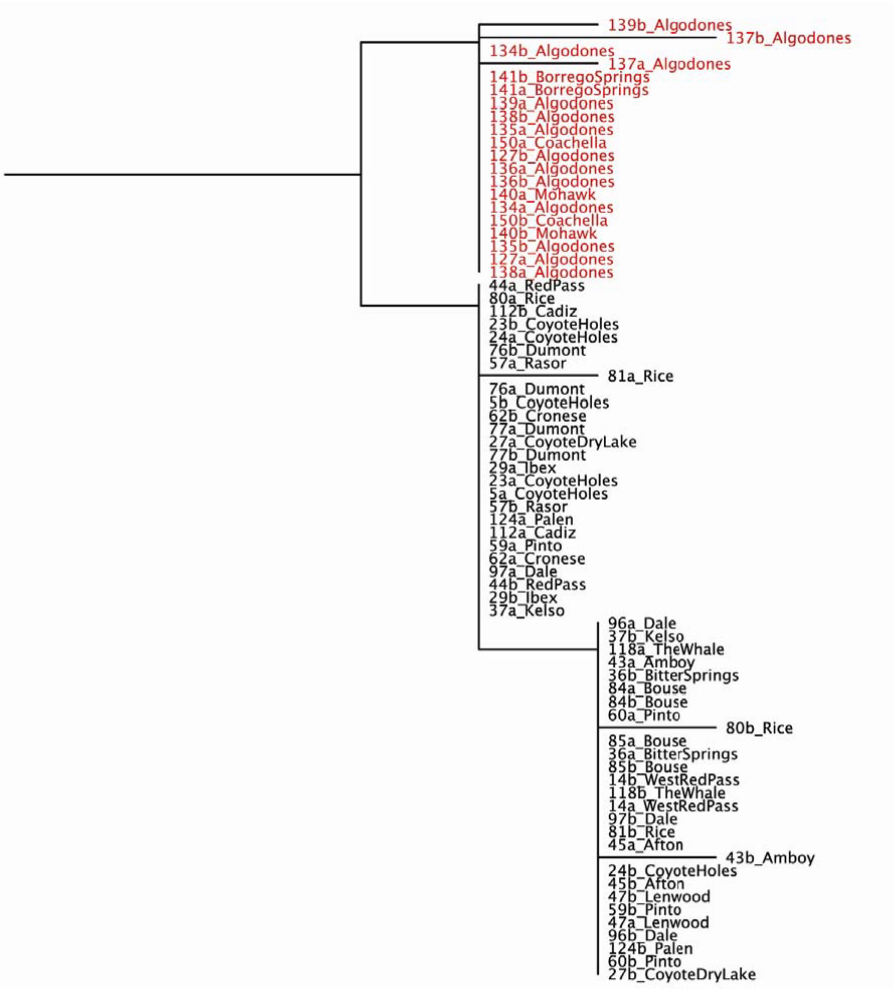


Figure 4. Frequency of heterozygous SNPs by population, excluding Locus Uma07 (see also Table 4).



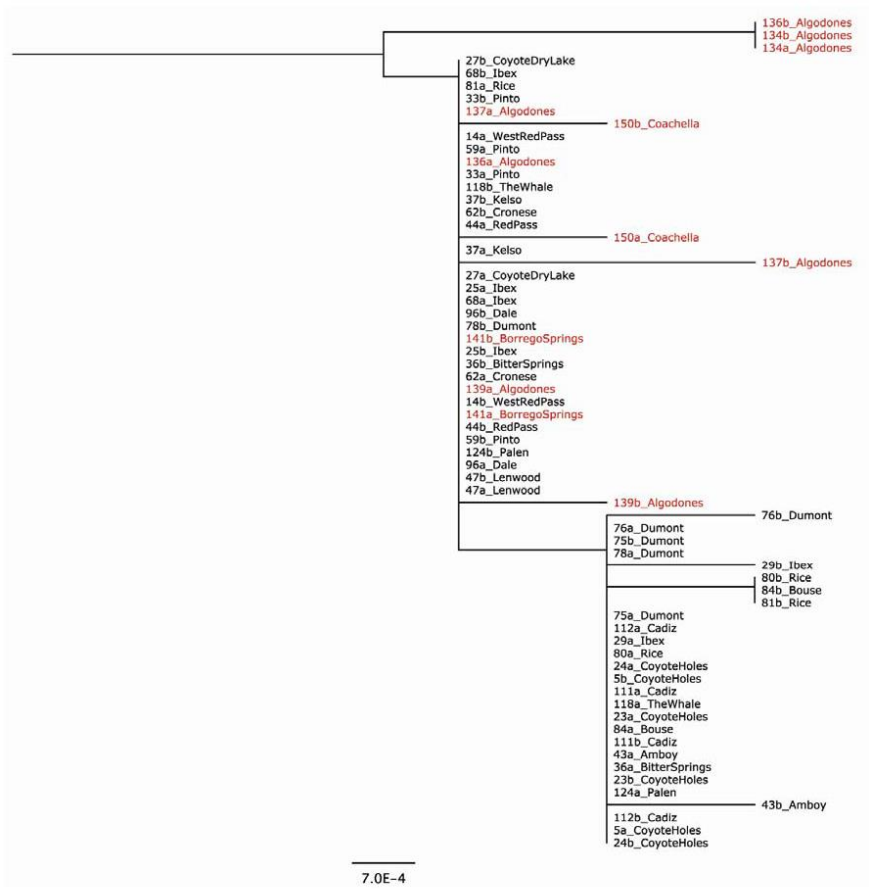
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Figure 5. Maximum likelihood gene tree for locus BDNF, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.



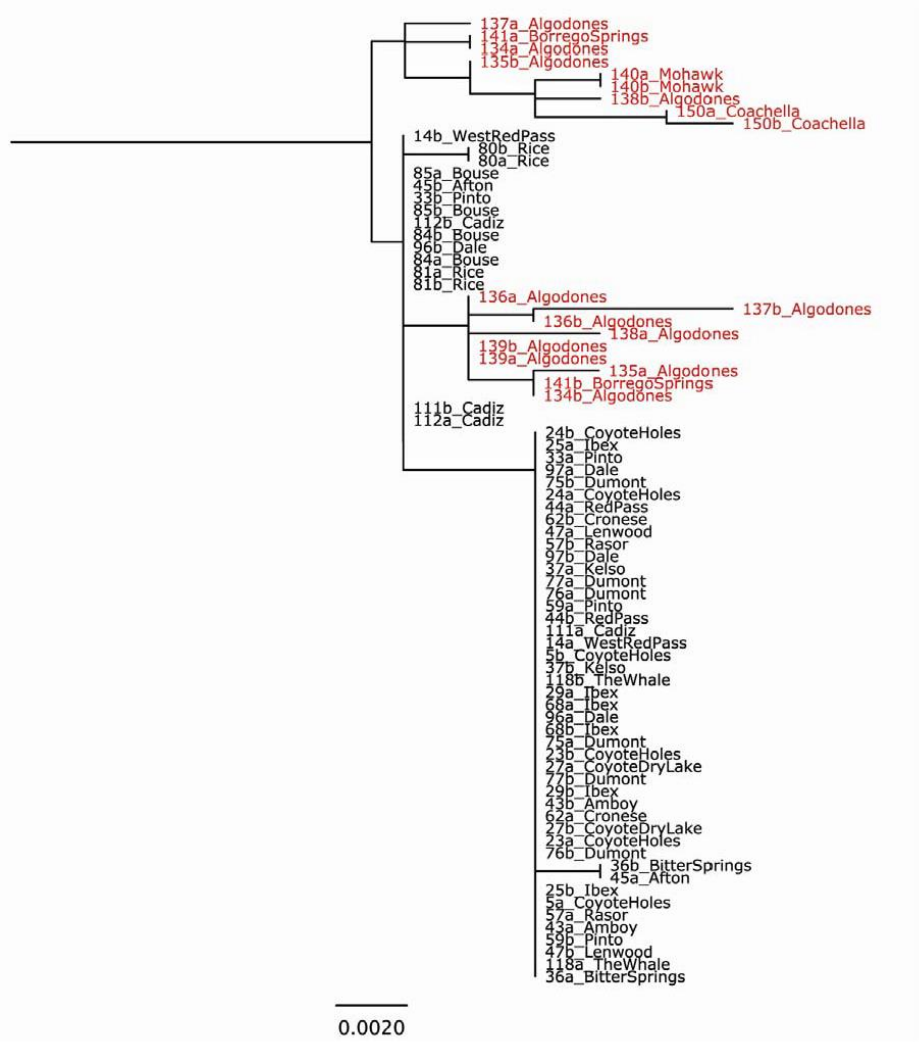
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Figure 6. Maximum likelihood gene tree for locus RAG-1, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.



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Figure 7. Maximum likelihood gene tree for locus PNN, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.



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Figure 8. Maximum likelihood gene tree for locus R35, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

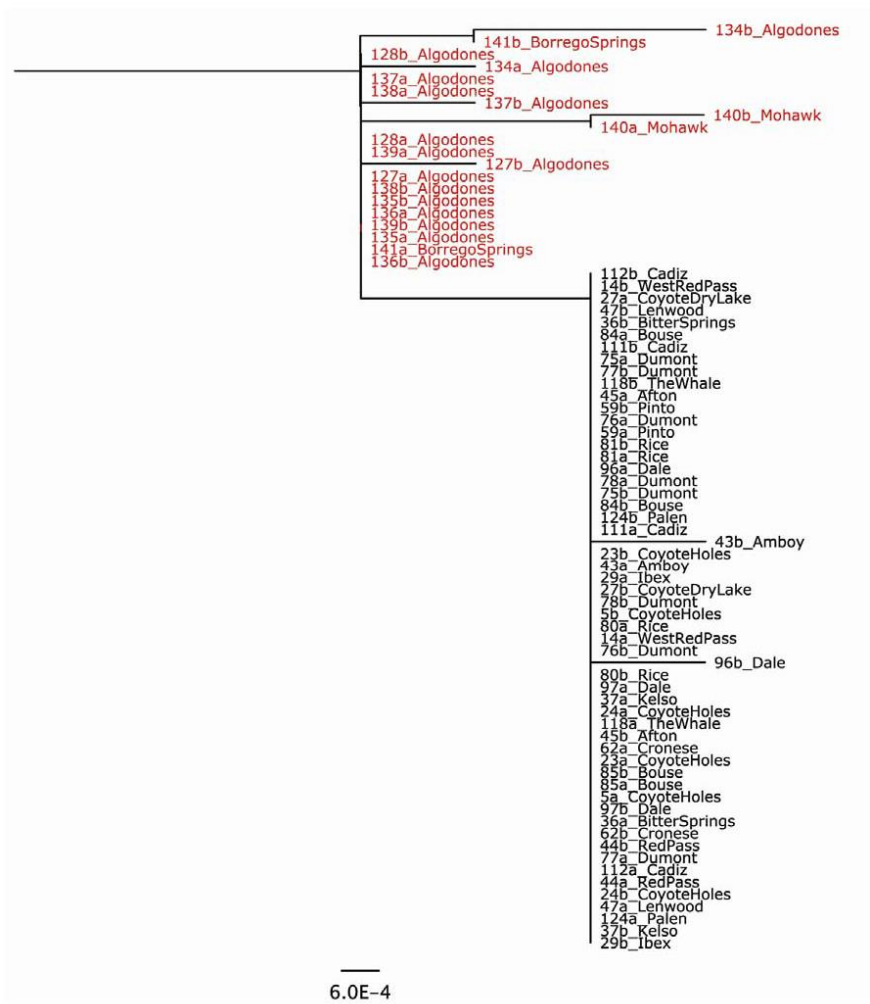


Figure 9. Maximum likelihood gene tree for locus Sun07, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

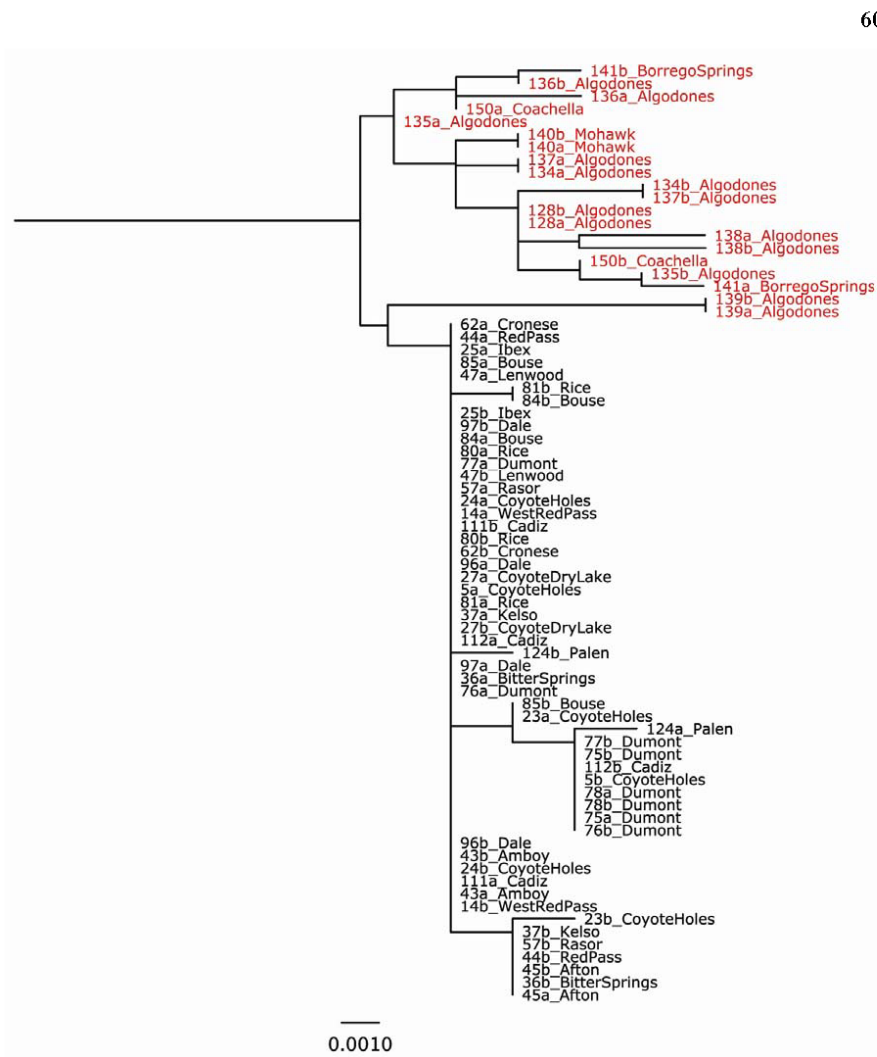
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Figure 10. Maximum likelihood gene tree for locus Sun08, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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Figure 11. Maximum likelihood gene tree for locus Sun10, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

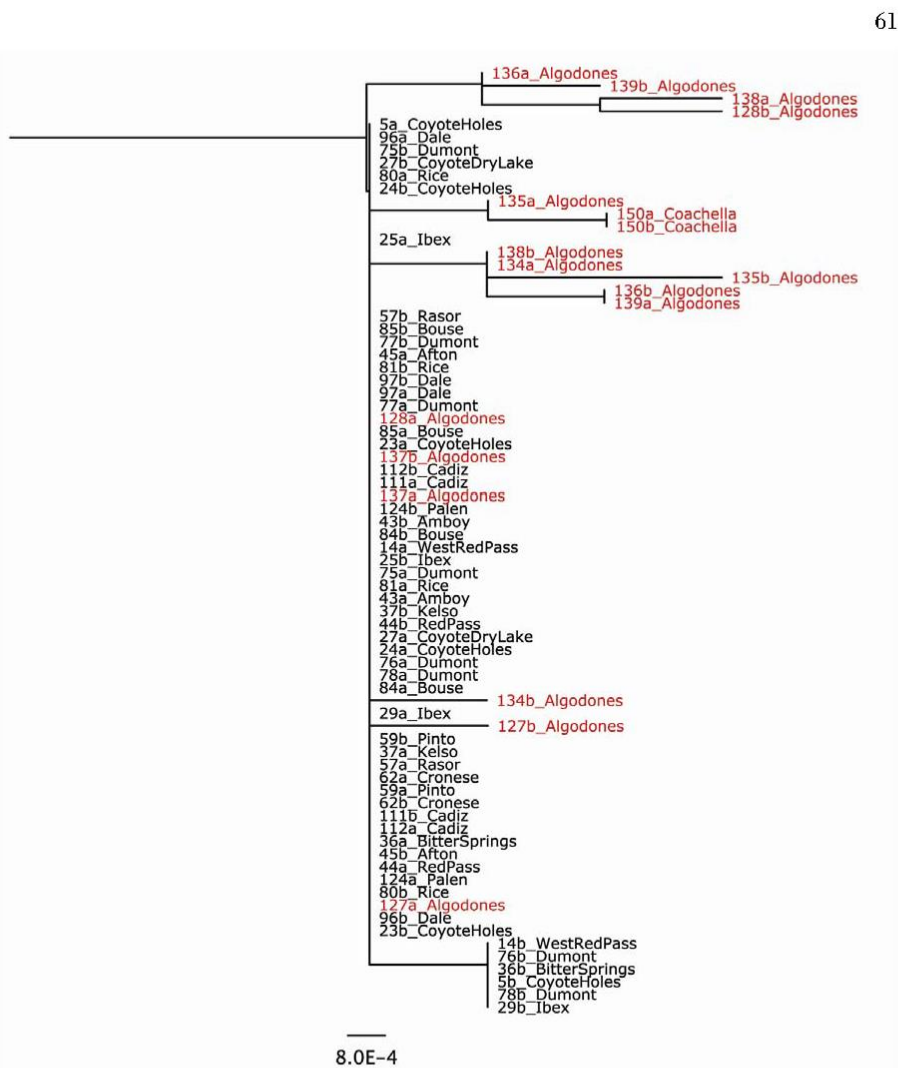


Figure 12. Maximum likelihood gene tree for locus Sun12, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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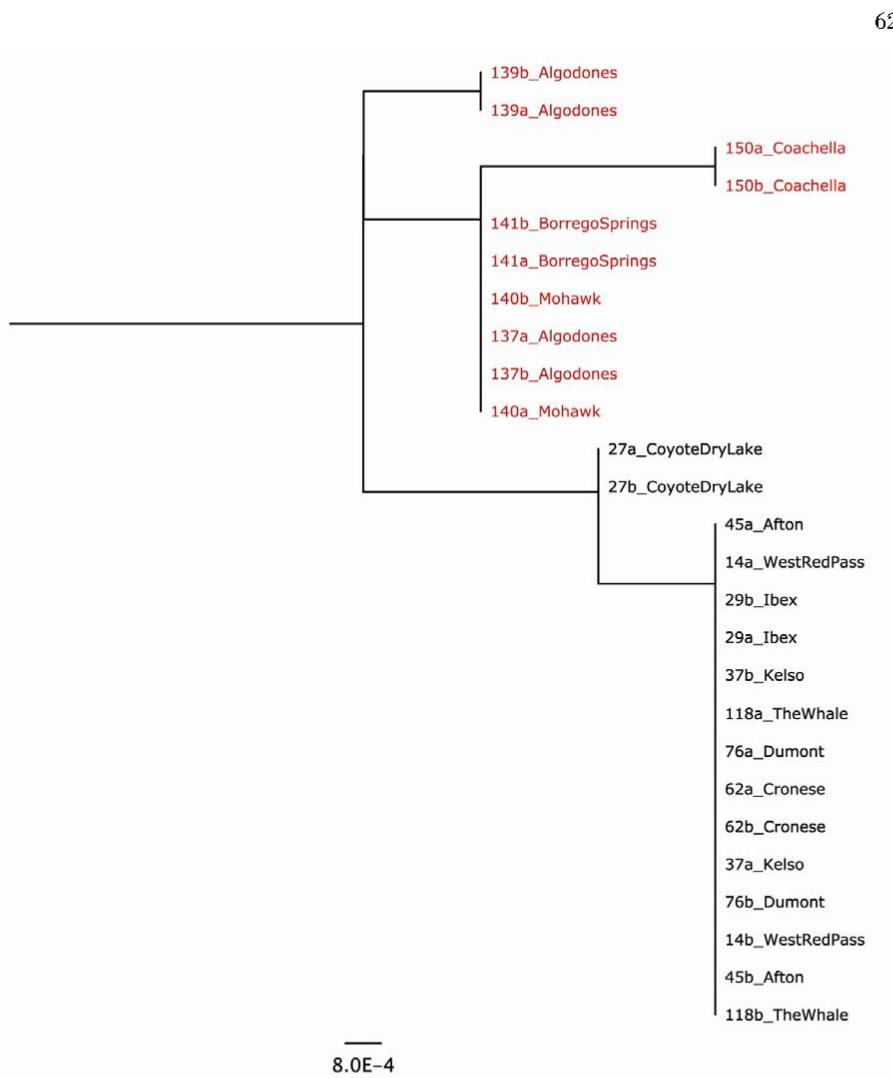


Figure 13. Maximum likelihood gene tree for locus Sun18, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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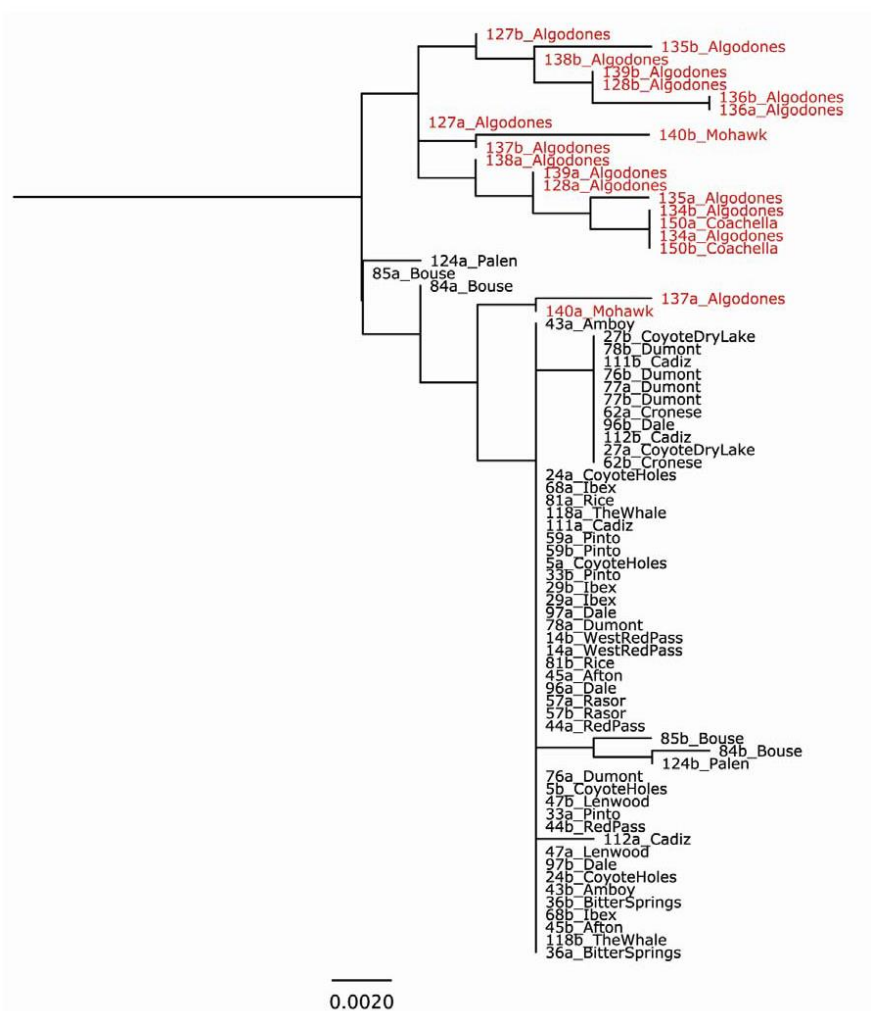


Figure 14. Maximum likelihood gene tree for locus Sun28, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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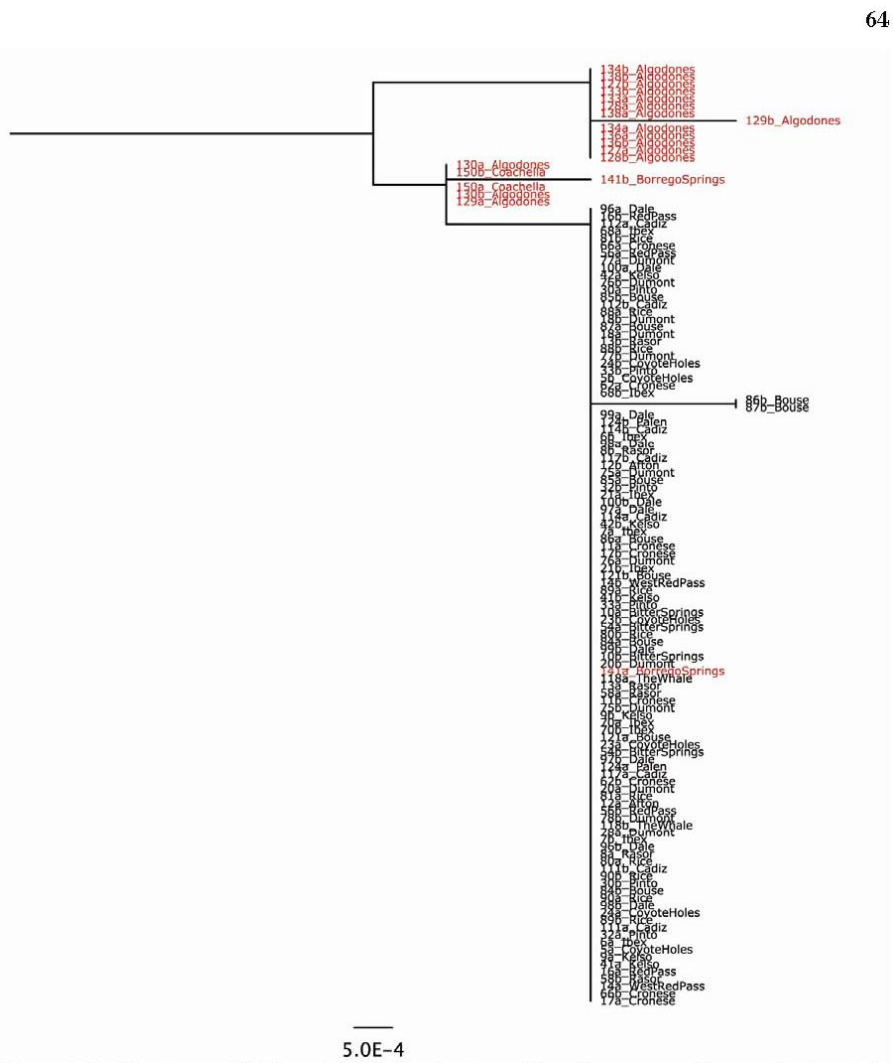


Figure 15. Maximum likelihood gene tree for locus Uma03, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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Figure 16. Maximum likelihood gene tree for locus Uma05, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.



Figure 17. Maximum likelihood gene tree for locus Uma06, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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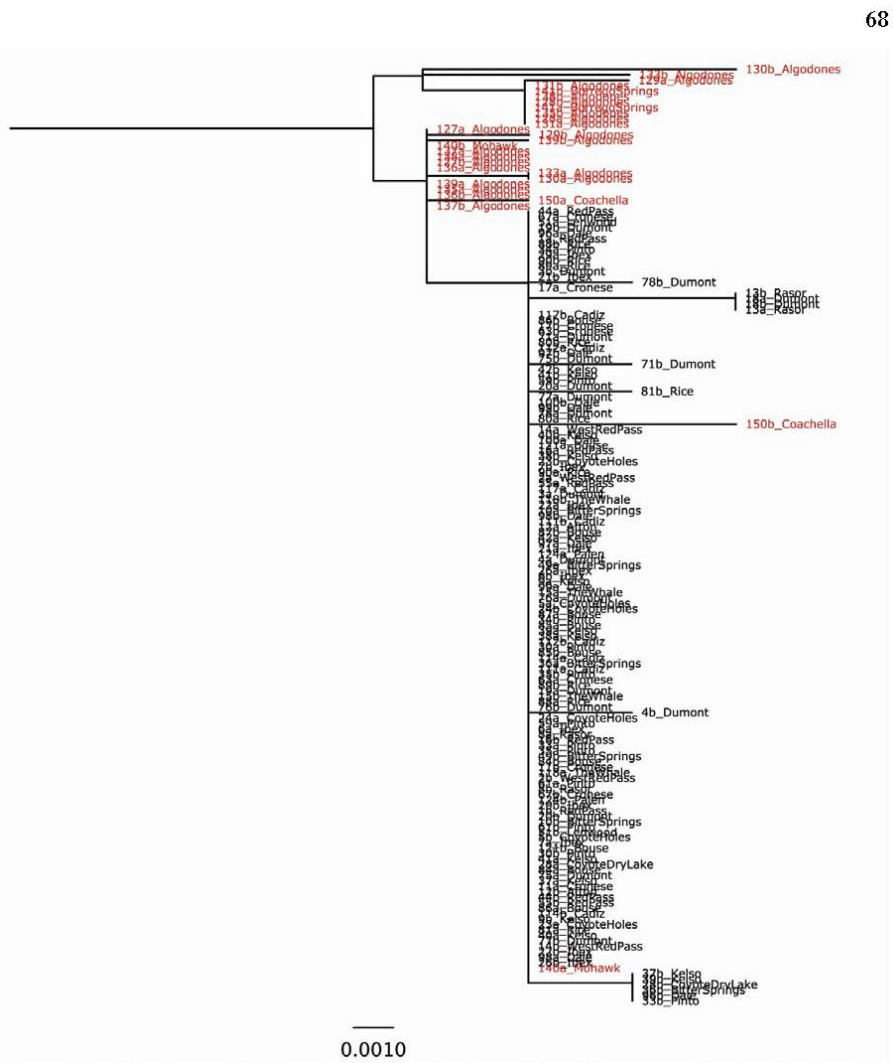


Figure 19. Maximum likelihood gene tree for locus Uma08, generated using Garli v. 1.0. *Uma notata* are shown in red, *U. scoparia* in black. The scale bar is in units of substitutions/site.

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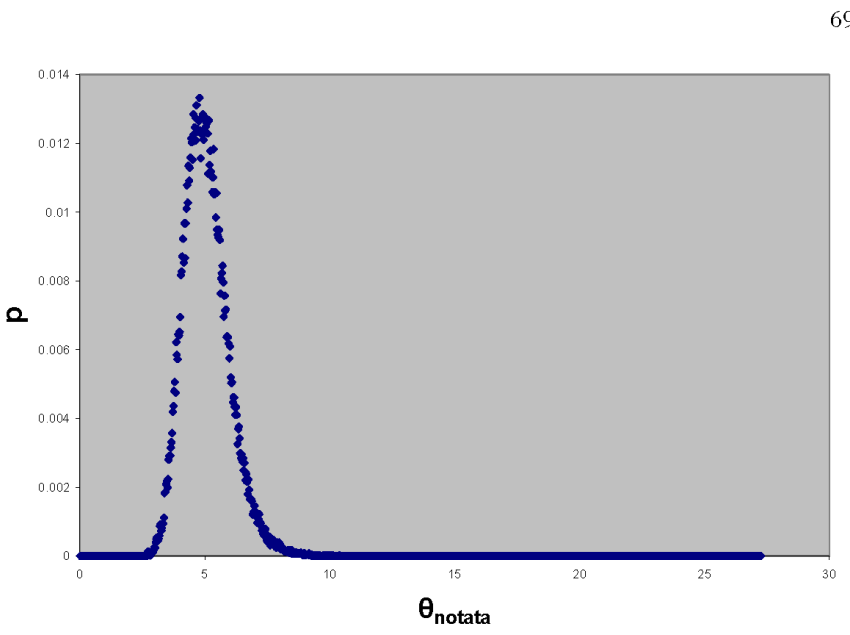


Figure 20. Effective population size for *U. notata* scaled by mutation rate (μ). All data included.

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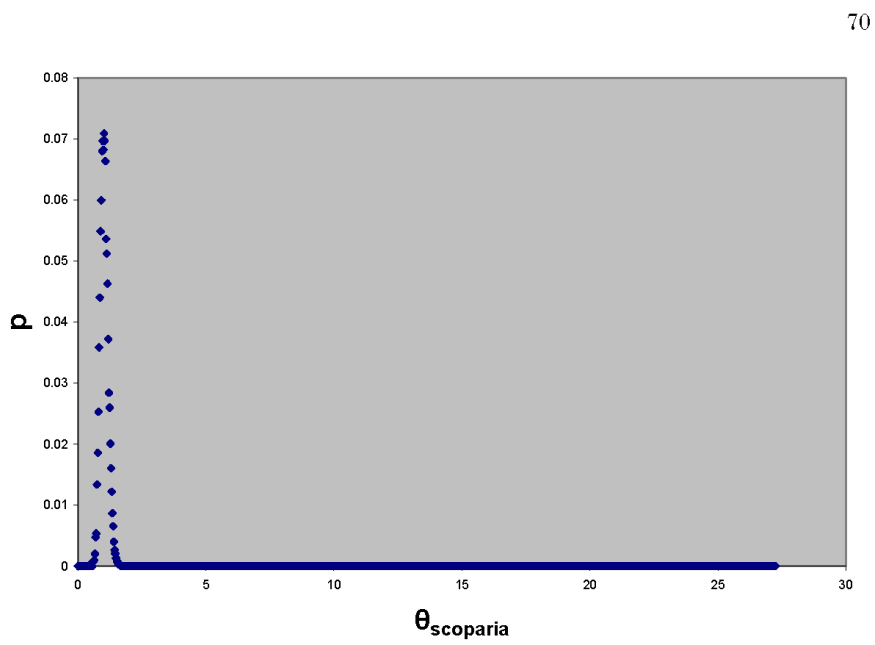


Figure 21. Effective population size for *U. scoparia* scaled by mutation rate (μ). All data included.

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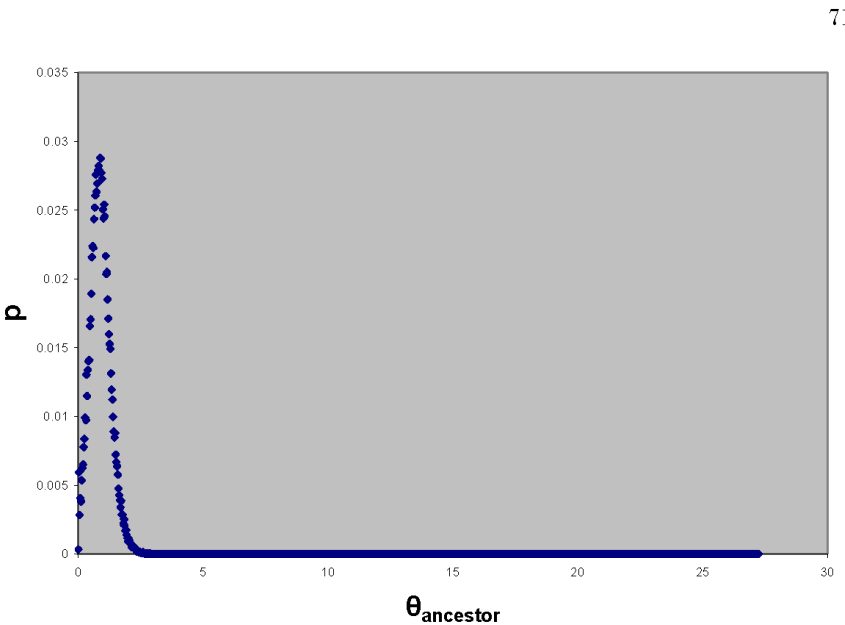


Figure 22. Effective population size for the ancestral population scaled by mutation rate (μ). All data included.

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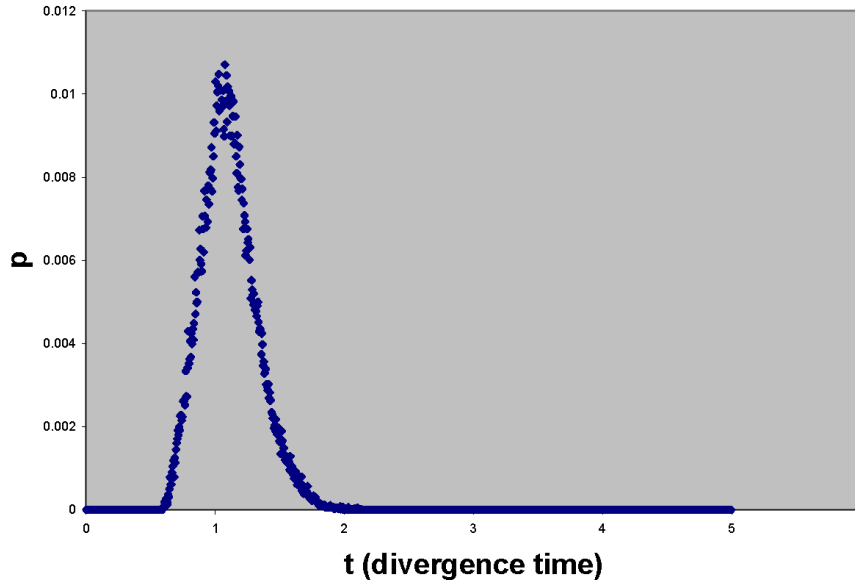


Figure 23. Population divergence (speciation) time between *U. notata* and *U. scoparia*, scaled by mutation rate (μ). All data included.

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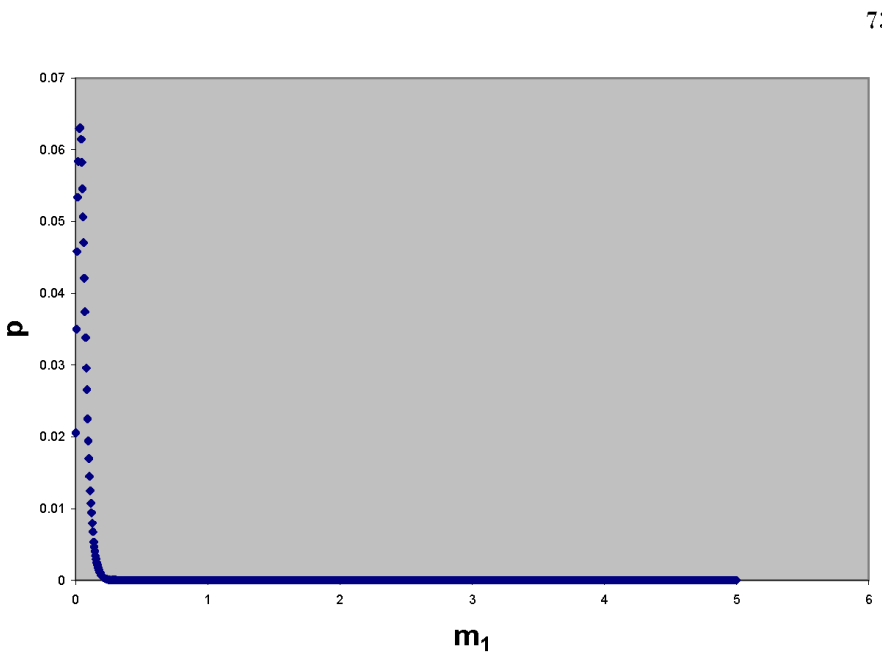


Figure 24. Migration rate (gene flow) into *U. notata* from *U. scoparia*, scaled by mutation rate (μ). All data included.

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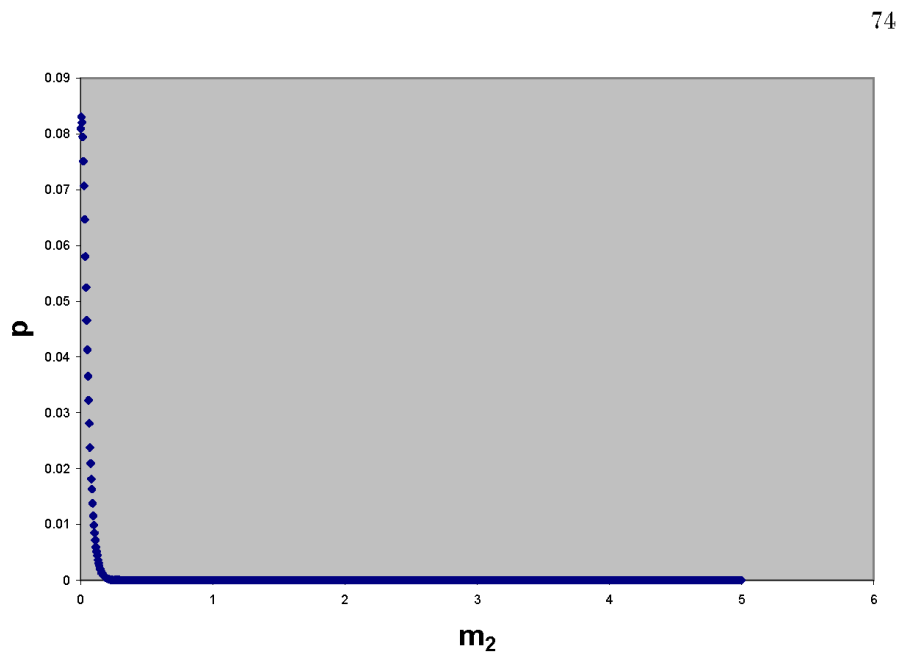


Figure 25. Migration rate (gene flow) into *U. scoparia* from *U. notata*, scaled by mutation rate (μ). All data included.

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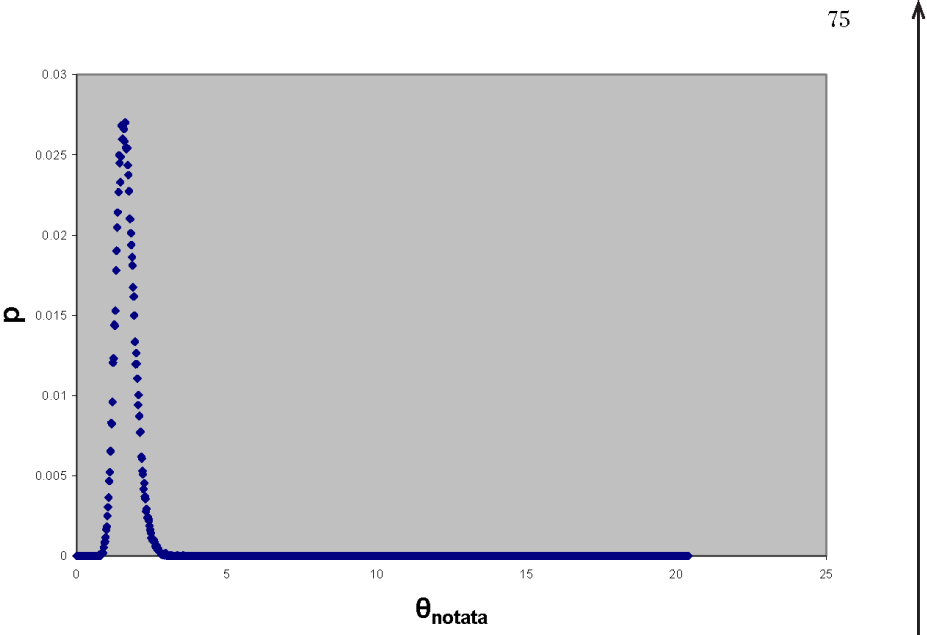


Figure 26. Effective population size for *U. notata* scaled by mutation rate (μ). All recombination excluded.

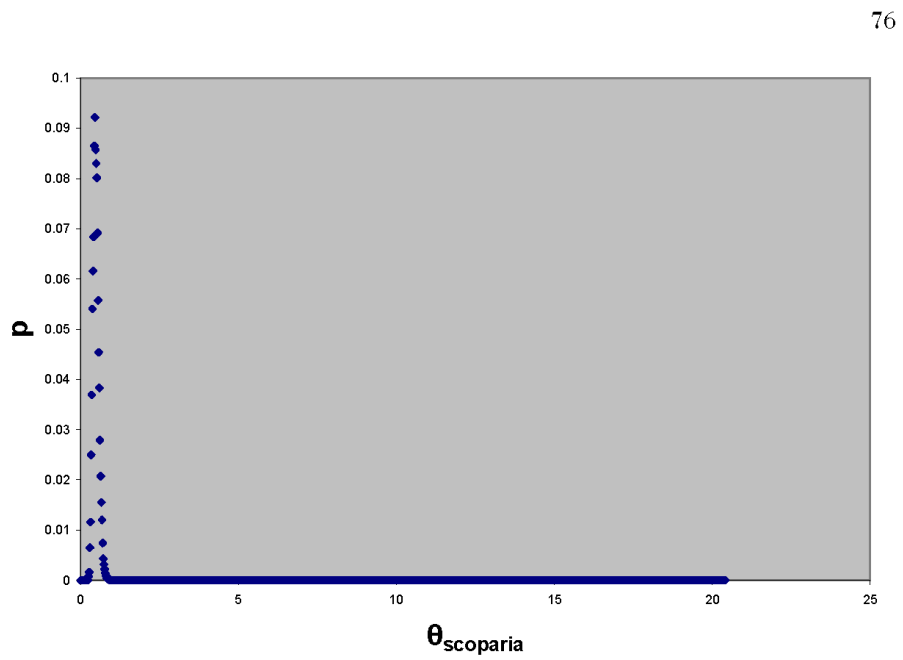


Figure 27. Effective population size for *U. scoparia* scaled by mutation rate (μ). All recombination excluded.

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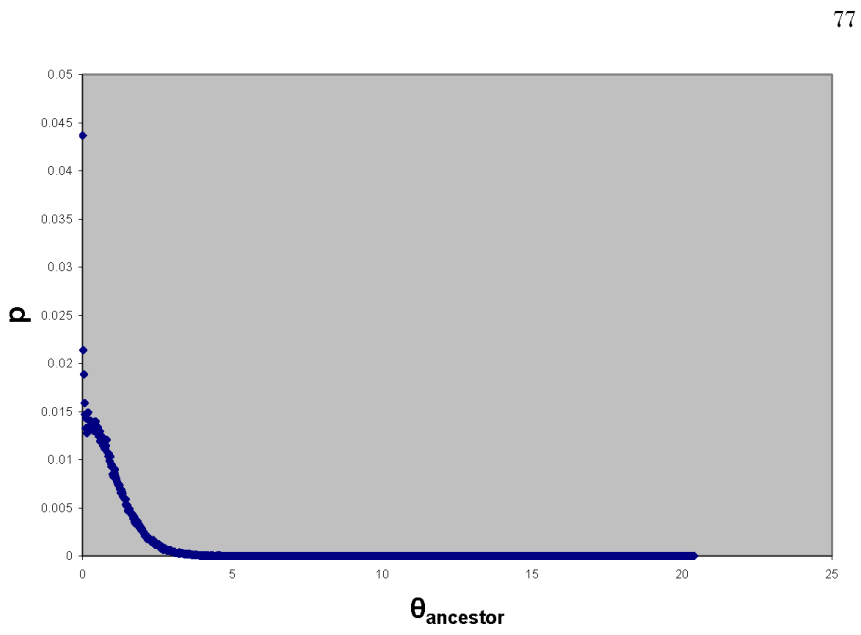


Figure 28. Effective population size for the ancestral population scaled by mutation rate (μ). All recombination excluded.

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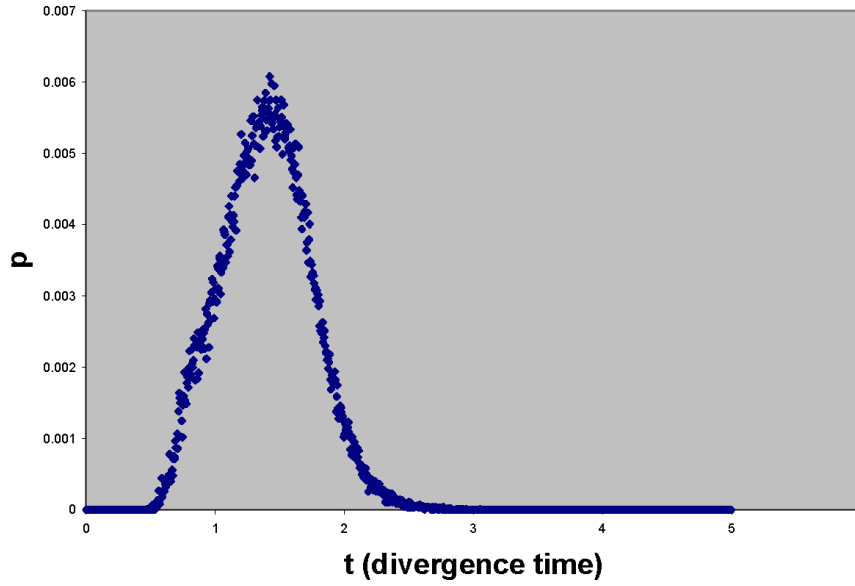


Figure 29. Population divergence (speciation) time between *U. notata* and *U. scoparia*, scaled by mutation rate (μ). All recombination excluded.

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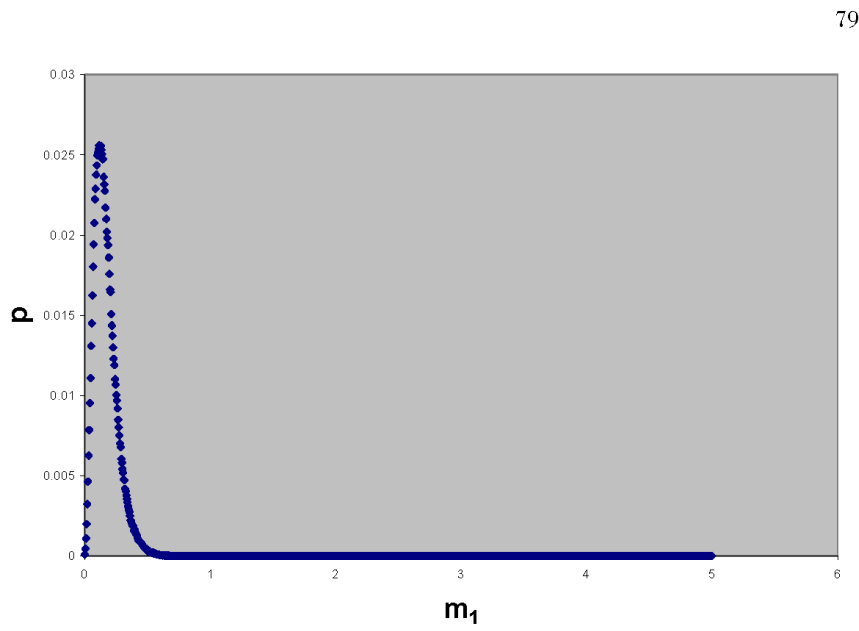


Figure 30. Migration rate (gene flow) into *U. notata* from *U. scoparia*, scaled by mutation rate (μ). All recombination excluded.

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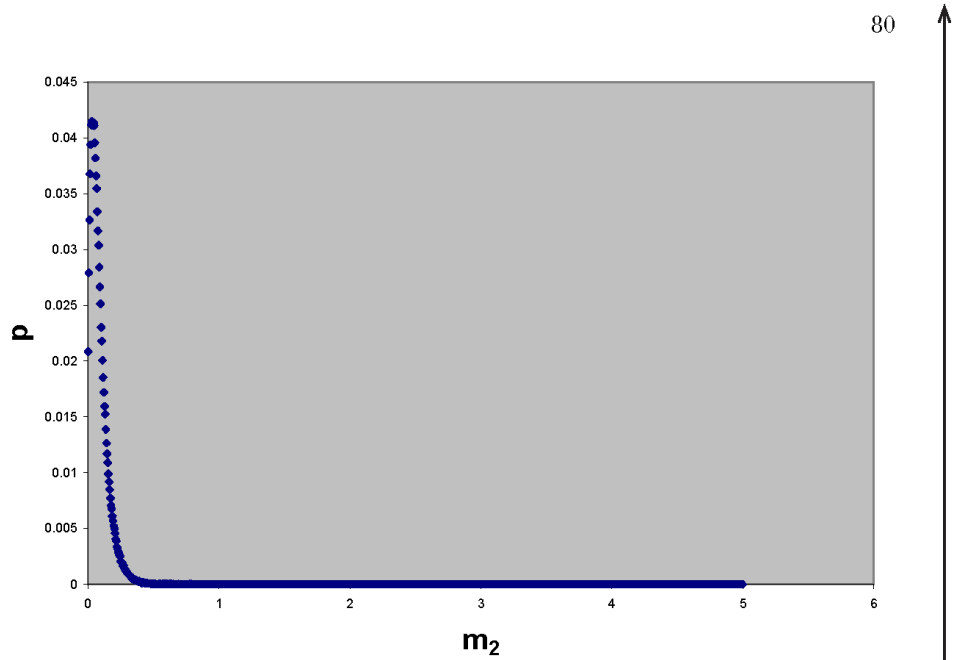
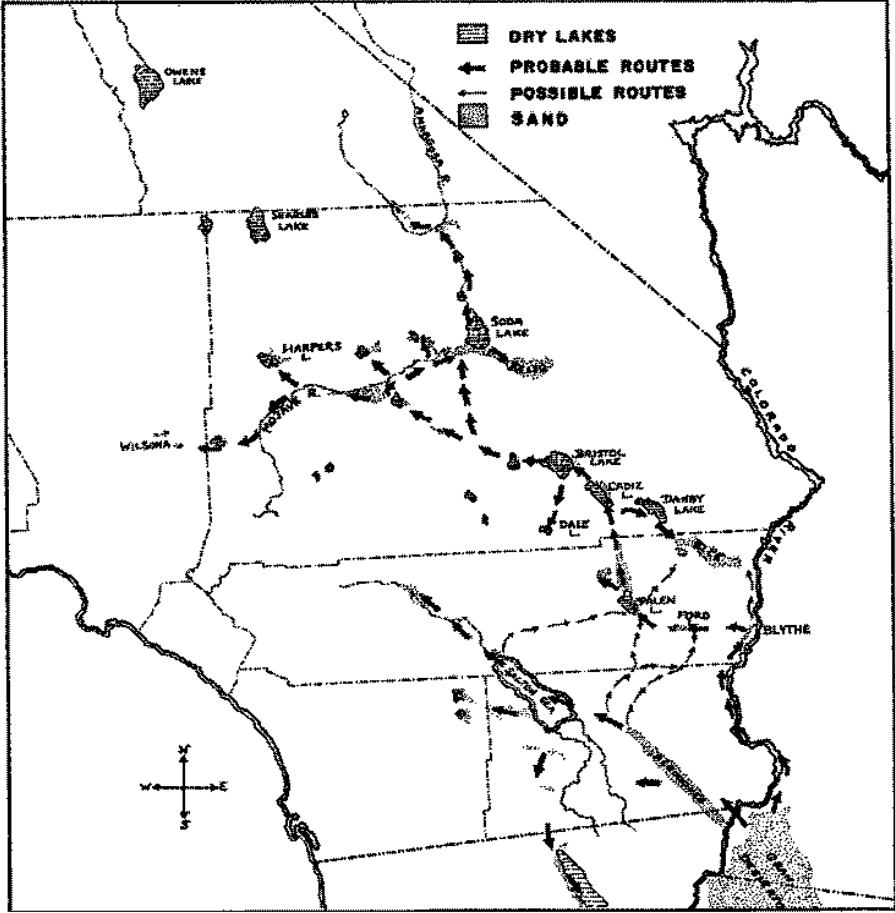


Figure 31. Migration rate (gene flow) into *U. scoparia* from *U. notata*, scaled by mutation rate (μ). All recombination excluded.

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Figure 32. Map of possible migration routes followed by *U. scoparia*, *U. n. inornata*, *U. n. notata*, and *U. n. rufopunctata* during the glacial cycles of the Pleistocene. Adapted from Norris (1958).



Conservation genetics, evolution and distinct population segments of the Mojave fringe-toed lizard, *Uma scoparia*

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Available online 14 November 2006

Abstract

Mojave fringe-toed lizards, *Uma scoparia*, occur only on desert sand dunes and associated mosaics of small sand ramps. Consequently, the distribution is naturally discontinuous and geographically complex. Many populations are vulnerable to local extirpation, and some are now gone. We synthesized genealogical and paleoecological data to explain the geographic relationships among populations of *U. scoparia* based on mitochondrial DNA sequence data. The species appears to have arisen from a common ancestor with *U. notata* by a vicariance event, associated with the formation and development of the Lower Colorado River. Within *U. scoparia*, two major maternal lineages are associated with the development of river drainage systems. The northern lineage is from the Amargosa River. The southerly lineage includes the Mojave River basin, Bristol Trough, Clark's Pass, and Colorado River sand transport systems. The northernmost lineage of *U. scoparia*, isolated in the vicinity of Plio-Pleistocene Lake Tecopa, has the greatest amount of DNA sequence divergence. The southern populations exhibit little local genetic differentiation. A small population near Red Pass Lake contains haplotypes from both the northern and southern lineages. We define two distinct population segments (DPSS), one associated with the Amargosa River lineage, and the other with Red Pass Dune.

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Keywords: Mojave desert; Sonoran desert; Biogeography; Genogeography; Phylogeography; MtDNA

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1. Introduction

Lizards can serve as model organisms in evolutionary studies and be used as flagship species for conservation. They form an important part of the ecosystem, be they large herbivores or fossorial, legless species. The genealogical history of lizards can also be used in the reconstruction of geographic history, especially when their distribution is highly restricted to specific habitats. For example, all species of fringe-toed lizards of the genus *Uma* are associated with paleo-lakes and drainage systems (Norris, 1958; Trépanier and Murphy, 2001). The history of these lizards could reveal much about the development of the hydrologic systems of arid North America. Charismatic *Uma* also have particular adaptations for dune habitats (Pough, 1969; Carothers, 1986). And fringe-toed lizards serve as flagships for the conservation of some dune systems in the American South-west and Mexico.

The Mojave fringe-toed lizard, *Uma scoparia*, is a small heliothermic phrynosomatid and an obligate dune-dweller. It is the northernmost species of *Uma*, ranging in California from extreme southern Inyo County through most of San Bernardino County, barely into the north-eastern corner of Los Angeles County, and southward and eastward through the eastern half of Riverside County to the vicinity of Blythe (Jennings and Hayes, 1994) (Fig. 1). This species also occurs near Parker, La Paz County, Arizona (Elvin, 1960).

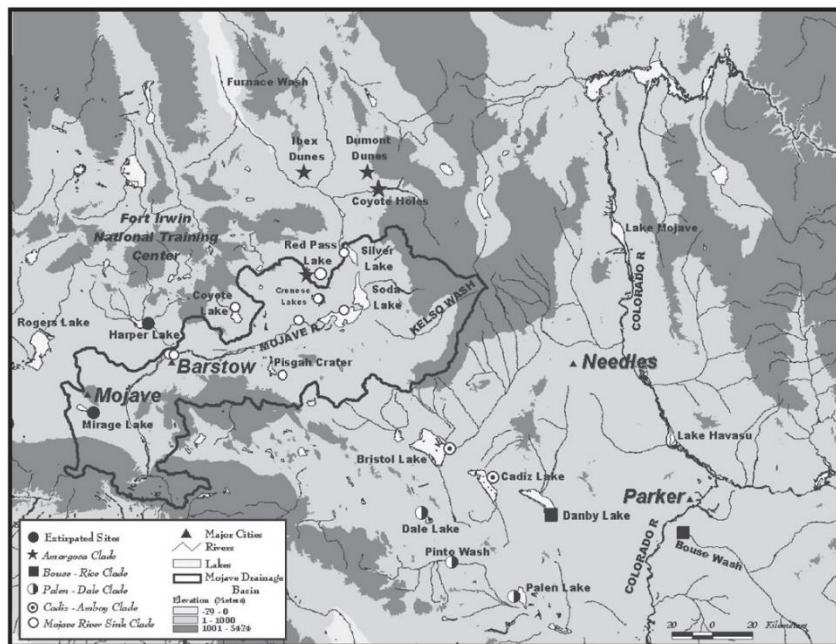


Fig. 1. Distribution of *Uma scoparia* in relation to the modern hydrology of the Mojave Desert and sample sites.

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Its common name is a misnomer. About one-third of its distribution occurs in the Lower Colorado River Valley Subdivision of the Sonoran Desert (Brown, 1994; Welsh, Jr., 1994; Ricketts et al., 1999). Within the southern Mojave Desert, the species is confined to the lowest (< 600 m) valleys. The Mojave and Colorado ecosystems are both in the Lower Sonoran Life Zone.

The distribution of *U. scoparia* is fragmented because of its obligate habitat specificity to loose sand, even though it is widespread geographically across the Mojave and northern Colorado deserts (Norris, 1958; Pough, 1969). Many local populations of *U. scoparia* are quite small with some having perhaps fewer than 500 adults. Small patches of sand cannot support large populations of lizards. Thus, the species is considered rare according to geographic distribution, population size and habitat specificity (Rabinowitz et al., 1986). Because habitat fragmentation leaves the species vulnerable to local extirpations, the California Department of Fish and Game listed *U. scoparia* as a “species of special concern” (Jennings and Hayes, 1994).

U. scoparia has the potential to yield insights into the development of the Mojave and Sonoran deserts, i.e. the changing Mojave Desert. Because fringe-toed lizards only occur on loose sand and the dunes are isolated from one another, the species’ history will reflect the development of eolian systems. In addition, the restricted habitat potentially allows the identification of conservation units, whether narrowly resolved genetically (Moritz, 1994), more broadly defined as distinct population segments (DPSs) under the provisions of the United States (US) Endangered Species Act (ESA; US Department of the Interior and US Department of Commerce, 1996), or defined by other criteria (e.g. Crandall et al., 2000). Patterns of recent population extirpation have the potential to predict future patterns of anthropogenic habitat modification on dune systems and, thus, focus conservation efforts.

The genealogical relationships of Mojave fringe-toed lizards can be used to test previous biogeographic hypotheses. For example, both Norris (1958) and Banta (1962) proposed that *U. scoparia* was displaced from its northern localities during times of Pleistocene glaciation. They postulated that the lizards reinvaded the northern parts of the Mojave Desert from a refuge in the Bristol Trough after the last pluvial stage. Similarly, because potential habitat for *U. scoparia* occurs north of its current distribution, Norris (1958) believed that these lizards had not reached the northern limits of their potential range.

The scenarios of Norris (1958) and Banta (1962) make several predictions. If a northward dispersal occurred, then little genetic substructuring is expected throughout the range of the Mojave fringe-toed lizard, especially in the northern parts of the distribution. Panmixia and dispersion during pluvial periods would result in greater genetic homogeneity. Dispersal to new areas could be accompanied by reduced genetic variation owing to founder effects. However, if *U. scoparia* persisted in the northern parts of their range throughout the pluvial episode, then substantial genetic variation is expected and a far more interesting question emerges: like the desert tortoise (*Gopherus agassizii*, Morafka and Berry, 2002), is *U. scoparia* adapted to desert environments or exapted (preadapted *sensu* Arnold, 1994)?

Our study assesses genetic diversity and the genealogical history of female lineages of *U. scoparia*. If the dispersal of male fringe-toed lizards parallels that of the females, then a genealogy would also represent the history of the dunes and dune systems. The current analysis provides updates and takes precedence over the study of Trépanier (2002), in which an error in data analysis precludes repeatability. We also examine the need for conservation of some populations of *U. scoparia*.

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2. Materials and methods

2.1. Samples

We surveyed populations of Mojave fringe-toed lizards from known or possible sites in Inyo, Kern, Los Angeles, San Bernardino and Riverside counties, California, and La Paz County, Arizona, to obtain tissue samples (Table 1 and Fig. 1). Sampled sites included all major dune systems occupied by *U. scoparia* as verified by collections in the California Academy of Sciences and Los Angeles County Museum of Natural History. Lizards from very small (<100 m diameter), isolated dunes, including some new records, were also sampled. Where they exist, geographic names conform to the US Board on Geographic Names (<http://geonames.usgs.gov/>), but synonyms are also provided in parentheses.

Two- or three-person teams walked at least 1 km during the morning (0800–1100 h PST) when we found the lizards to be most abundant. Occasional afternoon sampling spanned 1500–1930 h, usually in ambient air temperatures greater than 28 °C. Most sampling occurred from mid-March through June.

Lizards were captured by hand or by using fishing poles with nooses. Tail tips were removed at a natural intravertebral break point and placed into a plastic vial filled with 95% ethanol. Tail stumps were treated with a 10% solution of povidone iodine (betadine solution) before the lizards were released at their exact site of capture within 15 min of initial capture. Voucher specimens for most samples were not collected because multiple specimens already existed in museum collections and the species' identity was unambiguous. However, vouchers were taken to document new sites. Voucher specimens were euthanized with an overdose of sodium pentobarbital following approved animal use protocols, fixed in 95% ethanol or 10% formalin, and subsequently maintained in 70% ethanol in the herpetological collections of the Royal Ontario Museum.

2.2. Molecular techniques

The primary outgroup included the other six species of *Uma*. The zebra-tailed lizard, *Callisaurus draconoides*, and the greater earless lizard, *Cophosaurus texanus*, served as secondary outgroup species. Mitochondrial DNA sequences for the outgroup taxa were obtained from GenBank (ATPase 6 = 301958, 301960, 301934, 301914, 301937, 301924, 301922; cytochrome *b* = AF301962, 301970, 301972, 301982, 301985, 302006, 302008), with the exception of *U. exsul* and *U. paraphygas*, which were sampled and sequenced for this study.

Standard chloroform phenol-extraction methods (Hillis et al., 1996; Palumbi, 1996) were used to extract DNA from tail muscle. The mitochondrial gene ATPase 6 was amplified and sequenced using the primers 5' ATG AAC CTA AGC TTC TTC GAC CAA TT 3' (O. Haddrath, pers. comm.) and 5' ACG AAT ACG TAG GCT TGG ATT A 3' (Fu et al., 1999). Amplification and sequencing of cytochrome *b* (*cyt b*) were performed using three primers flanking this region, including 5' CCA TCC AAC ATC TCA GCA TGA TGA AA 3' (Kocher et al., 1989), 5' TGA GGA CAA ATA TCC TTC TGA GG 3' (Fu, 2000) and 5' GTC TTC AGT TTT TGG TTT ACA AGA C 3' (Kocher et al., 1989). Double stranded DNA was prepared for sequencing using the polymerase chain reaction (PCR) (Saiki et al., 1988). Amplification and sequencing protocols follow (Trépanier and Murphy, 2001). The PCR product from the ATPase 6 mtDNA gene was a 599 bp fragment. The PCR product

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Table 1
Alphabetical listing of localities, sample sizes, and voucher specimens of sequenced tissue samples of the Mojave fringe-toed lizard, *Uma scoparia*, and outgroup taxa

Species	Locality	Sample size	Voucher
<i>Uma scoparia</i>	Afton Canyon, San Bernardino Co., CA	2	ROM 32201 2
	Amboy Crater, San Bernardino Co., CA	2	ROM 32109 10
	Bitter Spring, San Bernardino Co., CA	5	ROM 00095 99
	Barstow, San Bernardino Co., CA	5	ROM 32095 9
	Bouse Wash, La Paz Co., AZ	3	ROM 2885 7
	Cadiz Lake, San Bernardino Co., CA	3	ROM 3425 7
	Coyote Holes, Kingston Wash, San Bernardino Co., CA	3	ROM 32102 4
	Coyote Lake, San Bernardino Co., CA	5	ROM 3436 40
	Cronese Lakes, San Bernardino Co., CA	3	ROM 32205 7
	Dale Lake, San Bernardino Co., CA	6	ROM 19850 5
	Dumont Dunes, San Bernardino Co., CA	7	ROM 19840 6
	Ibex Dunes, San Bernardino Co., CA	5	ROM 32090 4
	Kelso Dune, San Bernardino Co., CA	1	ROM 4115
	Lenwood Wash, San Bernardino Co., CA	5	ROM 3428 32
	Palen Lake, Riverside Co., CA	5	ROM 3418 22
	Pinto Wash, Riverside Co., CA	2	ROM 32107 8
	Pisgah Crater, San Bernardino Co., CA	3	ROM 4735, 3434 5
	Razor Road, San Bernardino Co., CA	2	ROM 32203 4
	Red Pass Dune, San Bernardino Co., CA	7	ROM 1531, 3406 11
	Rice Valley, Riverside Co., CA	3	ROM 19847 9
Silver Lake, San Bernardino Co., CA	2	ROM 32105 6	
<i>Uma inornata</i>	Coachella Valley Preserve, Riverside Co., CA	1	CAP 1723
<i>Uma notata</i>	Algodones Dunes, Imperial Co., CA	1	ROM 19877
	N of San Felipe, Baja California, MX	1	ROM 34082
<i>Uma rufopunctata</i>	San Pedro, Sonora, MX	1	ROM 4276
Unnamed <i>Uma</i>	Mohawk Dunes, Yuma Co., AZ	1	ROM 19893
<i>Uma exsul</i>	4km E Gabino Vazques (Bilbao), Coahuila, MX	1	ROM 32001
<i>Uma paraphygas</i>	7km N of Laboratorio del Desierto, Instituto de Ecología, Chihuahua, MX	1	ROM 32045
<i>Callisaurus draconoides</i>	Ocotillo, Imperial County, CA	1	ROM 4146
<i>Cophosaurus texanus</i>	15 km N of Laboratorio del Desierto, Instituto de Ecología, Chihuahua, MX	1	ROM 32048

ROM = Royal Ontario Museum Field Collection Tag Numbers; CAP = tissue collections of Christopher A. Phillips (Illinois Natural History Survey).

from *cyt b* was a 1031 bp fragment that included a portion of the tRNA^{Thr}. Sequences were aligned by eye using BioEdit (Hall, 1997–1999). Transition and transversion ratios were calculated separately for each gene using the number of events averaged across all most parsimonious reconstructions in MacClade 4.06 (Maddison and Maddison, 2003).

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2.3. Cladistic analysis

Lizards with identical haplotypes were merged using MacClade. Thus, all individuals in the analyses had different haplotypes. The two genes were combined for analysis. Unweighted maximum parsimony (MP) analyses were performed on potentially informative characters only using PAUP* 4.0b10 (Swofford, 2002). Most parsimonious trees (MPTs) were obtained by employing the heuristic tree search algorithm with random addition of individuals, 10 000 replicates while retaining minimal trees only and holding two trees at each replicate, tree bisection-reconnection branch swapping with steepest descent, and collapsed zero length branches. All multi-state characters were evaluated as nonadditive (unordered). Nodal consistency was assessed using nonparametric bootstrap proportions (Felsenstein, 1985) and decay analysis (Bremer, 1994) performed in PAUP*, and nodal Templeton tests (nTT) (Lee, 2000) performed in AutoCladeS (Eriksson, 2001). Bootstrapping (BS) used to assess relative support for the nodes was accomplished using 10 000 random pseudo-replicates of the data, with each pseudo-replicate being replicated twice. The selection of preferred trees from among the MPTs used sequential deletions of secondary outgroups taxa (Murphy et al., 2002). Cladogenic patterns were evaluated for their correspondence to geological and hydrological history of the Mojave and Sonoran deserts. The history of the deserts was taken from contributions in Enzel et al. (2003) and literature cited therein.

Bayesian inference was also used to infer matriarchal history (Huelsenbeck and Ronquist, 2001; Buckley et al., 2002; Nylander et al., 2004; Ronquist, 2004) and to obtain nodal support values. The program MrModeltest v2.2 (Nylander, 2004) was used to select an evolutionary model that best fit the data using the Akaike Information Criterion (Akaike, 1974, 1979). Hierarchical likelihood ratio tests (Goldman, 1993) were implemented by comparing log-likelihood scores of 56 models of molecular evolution. Bayesian inference, conducted using MrBayes 3.1.2 (Huelsenbeck and Ronquist, 2001), was initiated with random starting trees. Six Markov chains were used, and the dataset was run for 3×10^6 generations. Trees were sampled every 100 generations. Two independent analyses with different starting trees were run to avoid being trapped on local optima, and the fluctuating values of likelihood were graphically monitored (Huelsenbeck and Bollback, 2001). We plotted the log-likelihood scores of sample points against generation time and determined that stationarity was achieved when the log-likelihood values of the sample points reached a stable equilibrium value (Huelsenbeck and Ronquist, 2001). The analysis was a priori required to achieve a split frequency standard deviation of ≤ 0.005 . After discarding 25% of the sampled trees as burnin, the remaining trees were used to generate a 50% majority rule consensus tree.

3. Results

3.1. Field surveys

We sampled 79 *U. scoparia* from 21 localities (Table 1 and Fig. 1). We did not find *U. scoparia* at the following four sites where they are documented to have occurred: Harper Lake (Harper's Dry Lake) and El Mirage (Dry) Lake in San Bernardino Co., and on Lovejoy Buttes (Wilsona Butte) and Piute Butte (Peck's Butte) in Los Angeles Co. The lizards appear to be extirpated from these sites.

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3.2. Genetic variability

We sequenced 1630 nucleotide sites from two protein-encoding mitochondrial genes: ATPase 6 (599 bp) and *cyt b* (1031 bp). Among the total of 79 individuals in the ingroup, 52 unique haplotypes were detected. No indels were observed. For ATPase 6, 26 (4.3%) of the 599 nucleotide sites were variable with 14 (2.3%) being potentially phylogenetically informative. For *cyt b*, 88 (8.5%) of the 1031 sites were variable, with 52 (5.0%) being potentially phylogenetically informative. Combined, 114 sites (7.0%) were variable, with 66 (4.0%) potentially phylogenetically informative (ingroup only). Among the variable sites, most changes were silent. Nucleotide substitutions at 20 positions resulted in the coding of alternative amino acids, seven of which occurred in ATPase 6 and 13 in *cyt b*. Sequence divergence among sand dunes ranged from 0.00% to 2.94%. The greatest divergence occurred between the northernmost samples from Coyote Holes, Dumont and Ibex dunes and samples associated with the Mojave River drainage system. Within dune systems, haplotypes differed from 0.00% to 2.15% of resolved sequences. The highest level of divergence occurred at a small patch of sand (<2 km²) on the north-west side of Soda Mountain overlooking Red Pass Lake (= Red Pass Playa). Hereafter, we refer to this site as Red Pass Dune. The second highest divergence within a dune was observed at Cadiz Lake, which had 0.69% divergence. Most of the potentially informative sites also varied among the outgroup taxa. All sequences were deposited in GenBank (ATPase 6 = AF301954, AF384873, AF384898, AF389552; *cyt b* = AF302002, AF384921, AF384954, AF389627).

3.3. Trees

A MP analysis of the combined sequence data was based on 352 potentially informative characters, including variable nucleotide sites in all outgroup taxa. Rooted with the secondary outgroups, the analysis resulted in 451 MPTs, each with a length of 745 steps (CI=0.60, RI=0.80). A strict consensus tree revealed three nodes for the ingroup: a basal node that united dunes associated with the Amargosa River, and two more terminal nodes, one being Red Pass Dune, and the other uniting Dumont and Ibex dunes and Coyote Holes. More southerly populations associated with the Mojave River formed a completely unresolved bush.

Because most of the potentially informative nucleotide sites within *U. scoparia* also varied within the secondary outgroups, we re-defined the outgroup to include the other species of *Uma* only. *C. draconoides* and *C. texanus* were deleted from the next analysis. After excluding the secondary outgroup, a 271 potentially informative nucleotide positions were found. Reevaluation of these data found 886 MPTs (length=453 steps, CI=0.67, RI=0.87). Three additional nodes which united all individuals from Bouse Wash, and most individuals within Dale and Cronese lakes were found.

Many of the potentially informative sites in the ingroup also varied in *U. paraphygus* and *U. exsul*, the more distant species of *Uma*. Thus, a final analysis used the *U. notata* group to root the network for *U. scoparia* because they are sister groups (Wilgenbusch and de Queiroz, 2000; Trépanier and Murphy, 2001). The final evaluation, based on 166 potentially informative characters, obtained 253 MPTs (length=305 steps, CI=0.72, RI=0.92). The cladistic analyses using the other species of *Uma* as the outgroup consistently recovered six lineages, three of which contained multiple haplotypes (Fig. 2)

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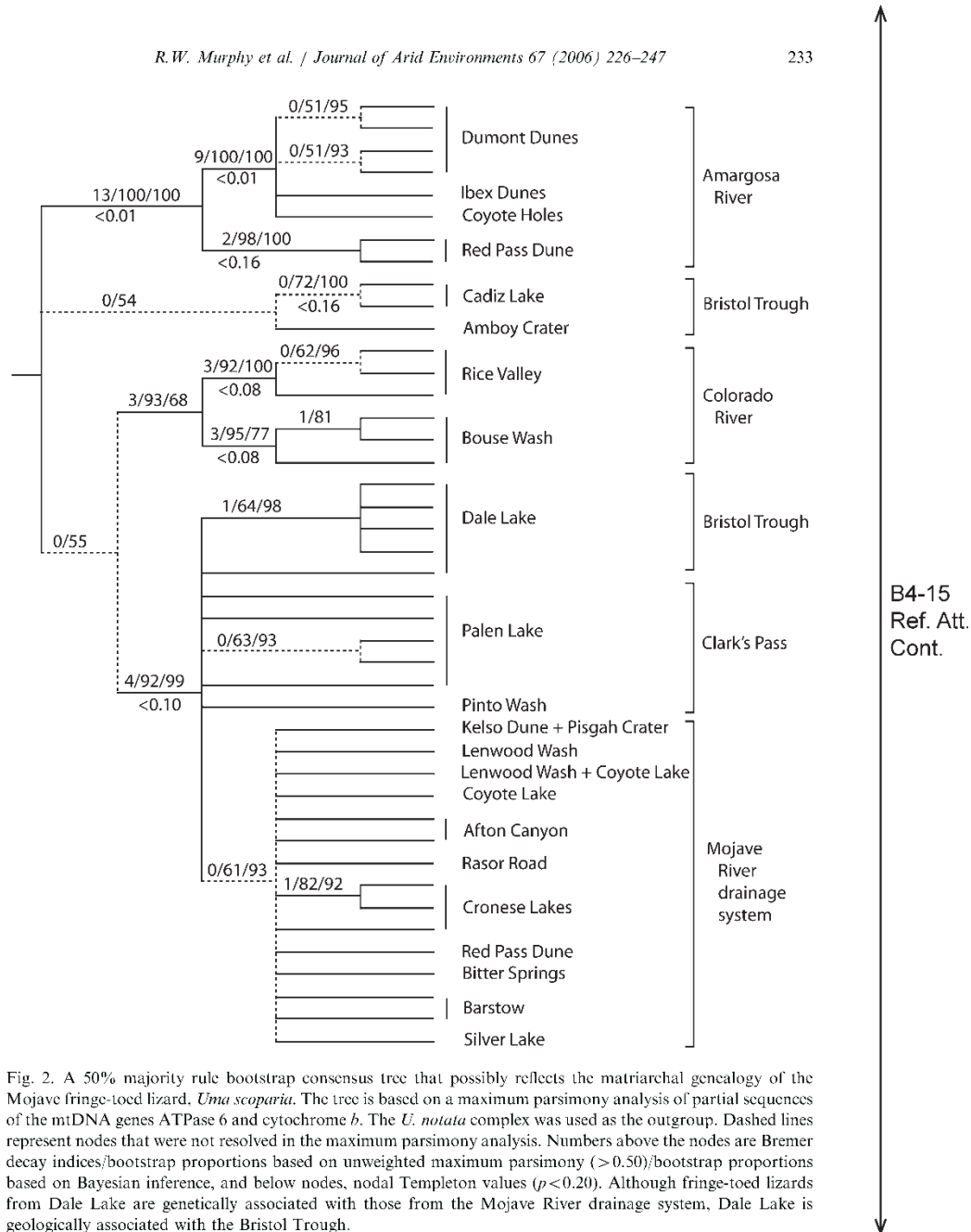


Fig. 2. A 50% majority rule bootstrap consensus tree that possibly reflects the matriarchal genealogy of the Mojave fringe-toed lizard, *Uma scoparia*. The tree is based on a maximum parsimony analysis of partial sequences of the mtDNA genes ATPase 6 and cytochrome *b*. The *U. notata* complex was used as the outgroup. Dashed lines represent nodes that were not resolved in the maximum parsimony analysis. Numbers above the nodes are Bremer decay indices/bootstrapped proportions based on unweighted maximum parsimony (>0.50)/bootstrapped proportions based on Bayesian inference, and below nodes, nodal Templeton values ($p < 0.20$). Although fringe-toed lizards from Dale Lake are genetically associated with those from the Mojave River drainage system, Dale Lake is geographically associated with the Bristol Trough.

and three with single haplotypes. The Amargosa River clade included lizards from Dumont, Ibex and Red Pass dunes plus Coyote Holes. The two haplotypes at Red Pass Dune associated with the Amargosa River are united by three synapomorphies, but 14 unambiguous changes separate them from other members of the Amargosa River clade. Another clade contained lizards from Bouse Wash and Rice Valley (= Rice Dunes). This latter clade is geographically associated with the Pleistocene Colorado River. The third clade was associated with the Mojave River drainage system plus the Bristol Trough. Within the former group, only one or two autapomorphies separate *U. scoparia* on Red Pass Dune from the Mojave River drainage system. Within the Bristol Trough and Clark's Pass sand transport pathways, some individuals from Palen, Cronese and Dale lakes clustered together, but others did not. Two haplotypes from Cadiz Lake and the haplotype found at Amboy Crater did not cluster together, although they occur in close geographic proximity to one another. However, the lack of resolution did not preclude the possibility that Cadiz Lake and Amboy Crater formed a single lineage. More significantly, populations in the Bristol Trough did not cluster together because *U. scoparia* at Dale Lake clustered with populations from Clark's Pass and the Mojave River drainage system. In this case, the genealogical patterns did not conform to geological formations and types of sand.

Using MrModeltest, the general time reversal plus invariant sites and a gamma distribution (GTR + I + G) model was selected for use in the Bayesian inference analysis ($-\ln L = 6502.5288$; $K = 10$; $AIC = 13,025.0576$). Bayesian inference resulted in a tree that was identical to the MP consensus trees except for relationships at the base of the tree, where neither the MP nor Bayesian approaches resolved substantial support for the tree nodes. The Bayesian analysis was not conducted with the sequential deletion of more distant outgroup taxa, as was done with the MP treatment. The Bayesian posterior probabilities (BPPs) were usually higher than the BSPs (Fig. 2).

3.4. Nodal stability

Several nodes were strongly supported according to the three indices of nodal stability (Fig. 2). Curiously, the BS majority rule consensus tree resolved six more nodes than were found in the MP analysis. The most strongly supported nodes were associated with the Amargosa River clade. Samples from Rice Valley and Bouse Wash received relatively high support for their associations. Although geographically nearby, Cadiz Lake and Amboy Crater formed a weakly supported clade in the BS analysis; this node was not resolved in the MP analysis. Surprisingly, the node for two haplotypes from Cadiz Lake received relatively high support (BS=72 and Templeton nodal support [nTT=0.16]) and yet the node was not resolved in the MP analysis.

4. Discussion

4.1. Matriarchal genealogy

Some nodes on the tree received little BS support. However, low BSPs may result from a small number of unambiguous (non-homoplastic) synapomorphies and therefore do not indicate a lack of confidence in the node (Felsenstein, 1985). In several cases, the homoplasy owes to an apparent homoplastic autapomorphy. Regardless, validity of the

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nodes is empirically supported by the observation that individual lizards from a given dune clustered together, or at least their association with a particular dune was not rejected by the tree. The only exception occurred in Red Pass Dune, which contained haplotypes from two different lineages (Fig. 2).

The cladistic analysis of haplotype lineages of *U. scoparia* (Fig. 2) revealed a strong correspondence with drainage systems in the Mojave and Colorado deserts. Lizards from the Amargosa River clade are associated with Lake Tecopa, Lake Manly (now Death Valley; frequently misspelled “Manley”) and Kingston Wash. The genetically divergent population on Red Pass Dune formed the sister group to the other members of this northern lineage. A relatively longer branch united the populations from Dumont Dunes, Ibex Dune, and Coyote Holes (Fig. 2). This longer branch could have indicated that the Amargosa River clade was evolving at a relatively rapid rate. Regardless, a lack of differentiation among lizards at these three dunes suggested that their isolation from one another has occurred relatively recently.

Populations within the Amargosa River clade had differing percentages of variation. A single haplotype was found in five lizards from Ibex Dune. Similarly, all three lizards from Coyote Holes shared the same haplotype. In contrast, five haplotypes were obtained from seven individuals at Dumont Dunes. Thus, Dumont Dunes could have been the source of variation observed within this clade.

Bouse Wash and Rice Valley occur near the north shore of a Late Tertiary body of water, either the marine Bouse Embayment, or lacustrine and fluvial deposits of the ancestral Colorado River (Axen and Fletcher, 1998; Gross et al., 2001; Lucchitta, 2001; Muhs et al., 2003; Poulson and John, 2003). Individual lizards can be unequivocally associated with their respective dunes (Fig. 2). Genetic isolation appears to have occurred by vicariance, as opposed to dispersal, because both sites have multiple maternal lineages and haplotypes from one dune do not nest within the other, as would be expected with recent dispersal.

The last and most diverse lineage with multiple haplotypes is associated with the Mojave River drainage system. Most of the possible relationships within this lineage cannot be resolved; the node is a hard polytomy (Fig. 2). Nearby populations, such as Red Pass Dune and Bitter Spring, are no more than 2 km away from one another but are separated by the north-west extension of the Soda Mountains. Most individuals from Lenwood Wash, Coyote Lake, Afton Canyon, Cronese Lakes, and Barstow are not united into single clades. This pattern indicates that dispersion of individuals and gene flow occurred recently. The lack of genetic differentiation likely reflects a relatively recent isolation. In turn, the recent isolation suggests that *U. scoparia* was more widely distributed during pluvial times. If true, it seems likely that *U. scoparia* is an exaptive species that would likely thrive in more mesic conditions. This hypothesis is supported by our observations of activity periods. The lizards are active in the morning and late afternoon, but absent during the heat of the day.

The clade associated with the Mojave River drainage system contains three poorly differentiated subclades, including individuals from Dale and Palen lakes, and Cronese Lake. Although possible, monophyly of the haplotypes from these lakes could not be confirmed because of the apparent hard polytomy at the base of the clade. Dale and Palen lakes occur in the Bristol Trough and Clark’s Pass sand transport pathways (Muhs et al., 2003), along with Pinto Wash, and these populations have the southernmost distributions for *U. scoparia* (Fig. 1). Four of five individuals from Dale Lake shared a common

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matriarchal lineage. Both specimens sampled from Pinto Wash had identical sequences, and only two of five individuals from Palen Lake were united. There is no clear-cut history of isolation among the dune systems within this major clade.

Amboy Crater and Cadiz Lake (Fig. 2) occur in close proximity within the Bristol Trough. The number of accrued autapomorphic states (Fig. 2) indicates that substantial genetic divergence exists within Cadiz Lake; the two haplotypes differ at 11 nucleotide sites. A larger sampling of individuals from both dunes, as well as an analysis of microsatellite DNA alleles, is required to investigate the potential of gene flow among these sites.

Among all species of *Uma*, only Red Pass Dune has a coalescence of historical lineages that are not sister groups. Red Pass Dune contains two haplotypes, one from the very distinctive Amargosa River clade and the other from the Mojave River drainage system (Fig. 2).

Conservation genetics frequently make use of statistical parsimony and unrooted haplotype networks (e.g. Templeton, 1998, 2004; Posada and Crandall, 2001). However, it has been argued that the maximum explanatory power of the data is that which makes the least assumptions, i.e. unweighted parsimony (e.g. Siddall and Kluge, 1997; Frost et al., 2001). In part, justification for the network approach is also built upon the notion of a persistent ancestor. This concept owes, in part, to the assumption of a traceable intraspecific phylogeny. Unfortunately, this assumption is falsified in sexually reproducing organisms owing to genetic recombination. Mitochondrial DNA gene genealogies only reflect the maternal history of animals and not that of paternal history. Trees derived from mtDNA necessarily reflect female dispersal and dispersion. In stark contrast, nuclear genes segregate and flow independently of the history of movement of particular individuals within demes. As a consequence, within species mtDNA gene trees are predictably at odds with nuclear gene trees (10 examples given in Ballard and Whitlock, 2004), in part because of the role genetic recombination plays in gene flow. Methods of haplotype network building also incorporate haplotypic frequency data. However, Murphy and Doyle (1998) demonstrated numerous problems, violations of assumptions, and common failures with inferring phylogenetic and genealogical relationships from frequency-based data morphological and molecular data. Trees derived from frequency data can reflect random drift, selection or any other mechanism that changes gene frequencies, and not the history of population fragmentation.

4.2. Historical biogeography

Genetic characterizations of individual populations, their matriarchal genealogy, geology and paleoecology of the Mojave Desert region can be synthesized to form an explanatory historical scenario. Two primary events are noted: the origin of the species and the primary intraspecific divergence into northern and central clades.

4.2.1. Interspecific evolution: the origin of *U. scoparia*

Geologic events caused hydrological changes that facilitated vicariance and dispersal of ancestral *Uma*. In the later Miocene (13–12 Ma), fault blocking, subsidence and erosion developed closed basin drainages in and around the preexisting (Oligocene) Colorado Plateau (Eberly and Stanley, 1978; Lucchitta, 1979). Between 10.5 and 6 Ma, these

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drainages expanded, coalesced, and ultimately formed new routes of water discharge. One of these new discharge points may have been the Bouse Embayment.

The current, southern limit of *U. scoparia* conforms roughly to the junction of the Colorado River and Proto-Gulf of California. The geological events may have isolated populations of several species, including the desert tortoise (Lamb et al., 1989; McLuckie et al., 1999), collared lizards, *Crotaphytus bicinctores* and *C. collaris* (McGuire, 1996), and toads, *Anaxyrus* (formerly *Bufo*) *californicus* and *A. microscaphus*, although the middle Pleistocene uplift of the Mojave Desert ranges may have separated the toads (Hunt, 1983; Gergus, 1998).

4.2.2. Intraspecific evolution of *U. scoparia*

U. scoparia occurs only within 45 m of its typical sand-dwelling habitat (Norris, 1958). This restriction to sand dunes facilitates biogeographic analyses because the history of isolation of the populations is associated with the history of the playas and dunes themselves. Given that sand forms from hydrological processes, the distribution of Mojave fringe-toed lizards can be expected to parallel that of the developing riverine and sand transport systems (Lancaster and Tchakerian, 2003; Muhs et al., 2003). Although evidence suggests that populations of fringe-toed lizards can only disperse as fast as their sand substrates advance, one Chihuahuan fringe-toed lizard, *U. paraphygas*, dispersed at least 200 m from one dune to another (Trépanier, 2002).

4.2.3. The north–south split in *U. scoparia*

Historical biogeography typically correlates branching patterns of genealogical trees with evolving landforms. The most basal split in the matriarchal gene tree of *U. scoparia* forms northern and southern lineages (Fig. 2). This pattern best reflects the isolation of the Amargosa and Mojave rivers.

Death Valley was well-defined by the Pliocene, and it became the very large, ancient Lake Manly. This lake was an occasional terminus for the Amargosa and Mojave rivers (McKenna and Hodges, 1990; Sharp and Glazner, 1997; Cox et al., 2003; Enzel et al., 2003). Simultaneously, Lake Tecopa dominated the landscape of the Mojave Desert lowlands from the Late Pliocene (>3 Ma) through the middle Pleistocene (<500 Ka), particularly when it was joined by Lake Manly to its west (Sharp and Glazner, 1997). At times of pluvial activity, and frequently in a more mesic environment (Van Devender, 1977, 1990; Spaulding, 1990), it is likely that the interconnected network of streams and channels connected populations of fringe-toed lizards.

The distribution of *U. scoparia* follows river courses, and these courses changed about 500 Ka because of mountain building events (Sharp and Glazner, 1997). In particular, the northern lineage associated with the Amargosa River was likely isolated from more southerly populations aligned with the Mojave River.

The extent of sequence divergence in related taxa provides some evidence for this time frame. Zebra-tailed lizards, *C. draconoides*, in the mid-peninsula of Baja California have an mtDNA divergence of about 9% (Lindell et al., 2005). The mid-peninsula discontinuity in mtDNA sequences has been observed in most species of animals on the peninsula and a divergence of 9–11% is common for other species of lizards (Murphy and Aguirre-Léon, 2002). This break has been attributed to a hypothetical vicariance event, mid-peninsular seaway (Upton and Murphy, 1997; Riddle et al., 2000; Murphy and Aguirre-Léon, 2002; Lindell et al., 2006), which is now dated at >3Ma (Rodríguez-Robles and de

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Jesús-Escobar, 2000; Lindell et al., 2005, 2006). Thus, for zebra-tailed and other lizards, divergence appears to be occurring at about 4% nucleotide sequence change per 10^7 yr. If this rate of change also occurred in fringe-toed lizards, then the northern and southern lineages of *U. scoparia* were isolated in the mid-Pleistocene, about 500 Ka, likely as a consequence of orogenic events that changed the courses of rivers (Sharp and Glazner, 1997), as opposed to pluvial stages. The initial north–south division of *U. scoparia* may have occurred near Red Pass Lake, as suggested by the southernmost occurrence of members of Amargosa River clade.

4.2.4. Late Pleistocene divergence in the lineages

The distribution of *U. scoparia* also reflects glacial history. The Quaternary in southwestern North America was dominated by glacial and interglacial cycles (Imbrie and Imbrie, 1979). About 94% of the Quaternary was dominated by glaciopluvial events (Van Devender and Burgess, 1985). Climates in the Mojave Desert region were frequently, if intermittently, more mesic and cooler than present, particularly during the glaciations (Spaulding, 1991; Enzel et al., 1992, 2003). The cooler and more-moist times include the “Little Ice Age” that occurred 390 yr bp and an earlier episode at 3.6 Ka (Wells et al., 2003). In these two episodes, most major playas of the Mojave River drainage sustained standing water for periods of up to 40 yr.

Glaciation had predictable impacts on the environment in terms of the formation of sand dunes (Enzel et al., 2003) and the distribution of their associated organisms. During glacial events, the climate was wet. Mountains were eroded by chemical weathering and soil formed. Alluvial fans and sand dune fields were stabilized and eroded. During the onset of dry, interglacial periods, lakes turned into marshes. As aridity continued, the climate became warmer, the ranges of mesophilic species contracted and the distribution of xerophilic species expanded. Mountains underwent mechanical weathering and erosion dominated. Alluvial fans and sand dunes expanded and built up.

The northernmost maternal lineage of *U. scoparia*, including populations from south-eastern Death Valley (Ibex and Dumont dunes) and the Silurian Valley (Coyote Holes) is united by distinct haplotypes. The absence of substantial genetic differentiation among individuals from these three locations suggests that populations from the northernmost clade were contiguous. Flooding along the Amargosa River (Brown et al., 1990; Enzel et al., 1992) would have facilitated repeated Holocene dispersion of *U. scoparia*. Habitat suitable for *U. scoparia* persisted at times of maximum glaciation, likely in xerothermic lakeshore dune microhabitats. Spaulding (1990) noted persistence of lowland vegetation in the glacial Mojave Desert prior to the beginning of the xerothermic post-glacial period 7.8 Ka. In Death Valley, a speciose and succulent semi-desert vegetation occurred at 425–775 m along its lateral slopes during full glacial times, 19–17 Ka (Woodcock, 1986; Spaulding, 1999). Typical warm desert plants, like *Ambrosia dumosa*, appeared by 10.2 Ka, and the dominant *Larrea tridentata* emerged between 9.1 and 8.2 Ka.

All habitats currently occupied by the northern clade of *U. scoparia* are below 200 m except for Red Pass Dune (> 500 m). Despite the downward displacement of desert vegetation, the doubly faulted deep grabens of the Silurian and Death valleys were probably sufficiently low to shelter populations of *Uma* throughout the Pleistocene Epoch, either as desert lowlands during interglacial episodes, or more likely along the lowland lakeshore dunes, perhaps near Dumont Dunes and Salt Spring. Given that

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Mojave fringe-toed lizards could have persisted in the Mojave Desert during glacial periods, how did they become isolated?

In the Pleistocene, the lineage of *U. scoparia* associated with Amargosa River may have become isolated in Silurian Valley between Lake Tecopa at its northern end and by Silver Lake (now a playa) to the south. Populations of *U. scoparia* at Dumont Dunes and Coyote Holes occur between these sites. Intermittent spillways over the south-western sill of Lake Tecopa might have established the population on Ibx Dunes, the only population to reach, or remain as a remnant in, Death Valley proper and the northernmost occurrence of the genus. Hydrological evidence is consistent with this interpretation. The high shorelines of Lake Manly have been estimated at 90 m above the lakebed, both at 12 Ka and at an earlier maximum fill at 125–86 Ka (Machette et al., 2001; Anderson and Wells, 2003). Both Ibx and Dumont dunes occur above the highest shoreline.

The extent of genetic divergence within the southern lineage suggests that most populations were contiguous during times of maximum glaciation. The possible exceptions include populations on dune systems in the Bristol Trough, and especially those in Rice Valley and Bouse Wash. These populations appear to have been derived from a single maternal lineage.

4.2.5. Comparison to previous hypotheses

Norris (1958) believed that the northernmost populations of *U. scoparia* from Death and Silurian valleys arrived relatively recently by dispersal. However, his scenario conflicts with the matriarchal history. Norris recognized a north-western group consisting of lizards from Silver Lake, Sperry Canyon, Saratoga Springs (= Ibx Dunes), East Cronese Lake, Alvord Mountains, Newberry Dunes, Daggett, Harper's (Dry) Lake, El Mirage (Dry) Lake, Wilsona Butte and Peck's Butte. These lizards had (1) posteriorly occluded postmental scales; (2) a high incidence of lacking pre-cloacal spots; and (3) a low number of scales separating the interparietal and post-parietal scales. Norris assumed that the anatomical similarity owed to a common westerly dispersal along stream routes. However, the morphological data unite some populations in two major maternal lineages that cannot be exclusive sister groups, i.e. the morphological data would be homoplastic if they represented apomorphic (derived) character states. However, the morphological similarity presents no problem or homoplasy when considered to be the plesiomorphic condition. Regardless, Norris' morphological data have the potential to phenotypically diagnose the genetically identified northernmost lineage.

The sympatric occurrence of endemic taxa suggests antiquity for many lineages in the northern Mojave Desert. Counter to Norris' (1958) hypothesis, many species might not have been forced southward during times of glaciation, and its cooler, more moist climates. A few examples of endemic taxa in the northern Mojave include vascular plants (> 50 taxa), fish (*Cyprinodon*, *Gila*, *Rhinoichthys* [Miller, 1946]), toads (*Anaxyrus* (formerly *Bufo*) *nelsoni* and *A. exsul*), snakes (*Crotalus mitchellii stephensi*), salamanders (*Batrachoseps campii*), montane lizards (*Elgaria panamintina*) and a new species in the *Plestiodon* (formerly *Eumeces*) *gilberti* complex (Richmond and Reeder, 2002). Many of these endemics are confined to relict montane woodlands and parklands and to intervening valley springs of the Pleistocene Owens River drainage, which may have terminated in Lake Manly.

4.2.6. Intraspecific evolution: sympatric maternal lineages

The occurrence of sympatric maternal lineages at Red Pass Dune may be associated with the formation of Afton Canyon. By the last full glacial episode, the increased precipitation

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generated greater water flow into a dammed Mojave River. While the terminus of this closed-basin river oscillated between Harper and Manix lakes, hydrological force eventually became sufficient to cut through Afton Canyon (between the Cave and Cady Mountains), perhaps episodically starting at 18 Ka (Anderson and Wells, 2003; Jefferson, 2003), but certainly flow was continuous by 14–11 Ka (Meek, 1989; Anderson and Wells, 2003). Flow of the river east of Afton Canyon ended into a new series of low valleys including Cronese, Silver and Soda lakes (Wells et al., 2003). These hydrogeologic systems and their associated playas provided a dispersal route and new habitat for *U. scoparia*. Not surprisingly, the maternal relationships among the haplotypes are poorly resolved (Fig. 2).

Red Pass Dune is the only location for *Uma* that contains haplotypes from two non-sister lineages. Secondary contact occurred between lineages from the Mojave River drainage system and the Amargosa River. The lineage from the Amargosa River must have arrived first, because it is well differentiated from other members of Amargosa River clade. The two haplotypes at Red Pass Dune are united by three synapomorphies, but 14 unambiguous changes separate them from other members of the Amargosa River clade. Regarding *U. scoparia* from the Mojave River drainage system, only one or two autapomorphies separate them from other members of their lineage.

Red Pass Lake and Red Pass Dune occur north of Afton Canyon and the Cronese Lakes. Animals from the edges of the Mojave River drainage system and the fringes of Lake Manix probably dispersed northward to Red Pass Lake and the Red Pass Dune making secondary contact with *U. scoparia* from the Amargosa River clade. Climatic and ecological conditions that favored colonization by the desert tortoise, about 9 Ka (Douglas et al., 1988) also may have facilitated the northward dispersal of *U. scoparia* into the Bitter Spring by the early Holocene Epoch. The paleoecology of Bitter Spring, which included perennial water an open pinyon woodland-grassland with a mosaic of vegetation and habitats, is well documented from 15 to 6 Ka (Reynolds, 1991; Reynolds and Reynolds, 1994; Spaulding et al., 1994).

5. Conclusion: distinct population segments and conservation

Inevitably, law accomplishes the conservation and protection of species and populations (Berry et al., 2002). In the US, under the ESA, any species, subspecies or vertebrate “distinct population segment” (DPS) can be listed as “threatened” or “endangered” and receive legal protection if it meets certain statutory criteria. Under current policy established by the US Fish and Wildlife Service and the National Marine Fisheries Service, a population may be protected under the ESA as a DPS following an analysis of: (1) the discreteness of the population segment in relation to the remainder of the species to which it belongs; (2) the significance of the population segment to the species to which it belongs; and (3) the conservation status of the population in relation to the ESA standard for listing. Designations of DPSs should be used “sparingly” and “be well justified biologically” (US Senate, 1979). Discreteness can be satisfied by several criteria (US Department of the Interior and US Department of Commerce, 1996): marked separation from other conspecific populations as a consequence of physiological, ecological or behavioral factors, or physical separation. Physical separation can include natural geographical isolation or by international boundaries where “discreteness” was created by differential protection/exploitation of populations on each side of the border.

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Four criteria can be used to measure “significance of the DPS” (US Department of the Interior and US Department of Commerce, 1996): (1) A population can be a DPS if it persists in an unusual or unique ecological setting for that species. (2) If extirpation of the population creates a gap in the range of the species, then it could qualify as being a DPS. (3) A population that is the only remnant of the species’ former range could qualify for designation as a DPS, even if introduced populations are more common elsewhere. (4) Genetic distinctiveness can also be used to qualify a population as being a DPS. The conservation status of each DPS is then determined separately using criteria set out in the ESA.

Two historical units of *U. scoparia* unambiguously qualify for designations as DPSs on the basis of several criteria. Natural geographic barriers, including the absence of sand and presence of mountains, separate populations from one another. Each dune is a discrete entity and it is extremely unlikely that gene flow is occurring among the isolated dunes, and especially among dune systems not connected by a recent hydrogeologic system. Ecologically, dispersal is virtually impossible because of the absence of intervening sand dunes. Within some dune systems, the presence of a single “monophyletic” maternal lineage provides evidence that dispersal has not occurred; if dispersal was common we would expect to see haplotypes from different lineages scattered among the dune systems, as observed on Red Pass Dune (Fig. 2). The Amargosa River lineage is genetically distinct. The presence of unique haplotypes gives credence to the possibility of regional adaptations and incipient speciation. The Amargosa River lineage represents a significant historical component and it deserves recognition as a DPS. In addition, Red Pass Dune is special in being the only population of *Uma* that contains two distinctive maternal lineages. Accordingly, we propose the recognition of two primary DPSs as follows:

1. Amargosa River DPS: Dumont and Ibox dunes and Coyote Holes.
2. Red Pass Dune DPS.

Designation of the primary DPSs does not adequately represent the significance and extent of isolation of the dune-restricted populations. Our concept of DPSs for *U. scoparia* is similar to the current management of the desert tortoise, i.e. a precedence exists for making further subdivisions. The “Mojave Population” of *G. agassizii* is listed as a DPS, and the Recovery Plan (US Fish and Wildlife Service, 1994) describes six smaller units as both DPSs and ESUs each of which is designated as a named “Recovery Unit.”

An individual *U. scoparia* from Bouse Wash and Rice Valley can be associated unambiguously with its particular dune. It is quite likely that individuals from Amboy Crater and Cadiz Lake can also be associated with their respective dunes. A phylogenetic analysis of the sequence data can associate some lizards from the Mojave River drainage system with their respective dunes, but not most. However, it is likely that additional sequence data, particularly from more rapidly evolving genes, will further resolve the historical associations. Until these data are available, it is preferable not to recognize additional subdivisions or DPSs.

Many populations represent isolated historical units that could represent incipient species. They could be locally adaptive and have unique behavioral and physiological attributes. Consider, for example, *U. scoparia* at Dumont Dunes. Within the Amargosa River DPS, Dumont Dunes is the only population documented to have variation in its mtDNA; four different haplotypes were found among the seven individuals sequenced.

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Among five individuals from IbeX Dune, only one haplotype was observed. Similarly, all three individuals from Coyote Holes shared a haplotype. Thus, the population of *U. scoparia* at Dumont Dunes deserves designation as a DPS because it is the only location where a “pure” lineage from the Amargosa River DPS is documented to harbor variation in its mtDNA; the only other variable population within this lineage occurs at the very small Red Pass Dune.

Red Pass Dune is deserving of status as a DPS. It contains a unique maternal lineage associated with the Amargosa River DPS as well as haplotypes from the Mojave River drainage system. In addition, Red Pass Dune is the only location where, among all species of *Uma*, divergent maternal lineages occur in sympatry.

Unfortunately, *U. scoparia* is now extirpated from at least two historical localities within the Mojave Desert in San Bernardino Co., at Harper and El Mirage lakes (dry). Further west in Los Angeles Co. populations at Lovejoy Buttes and Piute Butte have also been extirpated, thus reducing the geographic range in the west. Recent searches of the Desert dunes failed to locate a single individual.

Having defined DPSs, it is possible to evaluate the conservation status of each and, where appropriate, obtain protection through application of the ESA. A full review of the conservation status of each DPS, as well as the attainment of protection, is beyond the scope of this paper, because conservation necessarily involves law. Regardless, the isolated nature of the populations leaves them vulnerable to local extirpations—extinctions of incipient species. Dune systems are very fragile, as reflected in part by protection currently afforded to other species of fringe-toed lizards. The Coachella Valley fringe-toed lizard, *U. inornata*, is a federally threatened species (US Department of the Interior, 1980). *U. scoparia* and the Colorado Desert fringe-toed lizard, *U. notata* are listed as species of special concern in California (Jennings and Hayes, 1994). In Mexico, *U. notata*, is listed as threatened, the Chihuahuan fringe-toed lizard, *U. paraphygas*, is considered endangered, and the Coahuila fringe-toed lizard, *U. exsul*, is listed as rare (SEMARNAP, 2000).

Habitat destruction, habitat loss and disruption of eolian sand transport pathways threaten the survival of *U. scoparia*. Disruption of dune ecosystems by off-highway vehicles poses a major threat. Habitat loss due to agriculture and development contribute to loss of habitat. Fringe-toed lizard densities are negatively affected by sand depletion and surface stabilization (Turner et al., 1984). Sand compaction and sand patch size adversely affect the abundance of fringe-toed lizards (Barrows, 1997). Off-road vehicles can severely compact sands and destroy vegetation at dune sites (Luckenbach and Bury, 1983). This loss of native vegetation results in the elimination of cover, which is used for thermoregulation and predator avoidance (Pough, 1969). Vegetation, presumably native, is also required for food sources for fringe-toed lizards (Luckenbach and Bury, 1983). A high incidence of *U. notata* that were missing tails, or dead, was observed on the heavily frequented off-road vehicle area at Algodones Dunes (Luckenbach and Bury, 1983). Further compounding the effects of human disruption of desert vegetation are the extraordinary time intervals estimated for recovery of plant species through secondary succession. Lovich and Bainbridge (1999) estimate that 50–300 yr may be required for recovery to predisturbance plant cover and biomass, and over 3000 yr for complete recovery of the desert ecosystem. Anthropogenic threats continue to severely impact populations of fringe-toed lizard and the threats must be addressed to ensure the perpetuation of these species. These factors should be taken into consideration when and if the ESA is used to provide protection for one or more DPSs of *U. scoparia*.

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Acknowledgements

L.E. Bell, L. Cunningham, K. Emmerich, I. Girard, S. Hillard, R. Hirsh, A. Leaché, M. Marolda and D. Turner assisted in collecting *U. scoparia* in the US. Collecting in Mexico was assisted by H. Gadsden-Esparza, H. López-Corrujedo, J.-L. Estrada-Rodríguez, U. Romero-Méndez, A. Orona-Espino and A. Herrera. S. Papadakos-Morafka assisted throughout the study. This project is a product of research contracts (#5278 and #5376) between the Directorate of Public Works of the US Army, the National Training Center (NTC) at Fort Irwin, and California State University Dominguez Hills (CSUDH) Foundation to DJM. We are particularly indebted to W. Quillman of the NTC. Genomic research was conducted under a subcontract from CSUDH Foundation and the Natural Sciences and Engineering Research Council of Canada Discovery Grant A3148 to RWM. All collecting used approved Animal Use Protocols, Death Valley National Park Service Scientific Research and Collecting Permit (DJM), and California Department of Fish and Game (CDFG) Permits (8001062-03 to DJM). Fieldwork in Mexico was conducted using permits from the Secretaría de Desarrollo Urbano y Ecología (SEDUE) to H. Gadsden-Esparza, and Federal Permit #DOO.02-2802 issued to RWM; tissues were imported into Canada on SEDUE export permit DOO 750-1268 issued to RWM. Collecting in Arizona used Permit #HK081491 (to D. Turner). We are particularly indebted to R. Jones and S. Parmenter of the CDFG for advice and suggestions. We also thank T. Egan and E. La Rue of the US Bureau of Land Management and K.H. Berry of the US Geological Survey for directing us to previously unsampled localities. K.H. Berry, J. Calzia, J.P. Galloway, N. Lancaster, T. Reeder, B.R. Riddle, J. Weigand and one anonymous reviewer provided valuable comments on the manuscript. A. Ngo assisted with analyses of the data. Fig. 1 was prepared by K. Keith and Fig. 2 by A. Lathrop.

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Response to Comment Letter B4

Center for Biological Diversity

Ileene Anderson, Senior Scientist/Public Lands Desert Director

September 20, 2021

- B4-1** This comment is introductory, stating that Center for Biological Diversity (CBD) is concerned the Arica Solar Project and Victory Pass Solar Project (Projects) are not fully implementing the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) Conservation Management Actions (CMAs) within the Riverside-East Development Focus Area. Refer to Responses B4-7 through B4-11, which explain in detail how specific portions of the thorough analysis provided in the EIR are consistent with the California Environmental Quality Act (CEQA), how the Projects are designed to be consistent with DRECP LUPA and related CMAs, and how additional measures to avoid and mitigate potentially significant impacts further reduce related effects to the extent feasible and generally to less than significant.
- B4-2** This comment uses proposed action alternative terminology from the Bureau of Land Management (BLM) separate Environmental Assessment (EA) for the Projects. It goes on to describe the Alternative B project from the BLM EA. The commenter's description of the Projects tracks the Project Description in Chapter 2 of the CDFW Draft EIR.
- B4-3** This comment summarizes information in the Draft EIR regarding Mojave fringe-toed lizard (*Uma scoparia*) (MFTL), a designated Wildlife Connectivity Corridor, and critical habitat for desert tortoise (*Gopherus agassizii*). The comment expresses general concern without further detail about the Projects' impacts to these resources. The commenter provides additional specific comments regarding these issues later in their comment letter. As to these more specific comments, please refer below to Responses B4-6 through B4-9, and see EIR Section 3.4, Biological Resources, for related substantive analysis.
- B4-4** This comment describes the commenter's legal opinion regarding project objectives and alternatives analysis requirements under CEQA. The comment also notes the Draft EIR identifies the Applicants' objectives for the Projects and CDFW's objectives as the CEQA lead agency. The comment includes a bulleted list of the CDFW objectives included in the Draft EIR at pages 1-3. The comment includes no specific discussion regarding the sufficiency of information in or the adequacy of the analysis in the Draft EIR. Nor does the comment raise significant environmental issues requiring further response.
- B4-5** This comment expresses the general opinion that siting the proposed Projects in the proposed location with related environmental effects "may run contrary to an effective climate change adaptation strategy" and "could undermine a meaningful climate change adaptation strategy" absent significant measures to protect the environment. The comment says, "the way to maintain healthy, vibrant ecosystems is not to fragment them and reduce their biodiversity." The comment includes no specific discussion regarding the sufficiency of information in or the adequacy of the analysis in the Draft EIR. Instead, the comment introduces themes potentially relevant to subsequent comments. Please refer to Responses B4-6 through B4-9 for specific responses regarding these general concerns.
- B4-6** This comment expresses "grave concern" about the Projects' impacts to MFTL and their habitat as detailed specifically in the commenter's separate letter regarding the BLM EA.

The comment also refers to CDFW Mitigation Measure (MM) BIO-6 and says the Draft EIR “needs to identify the contemplated ‘additional minimization measures’ that could reduce the need for mitigation in order to adequately disclose to decisionmakers the ultimate impact to the species.” But for mention of Draft EIR BIO MM-6, this comment and the portion of the commenter’s separate letter to BLM regarding MFTL do not specifically address substantive analysis in the Draft EIR of the Projects’ effects on MFTL, including CDFW’s determination that the Projects’ substantial and potentially substantial adverse effects to the species and its habitat would be reduced to below a level of significance under CEQA with related mitigation measures identified in the Draft EIR.

In terms of the commenter’s letter regarding the BLM EA, it expresses concern regarding the acreage of impacts to the sand transport corridor (as mapped as “Active Eolian Sources Qyf”) by the Projects, impacts to the sand transport corridor in the region from other existing and permitted projects in the BLM Development Focus Area, the potential for indirect effects to MFTL, the adequacy of a 1:1 mitigation ratio for offsetting the effects to MFTL habitat, and the availability/feasibility of finding suitable off-site mitigation land for the sand transport and MFTL habitat impacts.

As shown on EIR Figure 3.7-1 (EA Figure 3.9-2), the predominant sand transport corridor is located north and northeast of the Projects, as indicated by the graphical arrow within the area of active eolian deposits. As described in the biological resources impact analysis for MFTL (EIR Section 3.4, Biological Resources [in Section 3.4.3, Impact Analysis]), “Construction of the solar arrays would minimize the impacts to windblown sand in the northern and eastern parts of the Arica Project Site [and] to comply with CMAs LUPA-BIO-DUNE2 through LUPA-BIO-DUNE4, the Project was designed to follow the sand transport corridor and was pulled back from the active dunes.” The BLM EA notes that the Projects would impact “zones with mixed eolian and fluvial (water-driven) geomorphology, approximately 55 acres within areas with low to moderate sand migration and 330 acres within areas with fluvial dominate hydrology.” The EIR impact analysis for geology and soils (EIR Section 3.7.3) concludes that the Projects would have a less-than-significant impact on sand transport stating that the “northeastern and eastern portions of the Arica Project site include geomorphic zones with low to moderate sand transport importance” and that “the design of the solar facility . . . follows the northwest to southeast trend of the mapped sand migration zone . . . , which eliminated development of the northernmost region and northeastern-most region.” The EIR analysis further noted that “very little of the Project sites is within eolian deposits, as most of the sand source with the Arica Project site is fluvial dominated” and the avoidance of washes by the project design would “allow sheet flow and continue transporting water and sand sources.”

The cumulative impact analysis for geology and soils (EIR Section 3.7.3) acknowledges that the cumulative projects “have or could impact the Palen Lake sand migration zone through directly or indirectly impeding sand transport, reducing the amount of sand that flows through the Chuckwalla Valley, or reducing the amount of water needed for sand migration.” As it pertains to the Projects, the cumulative impact analysis concludes that “because the Arica Project site design would avoid the sand migration zone near the north and northeastern Project boundaries, and because the design of both Projects would avoid development in some of the washes and allow continued sheet flow to transport water and

sand sources that feed the sand migration zone, the Projects' contribution to cumulative impacts would not be cumulatively considerable or significant."

With regard to potential indirect effects of the Projects on MFTL, EIR Section 3.4.3 acknowledges that impacts to the species could occur during site preparation and construction, during operations and maintenance, and during decommissioning. Avoidance and minimization measures including MM BIO-1 (Biological Monitoring), MM BIO-2 (Worker Environmental Awareness Training), MM BIO-3 (Minimization of Vegetation and Habitat Impacts), MM BIO-4 (Integrated Weed Management Plan), MM BIO-5 (Vegetation Resources Management Plan), and MM BIO-8 (Wildlife Protection) would reduce these potential effects to less-than-significant levels.

As to the adequacy and feasibility of the compensatory mitigation for the loss of MFTL habitat, EIR MM BIO-6 requires the compensation for special-status wildlife species impacts to "provide habitat value that is biologically superior or equivalent to the habitat impacted." Refer to Response B4-7 for additional rationale for determining that this mitigation is adequate and feasible for offsetting the potential impacts of the Projects on MFTL to less than significant.

Regarding MM BIO-6, the commenter says the EIR should identify the "additional minimization measures" that could reduce the need for MFTL mitigation. Additional minimization measures are mentioned in the broader context of CDFW's exercise of regulatory authority under the California Fish and Game Code and as a CEQA lead agency at the time of any final agency action. MM BIO-6 states, in the relevant part, that CDFW "will calculate and identify the final amount of required compensatory mitigation as provided by this measure, and may consider additional minimization measures that may reduce the final amount of required compensatory mitigation, prior to issuance of the Permits and final approval of the Projects under CEQA." Minimization measures that may be relevant at the time of final action may include design changes to the Projects in response to public input to CDFW and BLM's environmental analyses that would further avoid or reduce the already less-than-significant effects to the species of concern in the comment. The Applicants, in turn, beyond design change, may propose additional measures to minimize effects. Similar measures might also be identified and imposed as a condition of project approval through the respective exercise of CDFW and/or BLM's substantive regulatory authority, all informed by meaningful public review of the proposed Projects. Importantly, any further minimization measures identified prior to project approval may reduce the acres of required compensatory mitigation identified in the Draft EIR, but only commensurate with a proportional reduction in the area of impact and consistent with all mitigation measures identified in the Draft EIR, including MM BIO-6.

B4-7 This comment raises concern whether "biologically superior or equivalent to the impacted habitat" is available and feasible for permanent conservation to offset direct and indirect impacts to the sand transport corridor and the MFTL habitat. This comment also references Gottscho 2010, and Murphy et al. 2006, both of which are attached to the comment letter. The comment, in short, expresses concern that habitat mitigation identified in the Draft EIR may not be available. The comment letter also includes a general statement regarding the sand transport corridor that originates in Joshua Tree National Park and runs through the existing and proposed sites of various solar energy projects to the agricultural area in the

Palo Verde Valley. The commenter says, “Securing conservation of this sand transport corridor and preventing impact to its natural aeolian function is crucial to keep this genetically distinct clade of [MFTL] . . . extant in their habitat.”

The Applicants are working with a company that specializes in acquiring and managing compensation lands. The Applicants are aware of the requirements for the compensation (mitigation) land, including that the mitigation land be biologically superior or equivalent considering the habitat requirements for MFTL relative to soils, vegetation, topography, human-related disturbance, invasive species, wildlife movement opportunity, proximity to other protected lands, management feasibility, and other habitat values. Also importantly, active research (e.g., Murphy et al. 2006) on MFTL clades (group of a species descended from a common ancestor) in the Mojave Desert indicates MFTL individuals at the Projects are part of the most southerly population segment of the species. This information, in combination, will inform CDFW’s required consideration and any determination regarding whether the mitigation land identified by the Applicants is biologically superior or equivalent mitigation. CDFW recognizes mitigation land that will meet these criteria may be limited, but not impossible for the Applicant to secure. Thus, securing mitigation land that meets the qualifying criteria may be difficult for the Applicants but does not affect the underlying obligation should CDFW approve the proposed Projects as described in the Draft EIR.

As to the balance of the comment, CDFW agrees preserving the sand transport corridor that originates in Joshua Tree National Park and runs to the agricultural area in the Palo Verde Valley, and the corridor’s natural eolian function, is important in order to conserve MFTL extant to the area. Besides the general comment regarding the importance of preserving the sand transport corridor and its eolian function, the comment does not mention or discuss related analysis in the Draft EIR. No further response is necessary as a result, but please refer to EIR Sections 3.4.3 and 3.7.3, as well as the response to B4-6.

B4-8

This comment expresses concern about impacts to the BLM-designated multiple species connectivity corridor (within the Development Focus Area that includes the proposed Projects) and refers CDFW, without specific comment regarding the Draft EIR, to the commenter’s separate letter to BLM. The comment is also critical of MM BIO-4, which the commenter says “seems to give up on maintaining” the corridor because the Projects include development on 55 acres within the corridor that the comment contends will further fragment wildlife connectivity. In addition, the comment says the Draft EIR fails to ensure functionality and that CDFW should require changes to the Projects to remove any related infrastructure in the corridor. The comment concludes saying a “supplemental DEIR may be needed to fully analyze that less-impactful alternative.”

But for mention of Draft EIR Impact BIO-4, this comment and the portion of the commenter’s letter to BLM regarding wildlife connectivity do not mention or specifically address relevant substantive analysis in the Draft EIR, including the basis for CDFW’s determination that the Projects’ substantial or potentially substantial adverse effects to wildlife movement and connectivity, including with development on the 55 acres, would be reduced to below a level of significance with identified mitigation measures. For example, the impact analysis acknowledges that a small portion (55 acres) of the 3,480-acre multiple species linkage area would be impacted by the Victory Pass Project, but the analysis also points out that the Project footprint mostly avoids desert dry wash woodland vegetation

(with a 200-foot setback), leaving these high priority corridors to function for wildlife movement. The analysis also describes that the Project design avoids the undercrossings of Interstate 10, which would allow wildlife to continue to access and use the wildlife corridor for north–south movement. In addition, as illustrated in EIR Figure 3.4-6, only a portion of the multiple species linkage occurs within the Projects’ footprints, allowing the portions of the linkage outside the Projects to continue to provide regional wildlife movement function. Based on this analysis and with implementation of the Applicant Proposed Measures and mitigation measures, it was determined that issuance of the Permits would result in less-than-significant impacts on wildlife movement. The comment does not specifically point to any of this relevant analysis in the Draft EIR.

As to the general substance of the comment, CDFW disagrees that the Projects as proposed, with mitigation identified in the EIR, “give up on maintaining the corridor” and that substantially more severe fragmentation of wildlife movement would occur than was analyzed in the EIR. The proposed Projects are located in the Cadiz Valley and Chocolate Mountains ecoregion subarea in a region that generally connects the Palen McCoy Mountains to Little Picacho and Chocolate Mountains. The DRECP Final Environmental Impact Statement (p. IV.7-164) identifies 6,000 acres for solar development and 7,000 acres for transmission out of the approximately 707,000 acres of public land within this subarea. EIR Section 3.4.3 (under subheading Impact BIO-3, subheading Biological Resources) describes that only 55 acres of this 3,480-acre linkage are impacted and describes how the connectivity is maintained. Furthermore, as noted in the EIR, only a portion of the identified DRECP multi-species linkage occurs within the Projects. Therefore, in addition to maintaining wildlife movement function in the portion of the linkage that occurs within the Projects by avoiding the desert dry wash woodland corridor, the remainder of the multi-species linkage outside the Projects will continue to provide wildlife movement function.

Finally, the comment says CDFW should require the Applicants to redesign the Projects to remove infrastructure from the linkage in order to retain function of the linkage. As explained above, however, removing the 55 acres of proposed development in the corridor is not necessary to retain function and the Projects as proposed will not have a significant impact on wildlife connectivity for purposes of CEQA. The alternative identified by the comment is not necessary to avoid or further reduce a significant effect. Likewise, because related effects are less than significant, as explained, no supplemental EIR is required to analyze the redesign alternative identified by the commenter.

B4-9 This comment refers to a figure in an appendix in a BLM EA for another proposed solar project (Oberon) and then mentions the under-construction Athos and proposed Easley renewable energy projects in the western Chuckwalla Valley. The comment says the figure is troubling because it “reveals the potential extent of cumulative impacts from other existing and proposed renewable energy projects” in the western Valley. The comment expresses concern that the Athos Project will have a significant effect on the northern part of the linkage on the west and that the proposed Easley Project has the potential to block the northern part of the linkage and thereby eliminate its functionality. According to the comment, CDFW must consider an alternative that maintains the wildlife linkage and analyze all the known direct, indirect, and cumulative impacts to the multi-species wildlife linkage.

In terms of CDFW's substantive analysis of all impacts to the multi-species wildlife linkage, the Draft EIR includes a robust analysis in a sufficient level of detail to facilitate meaningful review and informed public decision making. (Please refer to Section 3.4.3, under the Environmental Impacts and Cumulative Impacts subheadings.) In contrast, the comment does not mention or otherwise specifically address this analysis. Instead, the comment focuses on the effect of the Athos Project and potential effect of the proposed Easley Project on the linkage, and then contends CDFW must consider an alternative in its analysis of the Projects that maintains the multi-species wildlife linkage in the western Chuckwalla Valley generally.

The Draft EIR reflects CDFW good-faith lead agency effort to find out and disclose all that it reasonably can about the substantial and potentially substantial adverse effects to the environment that may be caused by the Projects. For purposes of cumulative impacts to the multi-species wildlife linkage, that includes the combined effect created as a result of the Projects together with other projects causing related effects, including Oberon, Athos, and Easley, among others. The focus of the required cumulative impact analysis in the Draft EIR, however, is whether the Projects' incremental effect is cumulatively considerable, an analysis that need not discuss impacts that do not result in part from the Projects. Here, CDFW appreciates the commenter's concern that the Athos project will, and Easley project has the potential to, adversely affect the linkage. Those effects are, of course, relevant to and have been considered as part of CDFW's lead agency public disclosure and analysis of whether the Projects' related incremental effect to the linkage is cumulatively considerable. The comment, however, includes no specific mention of the cumulative impact analysis in the Draft EIR.

The comment focuses, instead, on the prospect that the Athos Project and the proposed Easley Project, if approved, could eliminate the functionality of the linkage. The comment contends that CDFW must include an alternative in its CEQA lead agency analysis that ensures the functionality of the linkage under the DRECP. The alternative called for by the comment appears to rest on concern about the effects of two other projects and, in so doing, goes well beyond CDFW's charge as the CEQA lead agency for the Projects. The alternative suggested in the comment is also infeasible under CEQA. The Projects are located entirely on federal land that BLM is charged to administer consistent with the DRECP. The comment, in this respect, may be better directed to BLM.

Finally, the Draft EIR did not include the Easley Project in the list method analysis of cumulative impacts because the application for the Easley Project was not on file with BLM when CDFW issued the Notice of Preparation for the Projects' Draft EIR (October 5, 2020). Thus, the Easley Project was not part of the reasonably foreseeable cumulative environmental baseline for the Projects at that time. The Easley Project will be added to the Final EIR in the interest of full disclosure, but that does not change the determination in the Draft EIR that the Projects' incremental contribution in the broader landscape is not cumulatively considerable. Also refer to Response B4-4.

B4-10 This comment contends the Draft EIR did not consider a reasonable range of alternatives because none of the alternatives meaningfully address how the portion of the solar array located in the BLM-designated multi-species linkage will adversely affect the functionality of that corridor. According to the comment, the EIR needs to analyze an alternative that

eliminates any impact to the corridor by removing the 55 acres of panels from within the corridor boundary. The comment concludes without elaboration, saying CDFW needs to consider an alternative that will avoid impacts to MFTL and the sand habitat.

CDFW disagrees the Draft EIR fails under the rule of reason to consider a reasonable range of potentially feasible alternatives to facilitate meaningful review and informed public decision making regarding the significant effects that may occur with the proposed Projects. The “reasonable range” obligation in an EIR is tied in the bigger picture to the purpose that alternatives serve under CEQA to avoid or substantially lessen any project-related significant effects. The comment makes no specific claim that the range of alternatives considered in the Draft EIR falls short of this broader benchmark. Instead, the comment contends the reasonable range of alternatives considered in the EIR is inadequate because no alternative specifically eliminates the 55-acre portion of the solar array in the BLM DRECP wildlife corridor. Yet, in so doing, the comment does not mention or address the analysis and finding in the Draft EIR that the Projects’ related effects are less-than-significant for purposes of CEQA. The comment, in this respect, contends the alleged failure to include an alternative to further reduce a less-than-significant impact precluded meaningful review, but does not explain why the broader analysis of the same issue in the Draft EIR generally falls short of that mark. As to the commenter’s other comments regarding the wildlife corridor, please refer to Responses B4-8 and B4-9.

As to the conclusory sentence in the comment that CDFW needs to consider an alternative that will avoid impacts to MFTL and sand habitat, an EIR need not consider every conceivable alternative to the proposed project, especially where related effects are less than significant. Please also refer to Responses B4-6 and B4-7.

B4-11

This comment contends the cumulative impacts analysis in the Draft EIR is inadequate and that the analysis should be revised and recirculated. The comment says the existing analysis is not meaningful under CEQA because “because the identification of [MFTL] on- and off-site is incomplete,” the Easley Project was not considered, and the Easley and Athos Projects will eliminate the functionality of the multi-species linkage mentioned in earlier comments. The comment says these issues must be considered for CDFW to determine whether the proposed Projects comply with the DRECP, including maintenance of wildlife linkages. Finally, the comment says a supplemental or revised Draft EIR is needed to analyze all the biological resource impacts caused by the proposed Projects in the larger Chuckwalla Valley area.

This comment repeats earlier comments regarding cumulative impacts, the Athos Project, MFTL, and the continued functionality of the multi-species linkage. As with the earlier comments, this comment does not mention any of the relevant analysis in the Draft EIR or explain beyond general contention why that analysis is specifically inadequate. To the extent this comment repeats earlier comments, please refer to Responses B4-6, B4-7, B4-8, and B4-9.

In terms of cumulative impacts, the Draft EIR includes a robust analysis of whether the Projects’ incremental change to the existing environment is cumulatively considerable in a sufficient level of detail to facilitate meaningful public review; refer to Section 3.4.3, under the Cumulative Impact subheading. The analysis also specifically considers MFTL and the continued viability of the wildlife corridor, including against the backdrop of Draft EIR analysis and the determination that the Projects would result in a less-than-significant effect

with identified mitigation (refer to Section 3.4.3, under the Environmental Impacts and Cumulative Impacts subheadings). For example, the cumulative analysis evaluated the effects of the cumulative projects on sand habitats and regional sand transport as it relates to cumulative effects to MFTL and the effects of the cumulative projects on regional wildlife movement and the multiple-species habitat linkage. This analysis fully considers the issues flagged by the comment; it is not incomplete despite the comment's general statement to the contrary.

Finally, this comment concludes with a sentence contending a supplemental or revised Draft EIR is needed to fully analyze the Projects' impacts. Beyond the broad contention, however, the comment does not mention or include any explanation regarding why a supplemental or a revised and recirculated EIR is required under CEQA Guidelines Sections 15163 or 15088.5. A supplemental EIR is not required, for example, because CDFW has yet to certify any EIR for the Projects as a lead agency. (Refer to California Public Resources Code, Section 21166; 14 CCR 15162–15164.) Likewise, nothing in the commenter's letter regarding the Draft EIR implicates new significant or substantially more severe environmental effects, or establishes that the Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. CDFW disagrees based on the substance of the commenter's letter that a supplemental EIR or a revised and recirculated EIR are necessary.

B4-12 The commenter suggests that the Draft EIR be recirculated before making a decision regarding the Projects or reject the proposed Projects. As described in Responses B4-7 through B4-11, the EIR thoroughly analyzed impacts under CEQA and demonstrates that the Projects have met all of the requirements for development and are designed to be consistent with the DRECP CMAs. Therefore, recirculation of a revised draft EIR is not required. Refer to Response B4-11 regarding recirculation.

B4-13 This is the commenter's letter submitted separately to BLM regarding the Proposed Draft Environmental Assessment for the Arica and Victory Pass Solar Projects (EA). Refer to the introductory comments in Response to Comment Letter B-1, which describe that BLM, as the lead agency under the National Environmental Policy Act, will separately consider these comments provided on the EA. We also acknowledge receipt of the following items as attachments to the EA comment letter:

- "Boundary Processes Between a Desert Sand Dune Community and an Encroaching Suburban Landscape" (Barrows et al. 2006). Paper referenced in this and other comments.
- Figure showing the proposed Victory Pass Project Overlap with BLM-designated Wildlife Connectivity Corridor. Refer to Responses B4-7 and B4-8 for discussion regarding the multi-species linkage.
- Figure showing the Wildlife Habitat Management Area from the Northern and Eastern Colorado Desert Coordinated Management Plan.

This letter includes comments on the BLM EA that do not raise any specific issues regarding the Draft EIR analysis and, therefore, no further response is needed. Refer to Responses B4-1 through B4-12 regarding comments on the Draft EIR.

- B4-14** Attachment of the thesis “Coalescent Analysis of Fifteen Nuclear Loci Reveals Pleistocene Speciation and Low Genetic Diversity in The Mojave Fringe-Toed Lizard, *Uma scoparia*” (Gottscho 2010). Refer to Responses B4-7 for additional information on MFTL.
- B4-15** Attachment of the article “Conservation genetics, evolution and distinct population segments of the Mojave fringe-toed lizard, *Uma scoparia*” (Murphy et al. 2006). Refer to Responses B4-6 for additional information on MFTL.

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Comment Letter B5

Clearway Energy Group
100 California St, Suite 400
San Francisco, CA 94111



September 20, 2021

Magdalena Rodriguez
California Department of Fish and Wildlife
3602 Inland Empire Blvd, Suite C-220
Ontario, CA 91764
Magdalena.Rodriguez@wildlife.ca.gov

RE: Comments to the Arica and Victory Pass Solar Projects - Draft Environmental
Impact Report

Dear Ms. Rodriguez:

Arica Solar, LLC and Victory Pass I, LLC, wholly owned subsidiaries of Clearway Energy Group LLC, appreciates the opportunity to submit comments on the Draft Environmental Impact Report (DEIR) published on August 6, 2021, by the California Department of Fish and Wildlife (CDFW) for the Arica and Victory Pass solar projects. Clearway is one of the largest renewable energy companies in the United States, with close to 5 GW of projects in operation across 25 states. If approved, the Arica and Victory Pass solar projects will be the first to be approved under the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) and will play an important role in efforts to revitalize our energy infrastructure and increase the nation's energy independence. The Projects will help meet federal and state renewable energy mandates and goals by generating roughly 465 MW of clean, renewable energy. It has been conscientiously sited in the Riverside East DRECP Development Focus Area (DFA) for solar energy, immediately adjacent to existing transmission and access road infrastructure, and has been designed to be fully compliant with the DRECP LUPA, avoiding impacts to the area's most sensitive resources. To reduce effects the Projects have been designed to share infrastructure as recommended in the DRECP LUPA.

We appreciate the time and effort, and thorough analysis that CDFW undertook in its preparation of the DEIR. As described in the following paragraphs, our key area of comment pertains to the Potentially Feasible Mitigation Measures in Section 3.17 Tribal Cultural Resources of the DEIR.

clearwayenergygroup.com

As CDFW is aware, we have been conducting voluntary outreach to Tribal groups with ancestral history in this area. Our intent with this outreach was to establish an independent, long-lasting relationship with the Tribes outside of the CEQA process, and to foster an open dialogue on the issues important to both the Tribes and to Clearway. Over the course of the last several months, we have completed numerous meetings with Tribal groups, including Soboba Band of Luiseño Indians, Agua Caliente Band of Cahuilla Indians, Colorado River Indian Tribes, Fort Yuma Quechan Tribe, and Twenty-Nine Palms Band of Mission Indians of California. The Applicant Proposed Measures that we proposed reflect the discussions that we have had and our intent to coordinate with and be inclusive with all groups. We remain committed to maintaining an open dialogue and working with those Tribes with interest in the Projects, particularly as we progress towards construction and operations.

B5-1

I. CDFW Cannot Adopt or Impose the Potentially Feasible Mitigation Measures Identified for Impacts to Tribal Cultural Resources

CEQA requires that lead agencies “provide that measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures.” (Pub. Resources Code (“PRC”), § 21081.6, subd. (b); Cal. Code. Regs., tit. 14 (“Guidelines”), §15126.4, subd. (a)(2).) Before adopting or certifying an environmental analysis, the agency must “find, based on substantial evidence, that the mitigation measures are ‘required in, or incorporated into, the project’; or that the measures are the responsibility of another agency and have been, or can and should be, adopted by the other agency; or that mitigation is infeasible and overriding considerations outweigh the significant environmental effects.” (*Fed. of Hillside & Canyon Ass’ns v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1260, citing PRC, § 21081; Guidelines, § 15091, subd. (b).) Where, as here, the lead agency lacks general police powers and broad permitting authority to enforce the full suite of appropriate mitigation measures, it may be necessary to incorporate mitigation into the proposed project. (*Sierra Club v. Cal. Coastal Com.* (2005) 35 Cal.4th 839, 859 [recognizing that “Section 21004 provides that ‘[i]n mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than’ CEQA”]; *Kenneth Mebane Ranches v. Superior Court* (1992) 10 Cal.App.4th 276, 291 [holding that mitigation beyond the scope of the participating agencies’ authority is legally infeasible].) The lead agency can presume that the project will be implemented consistent with its design and as submitted by the applicant for evaluation. (*Env’tl Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, 1035.)

B5-2

In this instance, due to the limited scope of CDFW's permitting authority, the applicant incorporated measures (applicant proposed measures, or APMs) into the project itself so that CDFW could consider these aspects of the Project as a whole. To ensure that this approach did not influence the level of detail in the analysis, however, CDFW appropriately evaluated the impact of these measures specifically and as part of the project.

Yet with regards to impacts to tribal cultural resources (TCRs), CDFW included additional "Potentially Feasible Mitigation Measures" that "would further avoid or substantially lessen the Projects' significant and unavoidable impacts to TCRs, but not to below a level of significance." Given that some of the PFMMs specifically carve out a role for the Soboba Band of Luiseño Indians, it appears that these measures are likely the result of consultation with the tribe under AB 52. The applicant recognizes that the Soboba in particular have been actively engaged in the permitting process and appreciates their contributions to information about the impact of the Projects on resources important to the Tribe. The applicant further expects that the Soboba will be centrally involved in the implementation of the APMs. But the APMs represent the limits of feasible measures that are still consistent with the basic project objectives. The PFMMs largely duplicate the APMs and are inappropriate because there is no substantial evidence, or any evidence, in the record that they would further mitigate the Projects' impacts. They are further infeasible because neither CDFW nor any other agency relying on the EIR has an enforcement mechanism to require these measures. For the following reasons, CDFW cannot adopt the PFMMs in addition to or in lieu of the APMs.

B5-2
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a. PFMM TCR-1 Does Not Improve Upon APM TCR-1

The PFMMs and APMs are set forth side by side for comparison below. As can be seen, both sets of measures include a Cultural Sensitivity Training requirement. PFMM TCR-1, however, inexplicably requires that the training be provided by the Soboba Band of Luiseño Indians, notwithstanding the interests of other Tribes in the area of the Projects. Clearway presumes that the intent of this measure was to re-affirm Soboba's commitment to the Projects; however, there is no evidence in the EIR demonstrating why the Soboba should be chosen over all others to direct the training. This measure is furthermore incomplete and vague regarding how the training will be delivered to a vast network of specialized construction crews throughout the development of the Projects. APM TCR-1 provides an opportunity for all interested Tribes to have input on the Cultural Sensitivity Training and provides the necessary flexibility in delivery modes to

B5-3

ensure that the training can be administered dynamically to hundreds of construction workers with staggered schedules. APM TCR-1 is more inclusive of other Tribes and takes into account the practical realities of construction schedules (i.e., it is feasible). PFMM TCR-1 is more narrow and thus cannot be said to further avoid or substantially lessen the Projects' impacts. As it lacks an enforcement mechanism and is not supported by substantial evidence, CDFW cannot adopt it.

Comparison of PFMMs and APMs for TCRs:

<p>PFMM TCR-1: Cultural Sensitivity Training. As part of APM TCR-1, prior to the commencement of ground-disturbing activities, the Applicants shall require all project personnel to attend a cultural sensitivity training provided by the Soboba Band of Luiseño Indians. The training will be included as part of the worker environmental awareness program training, and include a brief description of Tribal history and cultural affiliation of the Project's location and the surrounding area; what resources could potentially be identified during earthmoving activities; the protocols that apply in the event unanticipated cultural resources or wildlife species of Tribal cultural patrimony are identified, including who to contact and appropriate avoidance measures until the impacts can be properly evaluated; and any other appropriate protocols. This is a mandatory training and all project personnel must attend prior to beginning work on site.</p>	<p>APM TCR-1 Cultural Sensitivity Training. Prior to the commencement of grading or other activities that disturb previously undisturbed earth or soils, interested tribes shall be invited to prepare the content of a cultural sensitivity training module that will be included in the worker environmental awareness program (WEAP) training for all construction personnel and project biologists. Training will include a brief description of tribal history and cultural affiliation of the Projects' location and the surrounding area and the resources that could potentially be identified during earthmoving activities. The first presentation of this training may be videotaped or otherwise recorded for use in future trainings. If interested tribes are unable to prepare a cultural sensitivity training module suitable for inclusion in the WEAP training prior to the commencement of earthmoving activities, the Applicants are not obligated to delay such activities.</p>
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B5-3
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b. PFMM TCR-2's Requirements to Have Multiple Tribal Monitors for the Same Activity and Monitors from Specific Tribes Are not Supported by Substantial Evidence, and Determinations Regarding TCRs Cannot be Delegated to Monitors



B5-4

APM TCR-2 and PFMM TCR-2 both address Tribal Monitoring. PFMM TCR-2, like PFMM TCR-1, again carves out a special preference for members of the Soboba Band of Luiseño Indians without any substantial evidence demonstrating that monitoring done by the Soboba would be superior to monitoring done by any other Tribe in the area. Contrasting with the limits of feasible, sufficient mitigation adopted for at least a dozen other projects along the I-10 corridor, PFMM TCR-2 additionally proposes that there be multiple tribal monitors, indeed – a limitless number, that would have the authority to stop construction whenever a tribal monitor identifies any materials of potential value to the tribe (an undefined concept).

It is important to remember that CEQA is concerned not just with any impacts; the law applies only to significant effects on the environment. As far as tribal cultural resources are concerned, this means “effect[s] that may cause a substantial adverse change in the significance of a tribal cultural resource.” (PRC, § 21084.2, emphasis added.) “Tribal cultural resources” furthermore do not include anything and everything of with cultural value to a California Native American tribe. TCRs must be significant themselves, meaning they must be included or eligible for a state or local register of historical resources or “determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1.” (PRC, § 21074, emphasis added.) Subdivision (c) of Section 5024.1 provides that “A resource may be listed as an historical resource in the California Register if it meets any of the following National Register of Historic Places criteria: (1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage. (2) Is associated with the lives of persons important in our past. (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values. (4) Has yielded, or may be likely to yield, information important in prehistory or history.” CDFW cannot delegate its discretionary authority to tribal cultural monitors to make judgment calls as to what qualifies as a TCR and delay construction based on those opinions. As such, PFMM TCR-2 is legally infeasible, in addition to being unenforceable.

APM TCR-2, in contrast, is grounded in the authority granted by CEQA to designate TCRs. Consistent with other utility scale solar projects, and monitoring practices in general, it calls for one tribal monitor (a “Tribal Observer”), in addition to an archeological monitor and biological monitor, to observe certain construction activities.



B5-4
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There is no substantial evidence in the EIR supporting the requirement in PFMM TCR-2 to have multiple tribal monitors observing the same activities.

It is well established that “an agency need not ‘adopt every nickel and dime mitigation scheme brought to its attention or proposed in the project EIR,’ but it must incorporate ‘feasible mitigation measures’ ‘when such measures would “substantially lessen” a significant environmental effect.’” (*San Franciscans for Reasonable Growth v. City and County of San Francisco* (1989) 209 Cal.App.3d 1502, 1519, see also *Concerned Citizens of South Central L.A. v. Los Angeles Unified School Dist.* (1994) 24 Cal.App.4th 826, 841 (noting an EIR is not required to analyze “every imaginable alternative or mitigation measure; its concern is with feasible means of reducing environmental effects”).) Imposing mitigation that does not accomplish these goals simply for the sake of imposing more mitigation is inconsistent with the requirements that mitigation be roughly proportional to the impacts of the project. (*Dolan v. City of Tigard* (1994) 512 U.S. 374.) PFMM TCR-2 is inconsistent with these legal precepts. For this reason, and because CDFW lacks the necessary authority to impose it, the measure should not be adopted in CDFW’s CEQA findings.

Comparison of PFMMs and APMs for TCRs:

<p>PFMM TCR-2: Tribal Monitoring. The Applicants, as part of APM TCR-2, shall enter into a contract with and retain monitors designated by the Soboba Band of Luiseño Indians. The Applicants shall also enter into contracts with other tribes that request to be part of the tribal monitoring efforts. These monitors shall be known as the Tribal Monitors for the Project and shall be on site to identify tribal cultural resources (TCRs), which include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe. The Tribal Monitors, in conjunction with the Archeological Monitor(s), shall have the authority to temporarily divert, redirect, or halt the ground disturbing activities to allow</p>	<p>APM TCR-2: Tribal Monitoring. Prior to any grading or other activities that disturb previously undisturbed earth or soils within the Project area, the Applicants shall hire as many tribal monitors as may reasonably be necessary to facilitate observation of all such activities by one monitor (i.e., if one tribal monitor designated by tribal representatives from tribes that request monitors to observe all such ground disturbing activities cannot observe all of the activities on a given day because they will happen simultaneously in different areas of the Project, then more than one monitor will be needed for that day). These monitors shall be known as the Tribal Observers for this Project, and shall have the authority to identify resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial</p>
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B5-4
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the Tribal Monitors to identify, evaluate, and potentially recover the TCR(s).	evidence, has determined are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 (i.e., which CDFW has identified as tribal cultural resources).
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Cont.

c. PFMM TCR-3 Is Incompatible with Basic Project Objectives and Not Supported by Substantial Evidence

APM TCR-3 and PFMM TCR-3 both propose the development of a Long-Term Preservation Plan (“LTPP”) to minimize impacts to TCRs during and after construction. As drafted, however, PFMM TCR-3 appears to apply to and require avoidance of individual isolates (including isolated flakes) and currently unidentified TCRs within the development footprint. This is not a feasible measure for the Project. The applicant cannot plan for and build a utility scale solar project on public lands prioritized for such development that avoids every flake and sherd across the landscape. It further remains unproven that these materials are associated with important individuals or events or are likely to be the source of important information, as the draft EIR provides no explanation or evidence to support these conclusions. The Projects have been designed to avoid and protect proven significant TCRs and APM TCR-3 provides for ongoing monitoring of these resources to ensure the Projects do not have indirect impacts on the same (including, but not limited to, impacts from vandalism, however speculative those potential impacts may be). As the more expansive avoidance measures suggested by PFMM TCR-3 are incompatible with construction of the Projects and not supported by substantial evidence demonstrating the significance of all of the resources that might require avoidance, they must not be imposed on the Project.

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Comparison of PFMMs and APMs for TCRs:

<p>PFMM TCR-3: Long-Term Preservation Plan. The Long-Term Preservation Plan (LTPP) prepared by the Applicants as part of APM TCR-3 shall include measures to avoid and minimize impacts to contributing elements of tribal cultural resources (TCRs) during construction, include requirements for</p>	<p>APM TCR-3: Long-Term Preservation Plan. Consultation under Assembly Bill 52 is ongoing and may yet reveal new resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, may determine are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 and recommendations</p>
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<p>post-construction monitoring/condition assessment procedures to address unanticipated effects to TCRs, and require coordination with consulting tribes for any Project design modifications that may affect a TCR. The LTPP, with respect to any TCR that is vandalized or damaged, shall include required consultation with the Tribal Monitors regarding appropriate management of the TCR. An objective of the LTPP shall be to maximize retention of TCRs in proximity to important tribal locations, which may include preservation in place and minimizing impacts to plant and wildlife resources and from excess light.</p>	<p>of the tribes. Such tribal cultural resources (TCRs) so identified, even if not located within the footprint of the Projects, may nevertheless be impacted indirectly as a result of Project operations and decommissioning. To address these potential <u>indirect</u> impacts, the Applicants will develop a Long-Term Preservation Plan (LTPP) in consultation with consulting tribes, prior to the Projects' commencement of operations. The LTPP will require post-construction monitoring/condition assessments for the CDFW-identified TCRs on a quarterly basis for the first year of Project operations and will specify procedures for addressing unanticipated effects to TCRs covered under the LTPP. The LTPP shall identify the responsible entity for care, maintenance, and guidance in the event the TCR resources are vandalized or damaged by the Applicants or their agents or employees. The TLPP shall include reporting to the Bureau of Land Management.</p>
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d. PFMM TCR-4 Undermines the Effectiveness of APM CUL-3

In addition to the above referenced measures, the EIR identifies PFMM TCR-4, which would require a Tribal Cultural Resources Management Plan. This measure largely duplicates the provisions of APM CUL-3, which requires a Cultural Resources Monitoring and Treatment Plan. One significant difference, however, is that PFMM TCR-4 would require a BLM-issued Archaeological Resources Protection Act ("ARPA") permit for data recovery affecting TCRs. Finding such resources subject to ARPA will prevent BLM from allowing reburial of TCRs in accordance with the preferences of multiple Tribes that have repeatedly asked for such measures. Specifically, as explained in APM CUL-3, BLM can only allow reburial if it determines in accordance with Title 43, Code of Federal Regulations Section 7.33, that certain materials are not or are no longer of archaeological interest and therefore not considered archaeological resources. Adopting PFMM TCR-4 would actually undermine the objectives of several Tribes to at least preserve the general



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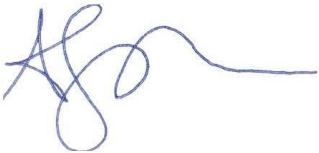
cultural footprint of Native Americans by allowing for the reburial of items in the same general area where they were found. As such, PFMM TCR-4 would impair the effectiveness of APM CUL-3 and thus cannot be said, or even presumed, to further avoid or substantially lessen the Projects' impacts to TCRs. Clearway currently does not have the location of the potential TCRs but once the locations are known, Clearway will review them during final engineering to consider whether any could be avoided during construction and left in place.

As demonstrated by its adoption of detailed measures that will give Native American Tribes a substantial role in the oversight of the construction and impacts of the Projects, the applicant is committed to reducing the Projects' impacts on TCRs. CDFW documented additional measures that purportedly would do more to further reduce these impacts, but as demonstrated by the discussion here, these measures would prevent the realization of basic project objectives and undermine the effectiveness of the measures already included as part of the Projects. The PFMMs are in fact infeasible and outside of CDFW's authority to enforce. They accordingly should not be included in the final EIR.

In addition to the issues with the PFMMs for TCR, Clearway has recommendations for specific edits to the text in the DEIR that are documented in the attached Table. These changes clarify or correct errors in the draft document.

We thank you for your consideration and evaluation of our comments and look forward to working with CDFW to complete the permitting process and commencing construction in 2022 on these important solar and battery storage projects. If you have any questions or require additional information, please contact me at (415) 627-4656 or by email at Aarty.Joshi@clearwayenergy.com.

Sincerely,



Aarty Joshi
Director of Environmental Permitting
Clearway Energy Group LLC

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Att. to
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Revisions to Draft EIR

Table 1 Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	
ES.1 Introduction	Arica Solar LLC and Victory Pass I LLC...	The Applicants are Arica Solar, LLC and Victory Pass I, LLC as shown on the ITP Applications. Please revise throughout to include the commas.	B5-7a
Table ES-1	Potentially introduces a new SU impact due to conflict with <i>and</i> existing land use plan	Typo, and should be “an”	B5-7b
ES.6 Areas of Controversy	Ongoing consultation with California Native American tribes under “Assembly Bill 52” and CDFW’s Tribal Communication and Consultation Policy	This was not raised during scoping. It may be considered an “Area of Controversy” by the CDFW, but it should be noted that this is not the language used in the scoping comments. Section 1.3.4 does include the summary of the scoping comments as provided by the commenters which does not include this language.	B5-7c
ES.7 and Table ES-2 page ES-71		The section speaks to how APMs and MMs will be implemented but is silent on PFMMs, so their status is unclear. Includes all the PFMMs in Table ES-2 starting page ES-71, which implies that they are of the same status as all other MMs. Please differentiate these measures and clarify that the feasibility of the PFMMs is still under review.	B5-7d
Footnote 2, page ES-27	The Applicant’s <u>approach to mitigating for special-status wildlife species included compensatory mitigation</u>	Footnote includes underlines. Please explain their purpose or delete.	B5-7e
Section 1.1, first sentence	Arica Solar LLC and Victory Pass I LLC (Applicants), wholly	Please correct Applicants’ name	B5-7f
Section 2.1, first sentence	Arica Solar LLC and Victory Pass I LLC (Applicants), wholly	Please correct Applicants’ name	B5-7g

EIR Section/Page	Draft EIR Text	Requested Revision
Section 2.1, page 2-1	The information used in the project description was provided by the Applicants in the Plan of Development (POD) prepared for each Project (Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. report).	The PODs were published August 6, 2021. They are available for review on the BLM eplanning website. Please update the reference to them.
Section 2.2.2, page 2-3	up to two substations for Arica and one substation for Victory Pass	Please revise this to one substation for Arica and one substation for Victory Pass
Section 2.2.2, page 2-4	Battery storage: The battery storage component would have a footprint of up to 5 acres.	Please revise to state "The battery storage component would have a footprint of 8 acres, with 2 acres of impervious surface."
Section 2.2.3, page 2-5 (Erosion Control and Stormwater Drainage)	It would include best management practices (BMPs). The BMPs may include dewatering procedures, stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed.	It would include best management practices (BMPs). The BMPs would may include, <u>but not be limited to</u> , dewatering procedures, <u>retention basins, swales</u> , stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed.
Section 2.2.6, page 2-7	Water required for O&M may be provided by on-site wells, purchased and trucked in from off site and stored in storage tanks, or a combination of these sources. There is one existing water production well on site that may be used, and others may be developed.	Please strike "There is one existing water production well on site that may be used, and others may be developed." There are no existing water wells onsite. The existing water well is adjacent to the site.
Section 2.4.4, page 2-14	The POD for each Project includes a Vegetation Management Plan (refer to Appendix C.6 in each POD [Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. Report]).	The PODs and the Vegetation Management Plans were published August 6, 2021. They are available for review on the BLM eplanning website. Please update the reference to them.

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 2.5, page 2-14	A detailed Decommissioning and Reclamation Plan would be developed in a manner that both protects public health and safety and is environmentally acceptable (refer to Appendix L in each POD [Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. Report]).	The POD is not unpublished, please refer to the BLM eplanning website.
Section 2.6, page 2-22, Biological Resources APMs	APM BIO-14	APM text bolds “avoided to the extent feasible”. Recommend removing the bold.
Section 2.6, page 2-37, Noise APMs	APM N-2, ...At least 15 days prior to the start of ground disturbance, the Applicants shall notify all residents within 500 feet of Ragsdale Road and the access driveway, by mail or by other effective means, of the commencement of construction.	Because the EIR considers two alternative access routes that would not use Ragsdale Road, please revise the APM as follows: ...At least 15 days prior to the start of ground disturbance, the Applicants shall notify all residents within 500 feet of Ragsdale Road, <u>if selected as the approved access road</u> , and the access driveway, by mail or by other effective means, of the commencement of construction.
Table 3.1-2	Revisions to Table	Please note, Desert Quartzite is under construction The BLM has indicated that a new project, the <i>Easley Solar & Green Hydrogen Project</i> has filed an SF 299 form. Please see the end of the comment table for recommended language for use for this project.
Section 3.4.2, Jurisdictional Waters, Waters of the United States, page 3.4-8	The U.S. Army Corps of Engineers has determined that no jurisdictional waters of the United States were found within other projects in the same basin (Desert Sunlight, Desert Harvest, Palen, and Athos Solar Projects). Therefore, waters of the United States do not occur within the Project sites and regulations under the Clean Water Act are not applicable.	The U.S. Army Corps of Engineers has already determined there are no waters of the US. This documentation was provided to the CDFW with the LSAA. Please update to reflect the current status.

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 3.4.2, Special-Status Plants, Emory's crucifixion thorn, page 3.4-10.	<i>Victory Pass Solar Project.</i> Suitable habitat is present in wash areas, but it was not observed during surveys. Therefore, it is considered absent from this site.	It is correct that no Emory's crucifixion thorn was found during the Victory Pass surveys, see BRTR. However, as noted throughout the EIR, after the surveys were completed, the Projects' fencelines were revised to meet the DRECP CMAs. With the revision of the fenceline there is one Emory's crucifixion thorn on Victory Pass and one on Arica. This does not change the analysis; it just clarifies the locations of the plants.
Section 3.4.3, Applicant Proposed Measures	APM BIO-25, Bird and Bat Conservation Strategy	<p>Please revise the introductory paragraph of the APM as follows because the BBCS focuses on operations rather than construction.</p> <p>~~~</p> <p>The Applicants shall prepare and implement a BBCS to avoid or minimize take of migratory birds that may nest on the site or may be vulnerable to collision with Project components. The BBCS shall identify potential hazards to birds during construction and O&M phases of the Project and specify measures to recognize, minimize, or avoid those hazards. The BBCS shall articulate the Applicants' commitment to reduce risk to birds and bats. Over the course of construction and O&M, progress and challenges that are encountered may necessitate review or revision of the BBCS, on mutual agreement among the Applicants and the lead agencies and resource agencies. The initial goals of the BBCS are as follows: ...</p> <p>~~~</p> <p>Additionally, please delete the two bullets that reference describing bird and bat monitoring during construction. Effects to all avian species during construction are address through the Nesting Bird Management Plan and the general monitoring of the sites which includes incidental birds and bat monitoring.</p> <p>Describe the incidental bird and bat monitoring and reporting that will take place during construction</p> <p>Description of the incidental bird and bat mortality and injury monitoring and reporting that will take place during construction</p>

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 3.4.3, Impact BIO-1, page 3,4-28	No special-status plants were observed on the Victory Pass Solar Project site. No windblown sand habitat is present. Suitable habitat is present for Emory's crucifixion thorn, but this is a conspicuous shrub and would have been detected by the field team if present. No impacts to special-status plants are expected.	It is correct that no Emory's crucifixion thorn was found on during the Victory Pass surveys, see BRTR. However, as noted throughout the EIR, after the surveys were completed, the Projects' fencelines were revised to meet the DRECP CMAs. With the revision of the fenceline there is one Emory's crucifixion thorn on Victory Pass and one on Arica. This does not change the analysis; it just clarifies the locations of the plants.
Section 3.4.3, page 3.4-30, Critical habitat	The Victory Pass Project site partially overlaps the Chuckwalla Desert Tortoise CHU (Figure 3.4-5). Approximately 118 acres of critical habitat within the Victory Pass Project site would be impacted. The gen-tie ROW is located on 26.0 acres of designated critical habitat but would impact fewer acres during construction.	Please add: The Victory Pass Project site partially overlaps the <u>1.2-million-acre</u> Chuckwalla Desert Tortoise CHU (Figure 3.4-5). Approximately 118 acres of critical habitat within the Victory Pass Project site would be impacted. The gen-tie ROW is located on 26.0 acres of designated critical habitat but would impact fewer acres during construction.
Section 3.4.3, Page 3.4-32	Based on monitoring data compiled for and by BLM for the Palen Solar Power Project, bird mortality for the Projects, in combination, is expected to range from a low of 0.4 birds per acre per year up to 1.7 birds per acre per year (BLM 2018).	We looked up the data from the Palen EIS. We'd like to note that this data was not collected for and by the Palen Solar Project, it was collected "from other solar projects in the California desert" and used in the Palen EIS (see Palen EIS page 4.21-18). It also does not provide a reference for this data other than "BLM Project Files". Given that this data is being used to quantify potential bird effects, we think it would be valuable if the CDFW provide information on which solar projects in the California desert were used to compile this data and what were the survey methods used.

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 3.4.3, Page 3.4-35	Direct impacts to nesting Gila woodpeckers or elf owls would be avoided through APM BIO-25 and implementation of a Nesting Bird Plan and BBCS that will include nesting bird surveys and monitoring and avoidance of nesting season.	Please revise to avoid confusion that all nesting bird season would be avoided: Direct impacts to nesting Gila woodpeckers or elf owls would be avoided through APM BIO-25 and implementation of a Nesting Bird Plan and BBCS that will include nesting bird surveys and monitoring and avoidance of <u>any active nests during nesting season by an appropriate buffer.</u>
Section 3.4.3, Page 3.4-38	The Projects do not include diversion channels, detention basins, or other substantial alterations to the existing surface hydrology. Water and sediment would be conveyed downslope across the site by sheet flow or within channels after site preparation and construction.	The Projects may use detention basins or swales but would not change the existing surface hydrology. Please revise the language to state: “The Projects do not include diversion channels, detention basins, or other substantial alterations to the existing surface hydrology. <u>Detention basins, berms or swales may be used as required to prevent increases to downstream flooding.</u> Water and sediment would be conveyed downslope across the site by sheet flow or within channels after site preparation and construction.”
Section 3.11.1, page 3.11-2		Please delete footnote 2 from the paragraph regarding the DRECP as this Draft EIS for the Desert Plan Amendment is no longer being pursued by the BLM. See Notice of Termination by the BLM (Federal Register Vol. 86, No. 47, March 12, 2021; [(LLCA930000.L1340000.DS0000.212X) MO#4500151907]).
Section 3.17.2, Landscape as Tribal Cultural Resource; page 3.17-4	CDFW, through ongoing discussion with consulting tribes, has determined in its independent lead agency judgment that the Cahuilla Traditional Use Area Tribal Cultural Landscape is a TCR, as provided by PRC Section 21074(b). This Environmental Impact Report (EIR) refers to this cultural landscape TCR hereafter as a Tribal Cultural Landscape (TCL).	AB 52 stipulates that substantial evidence needs to be provided to the lead agency to support a determination that a cultural resource is a TCR. It is unclear to us if this is the case here. The CDFW should indicate why has this specific area been identified as a TCR. Was evidence provided by the tribe(s) that support the conclusion that the entire area is a TCR/TCL? Note: information provided by the tribe during consultation is confidential. However, the CDFW needs to confirm that substantial evidence was provided which justifies the finding

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 3.17.2, page 3.17-5	Tables 3.17-1 and 3.17-2 list the sites that CDFW individually considers TCRs under PRC Section 21074(a)(1)(A), or those under PRC Section 21074(a)(2) that qualify for listing in the CRHR under Criterion 1 (events important to Native American prehistory and history) and Criterion 4 (the importance of tribal values conveyed by archaeological materials), ...	As stipulated in Section 3.5.1 of this DEIR, Criterion 1 of the CRHR is "is associated with events that have made a significant contribution to the broad patterns of our history" and Criterion 4 of the CRHR is "has yielded, or may be likely to yield, information important to prehistory or history". Please revise the definition of Criterion 1 and Criterion 4.
Section 3.17.2, page 3.17-5	These sites and isolated artifacts convey tribal ties to the landscape represented in the Cahuilla Traditional Use TCL, as individual TCRs given their association with the TCL, and their connection to nearby TCRs, such as the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D (CA-RIV-053T) to the south, and the Palen Dunes/Palen Lake TCP to the east; each of these is discussed at length in the indirect effects assessments completed for the Arica Solar and Victory Pass Solar Projects (Knabb et al. 2020a, 2020b).	This sentence seems to state that the TCRs in the Direct Effects Area of Potential Effect includes site that are important because they show tribal ties to the landscape, and also as individual TCRs because of their association with the landscape. Essentially, the analysis is saying the TCRs explain how there is a landscape and yet, are important because there is a landscape. It is a circular argument which does not show either the TCLs importance without the individual TCRs or the individual TCRs importance without the TCL. Please review and revise.

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 3.17-2, page 3.17-7	Table 3.17-1 and 3.17-2	<p>Please make sure that there is substantial evidence for each individual resource that it would meet Criterion 1 and 4 as revised above, if they are going to be regarded as individual TCRs.</p> <p>Specifically, the CDFW would need to have substantial evidence for each individual resource in in Table 3.17-1 and Table 3.17-2 to show that it has made a significant contribution to the broad patterns of our history and has yielded or may be likely to yield information important to prehistory or history. Please confirm this is the case and explain how, understanding that CDFW cannot share information provided by the Tribes confidentially.</p>
Section 3.17.3, page 3.17-17	APM TRC-3 ... To address these potential impacts, the Applicants will develop a Long-Term Preservation Plan (LTPP) in consultation with consulting tribes, prior to the Projects' commencement of operations.	<p>Please revise the APM to state:</p> <p>To address these potential <u>indirect</u> impacts, the Applicants will develop a Long-Term Preservation Plan (LTPP) in consultation with consulting tribes, prior to the Projects' commencement of operations.</p>
Section 3.17.3, Impact TCR-1, page 3.17-19.	The Projects may result in auditory and visual impacts, reducing visibility of the desert.	Please explain how auditory impacts would reduce visibility of the desert or revise.
Section 3.17.3, Impact TCR-1, page 3.17-20	Flash floods, the effects of which would likely be magnified due to soil erosion caused by the proposed Projects, could cause disturbance of surface or subsurface cultural resources located downslope of the APE.	Please explain how flash floods would be exacerbated by the Projects. This is not addressed in either the biological resources or soils or waters section but is postulated in the Tribal Cultural Resources section with no supporting evidence. Please delete the sentence.

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EIR Section/Page	Draft EIR Text	Requested Revision
Section 3.17.3, Impact TCR-1, page 3.17-20	Indirect effects studies were completed for the Arica and Victory Pass Solar Projects, and it was found that indirect effects from construction of the Projects would not have a significant indirect impact on cultural resources because they would continue to convey their significant values (Knabb et al. 2020a, 2020b).	<p>The Indirect Effects Report did not “find” the conclusion identified here. The Report “recommended” that indirect effects from construction of the Projects would not have a significant indirect impact on cultural resources because they would continue to convey their significant values.</p> <p>The distinction is important because it is the BLM who will issue the findings, not the Indirect Effects Report.</p>
Section 3.17.3, Impact TCR-1, page 3.17-20	However, these Applicant-prepared studies did not contain information from CDFW’s tribal consultation process and, accordingly, did not analyze impacts to the TCL or individual TCRs in light of that information.	<p>Please revise this to read,</p> <p>However, these Applicant BLM-prepared studies did not contain information from CDFW’s tribal consultation process because they were prepared by the BLM under the federal regulations and guidance, and, accordingly, The reports did not analyze impacts to the TCL or individual TCRs in light of that information.</p> <p>The Applicant did not prepare any of the cultural technical reports. The cultural technical reports are prepared by the BLM or a BLM consultant directly for the BLM and are not shared with the Applicant.</p>

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Recommended Revisions to Cumulative Analysis

As noted in Table 1, Clearway recommends including the Easley Project in the Final EIR as follows.

ID	Project Name	Location	Ownership	Status	Acres	Project Description
J	Easley Solar & Green Hydrogen Project	Northeast of Desert Center	IP Land Holdings, LLC	Entering review by BLM. SF-299 filed (CACA 57822)	9,825	The project on BLM land adjacent and north-northeast of the Arica site would generate and store up to 650 MW of solar PV energy. The project would include a green hydrogen electrolyzer to convert water into hydrogen gas and oxygen. The application area is for 9,825 acres but the developer anticipates 7,500 acres are available for development.

Clearway reviewed the cumulative analysis for all of the resources in the Draft EIR to see whether they were still valid and applicable. Based on this review, the conclusions of the cumulative analysis remain accurate but we recommend making the following, or similar, revisions to the Draft EIR.

Aesthetics:

Section 3.2.4 page 3.2-24. Please add the Easley Project to the list of Probably Future Projects and please revise the text to state that there are 5 probably future projects.

Please add the project to the third full paragraph on page 3.2-25 regarding projects visible from the JTNP.

Please change the number of projects to 15 on the fourth full paragraph on page 3.2-25.

Biological Resources:

Section 3.4.4, page 3.4-43, MFTL. Please add the Easley Project to the list of projects that could impact MFTL habitat.

Page 3.4-46, Wildlife Movement. Please add the Easley Project to the list of projects within portions of the multispecies linkage area identified in the DRECP. Please note that the Easley Project would also be permitted under the DRECP so would need to abide by CMAs regarding

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avoidance of desert dry wash woodland and ensuring the linkage area retains its function as a wildlife corridor.

Geology and Soils

Section 3.7.3, page 3.7-23, Second paragraph under Cumulative Impacts. Please add Easley Project to the list of projects that could impact the Palen Lake sand migration zone and please note that it has not gone through environmental review but would be reviewed under the DRECP so would need to meet the CMAs regarding the sand transport corridor (LUPA-BIO-DUNE-1, LUPA-BIO-DUNE-2, LUPA-BIO-DUNE-3, and LUPA-BIO-DUNE-4) which require that the projects ensure the continued sediment transport and maintaining the quality and function of the sand transport corridor.

Hazards and Hazardous Materials

Section 3.9.3, page 3.9-21, First paragraph under Cumulative Impacts. Please add Easley Project to the list of projects that would all be within 1 mile of the boundary of the Project sites.

Hydrology and Water Quality

Section 3.10.3, page 3.10-24, First paragraph under Cumulative Impacts. Please add Easley Project to the list of projects for the hydrologic unit.

The Water Supply Assessment for the Arica and Victory Pass Projects was completed prior to the Easley Project application was submitted to the BLM. Given estimated the construction date for the Projects and the application status for the Easley project, construction of the Projects would not overlap with construction of the Easley Project, which is when solar PV projects use the vast majority of the water. The analysis in the EIR remains valid.

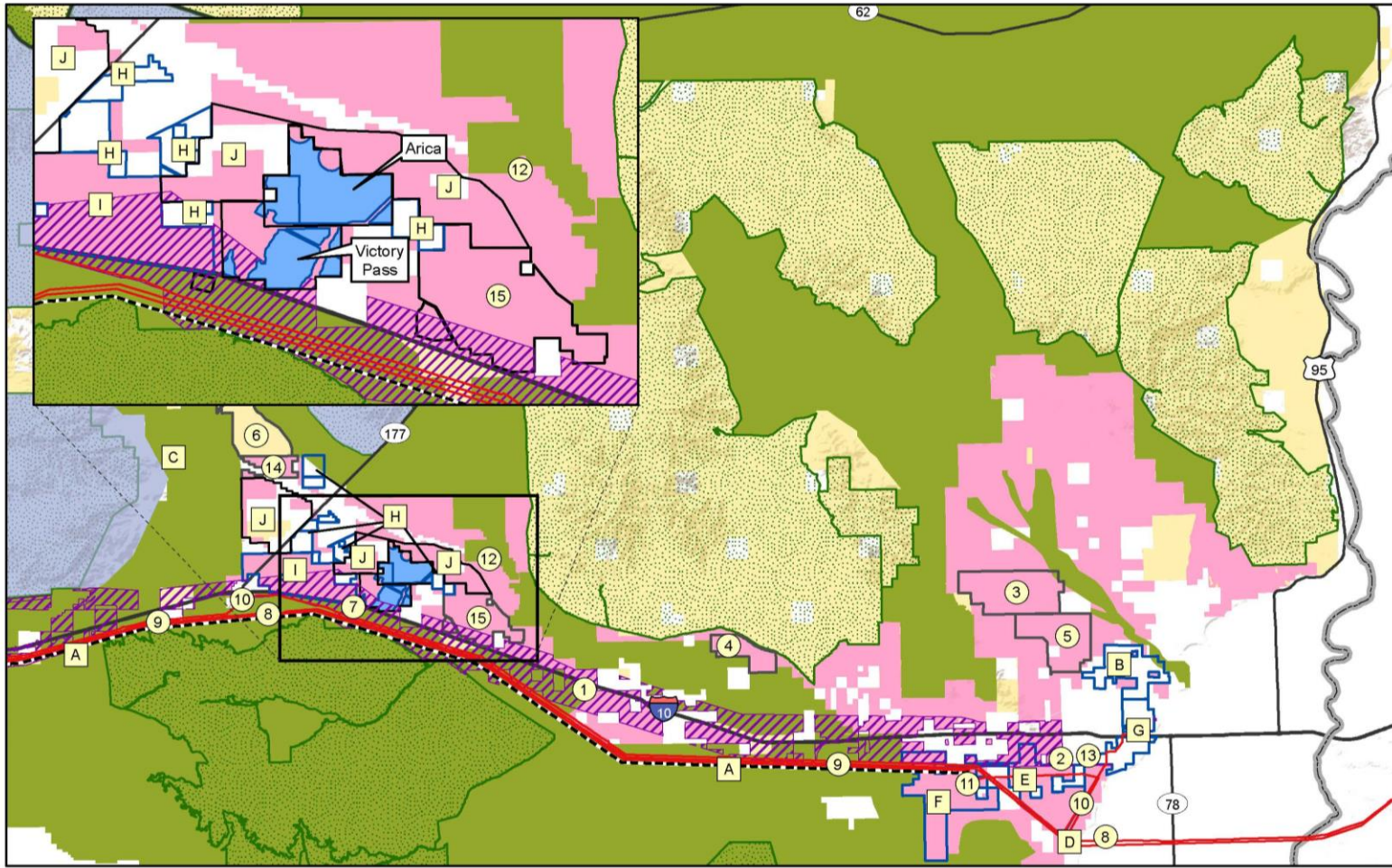
Recreation

Section 3.15.3, page 3.15-10, first full paragraph. Please add the Easley Project to the list of projects that could require route closure. While the site plans are not available at this time, the Easley Project appears to overlap portions of route DC 378 and DC506 and could potentially require closure of these routes. The Easley Project would also overlap DC511 but given the existing use of this route by SCE for maintenance of the existing 115 kV transmission line, it is reasonable to assume that the route DC511 would not be closed.



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Arica and Victory Pass Solar Projects



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Sources: Aspen, 2021; Clearway, 2020; IP, 2020/2019; EDF Renewables, 2018/2013; NextEra, 2011; San Bernardino County, 2020/2018; CPUC, 2019; BLM, 2020; Esri, 2020

Existing Projects*
②

Foreseeable Projects*
A

BLM Right-of-Way Grant Application
Proposed Solar Project Facilities (Project Fencelines)
Section 368 Energy Corridors
Bureau of Land Management Land

Joshua Tree National Park
Wilderness
BLM Conservation (ACEC and NLCS)
DRECP Development Focus

*Refer to tables 3.1-1 and 3.1-2 for information on Existing and Foreseeable Projects.



Figure 3.1-1
Cumulative Projects

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Response to Comment Letter B5

Clearway Energy Group

Aarty Joshi, Director of Environmental Permitting

September 20, 2021

B5-1 The California Department of Fish and Wildlife (CDFW) acknowledges that the commenter has been conducting voluntary outreach over a period of time to tribal groups with ancestral history in the area of the Arica Solar Project and Victory Pass Solar Project (Projects), and that the Applicant Proposed Measures (APMs) in the Draft Environmental Impact Report (EIR) reflect the Applicant's conversations with these Tribes. CDFW notes that the Applicant's Tribal outreach efforts, while conducted in good faith and viewed as important by CDFW, are separate from and not a part of the formal government-to-government consultation required by the California Environmental Quality Act (CEQA) between CDFW and the tribes. In CDFW's experience, the government-level consultation that it initiates with tribes can differ in substance compared to separate dialogue that project proponents may have with tribes. The comment does not raise an issue related to the adequacy of any specific section or analysis in the Draft EIR; therefore, no further response is required.

B5-2 This comment provides legal opinion regarding California Public Resources Code, Section 21004, CEQA Guidelines Section 15040, and other related law. The comment does not concern the adequacy of the Draft EIR or the sufficiency of the analysis to facilitate a meaningful, informed public decision under CEQA. No further response to the legal portion of the comment is required because it does not highlight a significant environmental issue per se.

The Draft EIR identifies potentially feasible mitigation measures (PFMMs) that may further reduce significant impacts to tribal cultural resources (TCRs) beyond the Clearway APMs, consistent with the informational purposes emphasized in CEQA Guidelines Section 15121. The PFMMs included in the Draft EIR specifically reflect CDFW's ongoing consultation with California Native American tribes, as required by CEQA. CDFW understands that Clearway is engaged in similar, but separate consultation with California Native American tribes with traditional and cultural connections to the geographic area that includes the Project sites. In addition, the Bureau of Land Management (BLM) is engaged in a separate and independent effort under federal law. The PFMMs included in the Draft EIR may help inform these ongoing consultation efforts and, if feasible, may further reduce the Projects' impacts to TCRs.

CDFW disagrees with the comment that the PFMMs are inappropriate because there is no evidence in CDFW's record that the measures would further mitigate the Projects' impacts. Substantial evidence supporting the determination that the PFMMs, if feasible and implemented, would further reduce impacts to TCRs, is based on, among other things, the expert opinion of California Native American tribes traditionally and culturally affiliated with the geographic area. California Native American tribes have expertise by law concerning their TCRs, the significance of related impacts, and ways to avoid or substantially lessen any such effects (refer to, e.g., California Public Resources Code, Sections 21080.3.1[a] and 21080.3.2). Substantial evidence to this end may include, as recognized by the State Clearinghouse at the Governor's Office of Planning and Research, tribal elder testimony, oral history, tribal government archival information, testimony of a qualified archaeologist certified by the relevant tribe, testimony of an expert certified by the tribal government, official tribal government declarations or resolutions, formal statements from a certified

Tribal Historic Preservation Officer, or historical/anthropological records. CDFW's independent lead agency determination that the PFMMs, if ultimately feasible and implemented by Clearway, would reduce the Projects' significant or potentially significant impacts on TCRs is supported by such evidence in the record, consistent with CDFW's obligation to preserve the confidentiality of information provided by consulting California Native American tribes.

B5-3 The comment includes similar comments as provided in B5-2 (refer to Response B5-2).

CDFW disagrees that PFMM TCR-1 does not improve upon APM TCR-1. APM TCR-1 reflects Soboba's direct involvement in identifying TCRs in Projects' area as a California Native American tribe traditionally and culturally affiliated with the Projects' area. PFMM TCR-1 builds on APM TCR-1 by allowing Soboba to provide training on the kinds of TCRs identified, what can be expected of tribal monitors as they monitor TCRs, and the cultural sensitivities associated with impacting TCRs; all these issues are central to Soboba input during consultation and issues that Clearway is not able to convey on their own. The statement that the APM is more inclusive ignores Tribal perspective on TCRs given that there is no obligation in the APM for Clearway to include all Tribal input in the training, or to maintain the fidelity of information conveyed to Clearway by the Tribes. On the other hand, the comment that the PFMM is more narrow, and thus does not reduce potential impacts to TCRs, ignores Soboba's recognized expertise, including whether objects are TCRs as well as the tribal perspective regarding how to avoid, minimize, or address related adverse effects.

B5-4 This comment includes a number of legal arguments regarding CDFW's authority as the CEQA lead agency. As to these arguments, refer to Response B5-2. In addition, the comment includes legal argument regarding CDFW's authority pursuant to California Public Resources Code, Section 21074, and a claim that the potentially feasible prospect of having more than one tribal monitor, including from more than one California Native American tribe traditionally and culturally affiliated with the geographic area, may run afoul of constitutional principles concerning rough proportionality. These arguments do not raise a significant environmental issue for purposes of CEQA that requires a specific response.

The comment in substance appears to challenge the notion that a member of a particular California Native American tribe working as a tribal monitor has and could exercise in-the-field expertise concerning significant cultural resources valuable to that tribe, compared to a member from a different tribe with an eye to their valuable cultural resources. Similarly, the comment questions the need for and value from a CEQA mitigation perspective of having tribal monitors from different tribes traditionally and culturally affiliated with the geographic area. The comment mentions other projects along the Interstate 10 corridor and contends the potentially feasible prospect of having a tribal monitor from more than one California Native American tribe would not further reduce or avoid the Projects' significant impacts on TCRs. In contrast, it is both common sense and established law that California Native American tribes traditionally and culturally affiliated with the geographic area may have expertise concerning cultural resources uniquely valuable to that tribe (refer to California Public Resources Code, Section 21080.3.1[a]). CDFW encourages Clearway to consider the cultural resource expertise of tribal members from different tribes, as well as the potentially feasible prospect that those individuals working as tribal monitors during construction of the Projects may indeed help to further reduce the Projects' potentially significant effects on TCRs.

B5-5 CDFW acknowledges the concern expressed in this comment regarding the feasibility of PFMM TCR-3 and CDFW will consider the comment to inform any final decision regarding the Projects. PFMM TCR-3 requires development of a long-term management plan for those TCRs that have been avoided. The goal of PFMM TCR-3 is to ensure long-term protection of preserved TCRs that convey Tribal significance. Impacts to TCRs that have been avoided still require protection and monitoring during construction that may encroach on their perimeter, or during operation due to increased public access or awareness. CDFW disagrees with the comment that implementation of PFMM TCR-3 will necessarily cause construction delays.

Regarding substantial evidence for TCRs, the Draft EIR describes the information in general terms that supports CDFW's determination, consistent with its lead agency obligation under CEQA to honor and preserve the confidentiality of more detailed input provided by California Native American tribes during required consultation (refer to California Public Resources Code, Section 21082.3[c]). CDFW confirms substantial evidence has been provided. The information and evidence, for clarity purposes, relates to the archaeological manifestation of tribal values, comprised of archaeological isolates and sites, distributed across the Projects' area and broader region.

B5-6 This comment expresses concern that PFMM TCR-4 has the unintended consequence of undercutting BLM-allowed reburial of Native American artifacts. According to the comment, when BLM determines that isolated artifacts such as flaked stone debris, ceramic sherds, and other archaeological material are ineligible for National Register of Historic Places listing, BLM has consequently determined that those artifacts do not meet the criteria to be considered historic properties and thus are not subject to the Archaeological Resources Protection Act. These findings are then a basis for BLM to allow reburial of those items, which California Native American tribes prefer when avoidance and preservation in place is not feasible. CDFW recognizes and supports California Native American interest in reburial of culturally significant artifacts where feasible and appropriate. That PFMM TCR-4 may undercut that interest and potentially put at risk appropriate TCR treatment negotiated between Clearway, consulting tribes, and BLM is important information that will inform a final determination by CDFW regarding the feasibility of the measure.

B5-7 The commenter provided recommendations for edits to the Draft EIR text (refer to Table 1 Recommended Revisions to the Arica and Victory Pass Draft EIR). The suggested revisions have been bracketed in Table 1 as comments B5-7a through B5-7ii (refer to "Comment ID" column in Table 1). Where minor editorial comments were recommended, these edits were made to the Draft EIR text and no further response to comment is provided. Where further explanation is required, those are provided in the last column in Table 1. These revisions only clarify the EIR and do not disclose new or more severe significant effects on the environment that were not already identified and analyzed in the EIR.

B5-8 CDFW acknowledges this comment to further work with Clearway through the permitting process and as a conclusion to the comment letter. The comment does not raise an issue related to the adequacy of any specific section or analysis in the Draft EIR; therefore, no further response is required.

- B5-9** The commenter provided information that BLM recently received an application (SF 299) for a new project, the Easley Solar & Green Hydrogen Project (Easley Project; also refer to Comment B5-7q) and provided recommended revisions to the EIR. Where relevant, the EIR cumulative discussions were updated to include this reasonably foreseeable project, including revisions to Chapter 3 cumulative discussions, as well as Table 3.1-2 and Figure 3.1-1. These revisions only clarify the EIR and do not disclose new or more severe significant effects on the environment that were not already identified and analyzed in the EIR.

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
ES.1 Introduction	Arica Solar LLC and Victory Pass I LLC...	The Applicants are Arica Solar, LLC and Victory Pass I, LLC as shown on the ITP Applications. Please revise throughout to include the commas.	B5-7a	Revision made
Table ES-1	Potentially introduces a new SU impact due to conflict with <i>and</i> existing land use plan	Typo, and should be “an”	B5-7b	Revision made
ES.6 Areas of Controversy	Ongoing consultation with California Native American tribes under “Assembly Bill 52” and CDFW’s Tribal Communication and Consultation Policy	This was not raised during scoping. It may be considered an “Area of Controversy” by the CDFW, but it should be noted that this is not the language used in the scoping comments. Section 1.3.4 does include the summary of the scoping comments as provided by the commenters which does not include this language.	B5-7c	The sentence preceding the bulleted list indicates that the list is based on input received from agencies, members of the public, and “others.” It does not explicitly state it was from a scoping comment. Therefore, no revisions to the Final EIR are required.
ES.7 and Table ES-2 page ES-71		The section speaks to how APMs and MMs will be implemented but is silent on PFMMs, so their status is unclear. Includes all the PFMMs in Table ES-2 starting page ES-71, which implies that they are of the same status as all other MMs. Please differentiate these measures and clarify that the feasibility of the PFMMs is still under review.	B5-7d	Section ES.7 has been revised to describe PFMMs. No other edits are required in Table ES-2 as all the PFMMs have been incorporated into the Final EIR.
Footnote 2, page ES-27	The Applicant’s <u>approach to mitigating for special-status wildlife species included compensatory mitigation</u>	Footnote includes underlines. Please explain their purpose or delete.	B5-7e	The underlining was removed in the footnote. As this was a minor editorial revision to remove an extra underline, this edit is not reflected by “underlining” in the Final EIR.
Section 1.1, first sentence	Arica Solar LLC and Victory Pass I LLC (Applicants), wholly	Please correct Applicants’ name	B5-7f	Revision made
Section 2.1, first sentence	Arica Solar LLC and Victory Pass I LLC (Applicants), wholly	Please correct Applicants’ name	B5-7g	Revision made

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 2.1, page 2-1	The information used in the project description was provided by the Applicants in the Plan of Development (POD) prepared for each Project (Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. report).	The PODs were published August 6, 2021. They are available for review on the BLM eplanning website. Please update the reference to them.	B5-7h	Revision made
Section 2.2.2, page 2-3	up to two substations for Arica and one substation for Victory Pass	Please revise this to one substation for Arica and one substation for Victory Pass	B5-7i	Revision made
Section 2.2.2, page 2-4	Battery storage: The battery storage component would have a footprint of up to 5 acres.	Please revise to state "The battery storage component would have a footprint of 8 acres, with 2 acres of impervious surface."	B5-7j	Revision made. This clarification resulted in revisions to EIR Section 3.10, Hydrology and Water Quality (refer to Section 3.10.3 in the Final EIR).
Section 2.2.3, page 2-5 (Erosion Control and Stormwater Drainage)	It would include best management practices (BMPs). The BMPs may include dewatering procedures, stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed.	It would include best management practices (BMPs). The BMPs would may include, <u>but not be limited to</u> , dewatering procedures, <u>retention basins, swales</u> , stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed.	B5-7k	Revision made. This clarification resulted in revisions to EIR Section 3.10, Hydrology and Water Quality (refer to Section 3.10.3 in the Final EIR).
Section 2.2.6, page 2-7	Water required for O&M may be provided by on-site wells, purchased and trucked in from off site and stored in storage tanks, or a combination of these sources. There is one existing water production well on site that may be used, and others may be developed.	Please strike "There is one existing water production well on site that may be used, and others may be developed." There are no existing water wells onsite. The existing water well is adjacent to the site.	B5-7l	Revision made. This clarification resulted in revisions to EIR Section 3.10, Hydrology and Water Quality (refer to Section 3.10.3 in the Final EIR). In addition, APM HWQ-2a and APM HWQ-2b were revised in the EIR to reflect the on- and off-site wells (refer to Executive Summary, Section 2.6.7, and Section 3.10.3).

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 2.4.4, page 2-14	The POD for each Project includes a Vegetation Management Plan (refer to Appendix C.6 in each POD [Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. Report]).	The PODs and the Vegetation Management Plans were published August 6, 2021. They are available for review on the BLM eplanning website. Please update the reference to them.	B5-7m	Revision made
Section 2.5, page 2-14	A detailed Decommissioning and Reclamation Plan would be developed in a manner that both protects public health and safety and is environmentally acceptable (refer to Appendix L in each POD [Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. Report]).	The POD is not unpublished, please refer to the BLM eplanning website.	B5-7n	Revision made
Section 2.6, page 2-22, Biological Resources APMs	APM BIO-14	APM text bolds “avoided to the extent feasible”. Recommend removing the bold.	B5-7o	Revision made. As this was a minor editorial revision from bold to not bold, this edit is not underlined in the Final EIR.
Section 2.6, page 2-37, Noise APMs	APM N-2, ...At least 15 days prior to the start of ground disturbance, the Applicants shall notify all residents within 500 feet of Ragsdale Road and the access driveway, by mail or by other effective means, of the commencement of construction.	Because the EIR considers two alternative access routes that would not use Ragsdale Road, please revise the APM as follows: ...At least 15 days prior to the start of ground disturbance, the Applicants shall notify all residents within 500 feet of Ragsdale Road, <u>if selected as the approved access road</u> , and the access driveway, by mail or by other effective means, of the commencement of construction.	B5-7p	Revision made

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Table 3.1-2	Revisions to Table	<p>Please note, Desert Quartzite is under construction</p> <p>The BLM has indicated that a new project, the <i>Easley Solar & Green Hydrogen Project</i> has filed an SF 299 form. Please see the end of the comment table for recommended language for use for this project.</p>	B5-7q	<p>Following review of the status of Desert Quartzite project, it was determined this project is not yet under construction. No revision was made to the EIR.</p> <p>Refer to Response B5-9. The Easley project has been added as project “J” to Table 3.1-2 and Figure 3.1-1 in the EIR.</p>
Section 3.4.2, Jurisdictional Waters, Waters of the United States, page 3.4-8	<p>The U.S. Army Corps of Engineers has determined that no jurisdictional waters of the United States were found within other projects in the same basin (Desert Sunlight, Desert Harvest, Palen, and Athos Solar Projects). Therefore, waters of the United States do not occur within the Project sites and regulations under the Clean Water Act are not applicable.</p>	<p>The U.S. Army Corps of Engineers has already determined there are no waters of the US. This documentation was provided to the CDFW with the LSAA. Please update to reflect the current status.</p>	B5-7r	Revision made
Section 3.4.2, Special-Status Plants, Emory’s crucifixion thorn, page 3.4-10.	<p><i>Victory Pass Solar Project.</i> Suitable habitat is present in wash areas, but it was not observed during surveys. Therefore, it is considered absent from this site.</p>	<p>It is correct that no Emory’s crucifixion thorn was found during the Victory Pass surveys, see BRTR. However, as noted throughout the EIR, after the surveys were completed, the Projects’ fencelines were revised to meet the DRECP CMAs. With the revision of the fenceline there is one Emory’s crucifixion thorn on Victory Pass and one on Arica. This does not change the analysis; it just clarifies the locations of the plants.</p>	B5-7s	Revision made
Section 3.4.3, Applicant Proposed Measures	<p>APM BIO-25, Bird and Bat Conservation Strategy</p>	<p>Please revise the introductory paragraph of the APM as follows because the BBCS focuses on operations rather than construction.</p>	B5-7t	<p>The suggested edits to remove “construction” from the APM were not made. The Draft Bird and Bat Conservation Strategy provided as Appendix C.3 to the Plan of Development</p>

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
		<p>The Applicants shall prepare and implement a BBCS to avoid or minimize take of migratory birds that may nest on the site or may be vulnerable to collision with Project components. The BBCS shall identify potential hazards to birds during construction and O&M phases of the Project and specify measures to recognize, minimize, or avoid those hazards. The BBCS shall articulate the Applicants’ commitment to reduce risk to birds and bats. Over the course of construction and O&M, progress and challenges that are encountered may necessitate review or revision of the BBCS, on mutual agreement among the Applicants and the lead agencies and resource agencies. The initial goals of the BBCS are as follows: ...</p> <p>Additionally, please delete the two bullets that reference describing bird and bat monitoring during construction. Effects to all avian species during construction are address through the Nesting Bird Management Plan and the general monitoring of the sites which includes incidental birds and bat monitoring.</p> <p>Describe the incidental bird and bat monitoring and reporting that will take place during construction</p> <p>Description of the incidental bird and bat mortality and injury monitoring and reporting that will take place during construction</p>		<p>includes measures related to construction activities.</p> <p>However, the Final EIR does reflect the deletion of the second bullet shown in the “Requested Revision” column, as that was listed under the “Operation and Maintenance” portion of the APM and did not belong under that subheading. The first bullet will remain, with the addition of this text, <u>“if not described in the Nesting Bird Plan.”</u>, at the end of the bullet.</p>

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 3.4.3, Impact BIO-1, page 3,4-28	No special-status plants were observed on the Victory Pass Solar Project site. No windblown sand habitat is present. Suitable habitat is present for Emory’s crucifixion thorn, but this is a conspicuous shrub and would have been detected by the field team if present. No impacts to special-status plants are expected.	It is correct that no Emory’s crucifixion thorn was found on during the Victory Pass surveys, see BRTR. However, as noted throughout the EIR, after the surveys were completed, the Projects’ fencelines were revised to meet the DRECP CMAs. With the revision of the fenceline there is one Emory’s crucifixion thorn on Victory Pass and one on Arica. This does not change the analysis; it just clarifies the locations of the plants.	B5-7u	Revisions made
Section 3.4.3, page 3.4-30, Critical habitat	The Victory Pass Project site partially overlaps the Chuckwalla Desert Tortoise CHU (Figure 3.4-5). Approximately 118 acres of critical habitat within the Victory Pass Project site would be impacted. The gen-tie ROW is located on 26.0 acres of designated critical habitat but would impact fewer acres during construction.	Please add: The Victory Pass Project site partially overlaps the <u>1.2-million-acre</u> Chuckwalla Desert Tortoise CHU (Figure 3.4-5). Approximately 118 acres of critical habitat within the Victory Pass Project site would be impacted. The gen-tie ROW is located on 26.0 acres of designated critical habitat but would impact fewer acres during construction.	B5-7v	Revision made
Section 3.4.3, Page 3.4-32	Based on monitoring data compiled for and by BLM for the Palen Solar Power Project, bird mortality for the Projects, in combination, is expected to range from a low of 0.4 birds per acre per year up to 1.7 birds per acre per year (BLM 2018).	We looked up the data from the Palen EIS. We’d like to note that this data was not collected for and by the Palen Solar Project, it was collected “from other solar projects in the California desert” and used in the Palen EIS (see Palen EIS page 4.21-18). It also does not provide a reference for this data other than “BLM Project Files”. Given that this data is being used to quantify potential bird effects, we think it would be valuable if the CDFW provide information on	B5-7w	The EIR has been revised to reflect that the information is from “ <u>other solar projects in the California desert.</u> ”

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 3.4.3, Page 3.4-35	Direct impacts to nesting Gila woodpeckers or elf owls would be avoided through APM BIO-25 and implementation of a Nesting Bird Plan and BBCS that will include nesting bird surveys and monitoring and avoidance of nesting season.	<p>which solar projects in the California desert were used to compile this data and what were the survey methods used.</p> <p>Please revise to avoid confusion that all nesting bird season would be avoided:</p> <p>Direct impacts to nesting Gila woodpeckers or elf owls would be avoided through APM BIO-25 and implementation of a Nesting Bird Plan and BBCS that will include nesting bird surveys and monitoring and avoidance of <u>any active nests during nesting season by an appropriate buffer.</u></p>	B5-7x	Revision made
Section 3.4.3, Page 3.4-38	The Projects do not include diversion channels, detention basins, or other substantial alterations to the existing surface hydrology. Water and sediment would be conveyed downslope across the site by sheet flow or within channels after site preparation and construction.	<p>The Projects may use detention basins or swales but would not change the existing surface hydrology. Please revise the language to state:</p> <p>“The Projects do not include diversion channels, detention basins, or other substantial alterations to the existing surface hydrology. <u>Detention basins, berms or swales may be used as required to prevent increases to downstream flooding.</u> Water and sediment would be conveyed downslope across the site by sheet flow or within channels after site preparation and construction.”</p>	B5-7y	The deletion of detention basins was accepted. However, the addition of “ <u>Detention basins, berms or swales may be used as required to prevent increases to downstream flooding</u> ” was not made in the Final EIR. A sentence was added to the paragraph following where this revision was requested regarding how APMS and the use of best management practices, including retention basins and swales, would be incorporated to minimize potential impacts of altered flow and downstream erosion.
Section 3.11.1, page 3.11-2		Please delete footnote 2 from the paragraph regarding the DRECP as this Draft EIS for the Desert Plan Amendment is no longer being pursued by the BLM. See Notice of Termination by the BLM (Federal Register Vol. 86, No. 47, March 12, 2021; [(LLCA930000.L13400000.DS0000.212X) MO#4500151907]).	B5-7z	Revision made

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 3.17.2, Landscape as Tribal Cultural Resource; page 3.17-4	CDFW, through ongoing discussion with consulting tribes, has determined in its independent lead agency judgment that the Cahuilla Traditional Use Area Tribal Cultural Landscape is a TCR, as provided by PRC Section 21074(b). This Environmental Impact Report (EIR) refers to this cultural landscape TCR hereafter as a Tribal Cultural Landscape (TCL).	<p>AB 52 stipulates that substantial evidence needs to be provided to the lead agency to support a determination that a cultural resource is a TCR. It is unclear to us if this is the case here. The CDFW should indicate why has this specific area been identified as a TCR. Was evidence provided by the tribe(s) that support the conclusion that the entire area is a TCR/TCL?</p> <p>Note: information provided by the tribe during consultation is confidential. However, the CDFW needs to confirm that substantial evidence was provided which justifies the finding.</p>	B5-7aa	Refer to Responses B5-2 through B5-5.
Section 3.17.2, page 3.17-5	Tables 3.17-1 and 3.17-2 list the sites that CDFW individually considers TCRs under PRC Section 21074(a)(1)(A), or those under PRC Section 21074(a)(2) that qualify for listing in the CRHR under Criterion 1 (events important to Native American prehistory and history) and Criterion 4 (the importance of tribal values conveyed by archaeological materials), ...	As stipulated in Section 3.5.1 of this DEIR, Criterion 1 of the CRHR is "is associated with events that have made a significant contribution to the broad patterns of our history" and Criterion 4 of the CRHR is "has yielded, or may be likely to yield, information important to prehistory or history". Please revise the definition of Criterion 1 and Criterion 4.	B5-7bb	Text accurately captures significance criteria as they relate to defining TCRs as archaeological resources that are listed in or eligible for listing in the CRHR. No revisions to the EIR are needed.

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 3.17.2, page 3.17-5	These sites and isolated artifacts convey tribal ties to the landscape represented in the Cahuilla Traditional Use TCL, as individual TCRs given their association with the TCL, and their connection to nearby TCRs, such as the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D (CA-RIV-053T) to the south, and the Palen Dunes/Palen Lake TCP to the east; each of these is discussed at length in the indirect effects assessments completed for the Arica Solar and Victory Pass Solar Projects (Knabb et al. 2020a, 2020b).	This sentence seems to state that the TCRs in the Direct Effects Area of Potential Effect includes site that are important because they show tribal ties to the landscape, and also as individual TCRs because of their association with the landscape. Essentially, the analysis is saying the TCRs explain how there is a landscape and yet, are important because there is a landscape. It is a circular argument which does not show either the TCLs importance without the individual TCRs or the individual TCRs importance without the TCL. Please review and revise.	B5-7cc	This section discusses TCRs as individually significant because of the tribal values they convey. It is not circular to state that they convey values at the landscape level. There is no requirement to segregate out individual tribal value versus values conveyed at the landscape level. That is, the landscape is important to tribes, as are the individual components of the landscape. Therefore, no revisions to the EIR are needed.

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 3.17-2, page 3.17-7	Table 3.17-1 and 3.17-2	<p>Please make sure that there is substantial evidence for each individual resource that it would meet Criterion 1 and 4 as revised above, if they are going to be regarded as individual TCRs.</p> <p>Specifically, the CDFW would need to have substantial evidence for each individual resource in in Table 3.17-1 and Table 3.17-2 to show that it has made a significant contribution to the broad patterns of our history and has yielded or may be likely to yield information important to prehistory or history. Please confirm this is the case and explain how, understanding that CDFW cannot share information provided by the Tribes confidentially.</p>	B5-7dd	<p>CDFW confirms substantial evidence has been provided. The substantial evidence relates to the archaeological manifestation of tribal values, comprised of archaeological isolates and sites, distributed across the project area and broader region. Therefore, no revisions to the EIR are needed. Refer to Responses B5-2 through B5-5.</p>
Section 3.17.3, page 3.17-17	<p>APM TRC-3 ... To address these potential impacts, the Applicants will develop a Long-Term Preservation Plan (LTTP) in consultation with consulting tribes, prior to the Projects' commencement of operations.</p>	<p>Please revise the APM to state:</p> <p>To address these potential <u>indirect</u> impacts, the Applicants will develop a Long-Term Preservation Plan (LTTP) in consultation with consulting tribes, prior to the Projects' commencement of operations.</p>	B5-7ee	Revision made
Section 3.17.3, Impact TCR-1, page 3.17-19.	<p>The Projects may result in auditory and visual impacts, reducing visibility of the desert.</p>	<p>Please explain how auditory impacts would reduce visibility of the desert or revise.</p>	B5-7ff	<p>To clarify the sentence, the following revision was made in the EIR: "The Projects may result in auditory and visual impacts, <u>thus reducing the ambient character of the desert beyond what has already been impacted.</u> visibility of the desert."</p>

Table 1. Recommended Revisions to the Arica and Victory Pass Draft EIR

EIR Section/Page	Draft EIR Text	Requested Revision	Comment ID	Response
Section 3.17.3, Impact TCR-1, page 3.17-20	Flash floods, the effects of which would likely be magnified due to soil erosion caused by the proposed Projects, could cause disturbance of surface or subsurface cultural resources located downslope of the APE.	Please explain how flash floods would be exacerbated by the Projects. This is not addressed in either the biological resources or soils or waters section but is postulated in the Tribal Cultural Resources section with no supporting evidence. Please delete the sentence.	B5-7gg	Relevant text deleted
Section 3.17.3, Impact TCR-1, page 3.17-20	Indirect effects studies were completed for the Arica and Victory Pass Solar Projects, and it was found that indirect effects from construction of the Projects would not have a significant indirect impact on cultural resources because they would continue to convey their significant values (Knabb et al. 2020a, 2020b).	The Indirect Effects Report did not “find” the conclusion identified here. The Report “recommended” that indirect effects from construction of the Projects would not have a significant indirect impact on cultural resources because they would continue to convey their significant values. The distinction is important because it is the BLM who will issue the findings, not the Indirect Effects Report.	B5-7hh	Revision made in the EIR to state “ <u>recommended.</u> ”
Section 3.17.3, Impact TCR-1, page 3.17-20	However, these Applicant-prepared studies did not contain information from CDFW’s tribal consultation process and, accordingly, did not analyze impacts to the TCL or individual TCRs in light of that information.	Please revise this to read, However, these Applicant BLM-prepared studies did not contain information from CDFW’s tribal consultation process <u>because they were prepared by the BLM under the federal regulations and guidance.</u> and, accordingly, The reports did not analyze impacts to the TCL or individual TCRs in light of that information. The Applicant did not prepare any of the cultural technical reports. The cultural technical reports are prepared by the BLM or a BLM consultant directly for the BLM and are not shared with the Applicant.	B5-7ii	Revision made

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Comment Letter C1

August 25, 2021

California Department of Fish and Wildlife
Inland Desert region
3602 Inland Empire Boulevard
Suite C-220
Ontario, California
USA 91764



Attention: Magdalena Rodriguez, Project Manager

Ms. Rodriguez,

Enclosed/ attached please find my comments on the proposed utility scale dense solar 'farms'.

Please forward it to Bureau of Land management and any and all appropriate Persons/ organizations. Please notice this report or comment is a generic statement which may appear elsewhere and /or again concerning similar topics.

I hope this correspondence finds you well. Good luck and thanks in advance for your work on this matter.

Sincerely

Robert R. Tilford

63624 Tilford Way
Joshua Tree, California
USA 92252

760 366-2198

Enclosure/ The case against dense solar/ a open letter, 7 pages

Rt/RT
file

This is an open letter of opposition to any and all dense solar utility scale generation schemes. Both those here-in named and any others that might be suggested or any now in 'operation'. The reasons for this opposition are stated in the following paragraphs.
The meaning of an open letter is it may be made available to anyone and is released for publication; should any desire to publish or for its availability -exist.

Preface

While the exhaustive detail concerning this matter, may only be summarized here- it's necessary to learn a little about solar voltaic power before rational and insightfully based decisions or opinions about it can be made.

Please consider these following points about it, which may help to restore a positive direction to U.S. solar interest and investment.

The Sun

Sunlight strikes Earth's surface with-out variation from pole to pole. Its intensity dose not vary across the entire face of our planet. – except at the poles where it does not strike the ground but travels horizontally by. The planets Ice caps exist because sunlight streams across - with-out striking the poles and the suns heat is gained at a lower level in those regions. In between the always freezing poles of earth sun light falls with equal intensity across all non-arctic longitudes and meridians.

The only thing which effects the otherwise uniform arrival of sunlight at the surface are the Radiation belts and the atmosphere of Earth. (o' of course the sun itself dose effect it, but the output of the sun rarely -if ever varies more than (less than ...)1% of its average total...) Of these effects only the atmosphere represents significant variability in the amount of sunlight reaching the surface of our planet- a quantity that is sometimes called *Solar flux* . The interaction of the Electromagnetic field with solar radiation tends to reduce focal flux uniformly across the globe. Both the moderating effects of the atmosphere and earths radiation belts are essential to life on our planet.

Because the amount of sunlight reaching earth dose not vary from location to location but is rather the same everywhere – our ideas about solar voltaic panel placement are very much wrong. Solar voltaic panels work equally well and produce equal amounts of electricity everywhere on earth, and not just in the desert. In fact, the desert is an environment not well indicated for solar panel usage; but is suitable for panel deployment knowing average production of electricity will be less. Let's explore why this is true...

While a study of surface flux- that is incoming solar radiation may indicate minor elevations in some desert regions- this data has been misinterpreted to imply greater solar voltaic production is possibly in these regions- it isn't.

Our confusion may stem from an association with sunlight to heat. While a connection indeed exists- the true determining factors in local climates are many. Sunlight is the only fixed factor- and because the sunlight falling on New York is the same as that falling on Los Angeles – every day and all day long; the profound nature of these climate effects becomes clearer.

C1-1

The most important geographic consideration of how much solar voltaic production may be possible- is surface temperature- on average. Followed by Atmospheric clarity and average cloud trends over any location(s).

2

The best performance from panels is achieved where surface temperatures exist in a range of from freezing, up to about 80-degree Fahrenheit. Above 80 degree- panels begin to lose efficiency and that efficiency falls greatly in any temperature above 100 degrees. What this means is high temperature environments do not favor solar panel usage, because production is reduced at surface temperatures above 80 degrees. At 120 degrees, panel production is seriously reduced.

Meanwhile cloud conditions do not affect average panel production to any level greater than 30% of peak efficiency. This means panels produce in conditions of cloud only slightly less than in direct sun. In fact, we find optimum production occurs in partly sunny or partly cloudy conditions where surface temperatures are below 90 degrees. Conditions of cloud can then be considered negligible. Solar panels work better in conditions of partly sunny skies compared to clear skies where surface temperatures exceed 80 degrees- it's easy to see our ideas about where solar works best -are all wrong.

Solar actually works, or would work better in the Eastern states, because the cooler climates allow for better production per square panel foot.

Panel production drops in any temperature above 80 degrees. Production actually increases towards freezing and remains about the same even in subzero temperatures- provided ice or snow dose not accumulate on panel surfaces, but this being likely in such cold climates- we can basically represent panel efficiency as being reduced in freezing environments.

The drop in panel production with temperatures above 80 degrees is due to increasing resistance in the conductive properties of such devices. The only way to lower the thermal resistance drop in production is to keep panels cooler than 80 degrees.

Deserts are not ideal for solar voltaic but are ok for it- as adequate production can be sustained for limited electrical uses.

The fact that a desert region has no advantage for solar voltaic panel placement- dose not reasonably lend to a preferred placement of panels in that environment. This is our first point against dense arrays...

1. It's a demonstrated lack of scientific and technical insight that exists on the parts of planners and operators of utility scale solar voltaic generating plants. This lack of insight or education can be considered as being -Crucial.

More not necessarily better...

Another point against utility scale solar voltaic generation- hereafter to be referred to simply as Dense solar – is again rooted in the fact that sunlight is a fixed quantity from pole to pole.

The amount of sunlight reaching earth on average can be expressed as a watt or volt per square unit quantity. That quantity cannot vary from its peak maximum to its peak minimum – and is not increased by cramming more panels into a smaller space. No matter how many panels are put out- the amount of sunlight available does not change- and as such any panel placement greater than a certain per area amount- is simply a waste of panels- as production cannot increase beyond the available sunlight per that area-square.

C1-1
Cont.

While exact data is not yet available- it appears that the ideal panel area numbers are less like a dense field and more like the sort of random and spaced positioning as one would see with panels on the roofs of houses and other buildings.

While this may not be the easiest of factors to understand- it can be shown like this:
 If in a given area, a 10x4 panels is exploiting maximum available sunlight- adding another 10x4 panel to that area -dose not double production. In fact, it only lowers production slightly- this reduction is not great, but occurs and here is why it occurs...

Because increasing panel area- dose not increase available sunlight. Lose occurs in any device where its size increases with-out an increase in its motive impute, or power. Sunlight is the motive impute or power for solar panels- increasing the number of panels per area- square- dose not in fact increase production.

Dense solar exceeds peak average sunlight availability compared to panel surface area- and consequently many of a dense field's panels do not produce any electricity at all. Probably half or more are simply wasted.

While point one (1) is well emphasized here; because no value exists in packing panels into any area when in fact the result of such *dense arraying* is -many panels producing below potential- we must create a new point beyond lack of insight and knowledge about solar technology- although it permeates every aspect of dense solar...adding to the case against dense solar... and that is.

2. Dense solar is an improper and wasteful use of solar voltaic technology- i.e., panels.

Dense Solar is a great waster of solar voltaic energies great potential as an electrical demand reducing and environment helping technology. Every panel in any dense field belongs on the 'roof' of a home or business- anywhere across the entire county.

Dense solar diverts panels from proper usage – proper usage is as site supplemental (grid connected) *demand reduction* in homes, business, and factories. The net effect is to keep panel prices high and panels off of roofs.

It's easy to begin to imagine this is the real purpose of dense solar- to deprive citizens of the benefits of site solar supplemental. While such a criminal conspiracy may be hard to prove -as dense solar promoters and Electrical power companies can claim ignorance as its real cause. I do not honestly know which it is... criminal intent or stupidity, but the bottom line is bad.

Let's examine the value per square foot of panel in appropriate and recommended site solar and in unrecommended dense solar applications.

Quanta	Site Solar Supplemental	Dense Solar
Reduces demand	YES	NO
Benefits the citizen	YES	NO
Lose in Transmission	NO	YES
Negative Environmental Impacts	NO	YES
Costly maintenance	NO	YES
Costly construction	NO	YES
Increases grid stress	NO	YES

3



C1-1
 Cont.

Quanta A/ reduces demand can also be summed up as:
Helps reduce the number Atomic Generating station installations, Dam constructions or other hard power generating modes- (by reducing demand.)

4

Demand reduction being the priority of National Energy Policy.

The bad 50%

Average panel production as an idealized peak- can be compared directly in terms of amounts of usable electricity produced per panel:

Site Solar supplemental	Dense Solar placement
99% of peak	42% of peak Or less

While dense solar average production may actually be even lower – what is clear that more than 50% of any dense solar field’s panels are merely going to waste- and not producing any usable energy.

Just facts

As to whether Dense solar represents a criminal conspiracy by electric purveyors and speculative interests- to delay and deny the widespread implementation of recommended site solar supplemental- or ‘roof top’ solar- is a matter of belief. Do you believe that individuals could wantonly conspire to sidetrack or derail solar power- having not the slightest regard for the environment or humanity- merely to hold on to high electric rates and personal power? Or dose the less toxic, but equally frightening possibility- that these people simply don’t get it- seem more of a fit?

Maybe it’s some of both, but here’s a fact we have no doubt about- point Three against Dense solar.

3. Dense solar has an unjustifiable and significant negative impact on the Environment.

While diverting panels from practical and efficient use; while producing less than half the usable power of those same panels compared to a *demand reducing*-citizen benefiting and environmentally friendly use in site solar supplemental – *Dense Solar* has a significant and destructive effect on already over stressed lands and ecosystems.

The idea that the Southwestern U.S. is empty land to be sprawled across and covered over in wasted solar panels- is of course – central to the problems that have let Dense solar get away with wasting panels and delaying or derailing solar innovation and use.

It’s not even necessary to go into detail about these negative impacts on wildlife, plant life and soil. The uptick in carbon emission from vehicles that must carry equipment and workers to far flung locations and provide access for endless maintenance and supervision. All to the drumbeat of mankind’s sprawling march to oblivion. Our endless, unsustainable,

C1-1
Cont.

C1-2

and unprofitable expansion into more and more of a natural world – the world which once gave rise to human life.

There exists no validity in the idea that dense solar provides any kind of alternative-safe energy- it does not. Again, panel for panel -we are looking at a plus 50% lose in productivity in Dense Solar- compared to the recommended site solar supplemental.

Further, dense solar presents significant grid complication and stress. More often than not these dense fields are producing zero usable electricity.

Each new and useless dense solar field only burdens the already dangerously overtaxed grid'. Only increasing the risk of black outs and expensive grid problems. Or, more to the point only guarantees future blacks -outs and power delivery problems.... But the future is a speculative matter at best.

Here's something that not speculation at all... very costly grid modifications or extensions to try and accommodate dense solar installs- is diverting resources from needed grid repair and strengthening. Grid repair and strengthening that is needed right now...

Not only are dense solar cheating tens of thousands of citizens out of the benefit of solar on site -in demand reducing roles, but its adding insult to injury by creating conditions where electricity is more costly. All while dense solar reduces the reliability of electrical delivery and production -and has a bad effect on the environment.

Not a good deal...

While doing all these bad things – dense solar is also keeping Hundreds of thousands of jobs coast to coast -waylaid. Jobs across diverse skill fields- from skilled to entry level and trainee. Jobs in installing site solar supplemental, and much work is needed to begin getting solar on every roof across the county. In fact, work for Hundreds of thousands -if not more -will exist every day- seven day a week for at least the next 25 years – in getting solar where it belongs on roofs everywhere.

By contrast, dense solar employees hundreds at most and in temporary jobs that lead only to unemployment rolls. Even, still dense solar is hundreds of times more costly than site solar supplemental-.

The high value and low impacts of site solar supplemental will become increasingly affordable when dense solar stops sucking up all the panels. Many new plans to connect solar to the average business or home, benefiting the environment and the average rate payer- are what is needed.

Summary

Dense solar is a boondoggle of epic proportions. If the implications obvious in the suggestion that these are not just wild- and wide-eyed blunders but are purposed and calculated attempts to deprive the citizens of the benefit of solar energy- then it is a scandal which will make 'Enron' look like fooling around after school on the playground.

Don't find yourself being compliant or complaisant with the mistake that is dense Solar.

Whatever view ultimately prevails about it... criminal conspiracy or organized retardation... Dense solar dose not prosper. It's a herd of "white elephants' run wild- and a blunder we have to ultimately- clean up.

We don't have to wait for dense solar to go bust, instead we should minimize the lose by preventing any further wastage of time or resources on it.

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C1-2
Cont.

We hope we have made it abundantly clear just why dense solar is not green energy, not sustainable and is in fact a travesty. Even, possibly a criminal attempt to deny consumers benefits and more competitive rates. While, that possibility may or may not be true.

Progress and Hope

When we stop the misuse of solar voltaic technology in dense and under producing fields- we establish conditions where it can be vigorously redirected to its intended usage- in demand reducing and citizen benefiting site supplemental electricity.

Households, businesses and even factories may use 100 % of any day's solar production on site- switching to grid power at night or when site production falls below the demand threshold at that location. Site solar supplemental is a low impact, high value process -which may ultimately lower daily demand nationwide by as much as 40% Even more, if consumers can become involved in confining energy intensive activities like laundry- to daylight hours only... that figure could reach 50%!


A good 50%

While such a significant decrease in demand involves complete national Solarization- that is site solar supplemental on every roof or in every yard across the nation... and we should set that as a firm goal... it will require widespread conservation efforts as well. Reducing demand by 47% from today's peaks is vital, if achieved could reduce the number of nuclear power installations nationwide by as many as 120 plants.

We should insist all resources are going to proper uses of solar power- not wasteful boondoggles like dense solar.

In returning to stated national Energy policy, which does not and never has recommended dense solar generation as a viable or approved option- we begin to get solar back on track- and on the roofs of countless businesses and homes across the entire USA.

Help make the goal of total national Solarization a reality- do not permit anymore dense solar boondoggles.

Sincerely,


Robert Tilford
63624 Tilford Way
Joshua Tree, CA 92252
760 366-2198

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↑
C1-2
Cont.

Post note: We should not confuse conditions which occur in space -with conditions that occur in earths thermally dynamic atmosphere. Conductivity due to thermal environment does not occur in space. It occurs on earth and in earths air, where panels can be considered an extension of material atmosphere- and subject to average or existing temperatures. Temperature fluctuations cause great variation in both average and peak panel production- on Earth.

Considering terrestrial applications referencing only space based solar voltaic experience- is *perhaps* one explanation as to why dense solar advocates are so far off the mark.

Production- panel Production/ the amount of electrical energy any panel can produce. Usually expressed in *Watts per panel*, or watts per square foot (of panels). Further ... production must be categorized as being Peak, average of low... Peak production is the wattage in ideal conditions, Average is the measured production over a span of time and Low production represents the lowest possible panel production / where the panel is good, but conditions are unfavorable. Next, we must add usable production, that is watts being produced that are actually powering some process or device(s)- as opposed to panel wastage or *Waste watts* from panels set out but not performing near average or are simply not connected to anything useful.

What is green energy: green energy is an ad hoc term meant to imply cleaner, less polluting, less harmful, or impactful, safer and more efficient energy production. Here is applied only to the production of electrical power. How green energy is certified: To be certified as green energy and there-after have a purchase value incentive at any scale- the mode of production must be an Approved and safe one, the mode of production must be with- in the 20% of the most efficient processes for that mode, must be reliable and must not have a transferring impact greater than any mode its proposed to augment or supplant.

While failing to meet the (increased from 10%to) 20%- top most mode efficiency in its own mode requirement (Mode Solar)- dense solar less than 50% as efficient as site solar supplemental in the same mode... Dense solar may also fall on carbon impacts- where panel production compared to end use, vehicle transport and maintenance emissions and negative environmental impacts- are in fact more than simply continuing to operate gas or coal fired electrical plants... producing the same Mw. Dense solar also falls in reliability, as a under performing operational rate of less then (confidential) %- In no way represents reliable electrical production. Finally, Dense solar is not recommended or approved of... in fact solar is not recommended in a generating utility scale config. -due to Solar's unique unsuitability for or in- such a role.
RT/rt

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C1-3

Response to Comment Letter C1

Robert R. Tilford
August 25, 2021

C1-1 This comment provides information regarding utility-scale dense solar farms and describes solar voltaic power and how sunlight produces energy. Furthermore, the commenter indicates that just because a solar facility is located in the desert, higher temperatures in the desert do not necessarily translate to the production of “more” energy, stating that “sunlight is a fixed quantity.” Hence, per the commenter, concentrating solar voltaic panels in one area would not increase the amount of energy produced in the desert region due to the loss of efficiency in in any temperature above 80°F. The commenter suggests that the same amount of energy would be produced by placing solar panels on the roofs of houses or business across the country.

Environmental Impact Report (EIR) Section 4.3.5, Alternative Renewable Energy Technologies, under the subsection Distributed Solar Technology, acknowledges the use of rooftops for solar voltaic panels as an alternative. This section describes that while, to an extent, distributed generation projects might have fewer impacts on certain resources because they do not include substations and transmission facilities, distributed generation projects cannot meet one of the fundamental objectives of a utility-scale solar project, which is to provide renewable energy to utility off-takers and their customers. Rooftop systems that are not connected to the utility side of the electric grid generate power only for on-site consumption. Distributed generation systems will not offset the impacts of counterpart fossil fuel energy sources managed by utilities or help achieve Renewables Portfolio Standard goals.

As reported in the 2020 California Renewables Portfolio Standard Annual Report (CPUC 2020), there remain challenges for small distributed generators, including high interconnection costs. While the large investor-owned utilities are generally on track to meet Renewables Portfolio Standard requirements, of the 29 community choice aggregators that serve one quarter of the total electricity load in California, 24 are at risk of failing to meet Renewables Portfolio Standard requirements for the 2021–2024 compliance period and must procure long-term contracts for renewable electricity. Therefore, it is expected that development of both distributed generation and utility-scale solar power will be needed to meet future energy needs in the United States, along with other energy resources and energy efficiency technologies.

The comment provides the opinions of the commenter and does not raise specific issues related to the adequacy of the environmental analysis in the EIR; therefore, no additional response is required.

C1-2 This comment states that dense solar has an unjustifiable and significant negative impact on the environment regarding already stressed lands and ecosystems, especially to wildlife, plant life, soils, and carbon emissions. The California Department of Fish and Wildlife (CDFW), as the California Environmental Quality Act (CEQA) lead agency, has analyzed and disclosed the environmental effects of the proposed Arica Solar Project and Victory Pass Solar Project (Projects), in combination with CDFW’s issuance of the Incidental Take Permits (TPs), as the “whole of the action.” As stated in Chapter 1, Introduction, of the EIR, CDFW is California’s Trustee Agency for fish and wildlife and holds those resources in trust by statute for all the people of the state (California Fish and Game Code Section 711.7[a]; California Public

Resources Code, Section 21070; 14 CCR 15386[a]). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (California Fish and Game Code Section 1802).

EIR Section 3.3, Air Quality, provides an analysis of project construction and operation emissions. As stated in the EIR, the project would incorporate emission reducing measures (Applicant Proposed Measure [APM] AIR-1 through APM AIR-3). In accordance with CEQA, the EIR discloses that during construction of the Projects, the concentration of emissions would exceed established Southern California Air Quality Management District emission thresholds, and would remain significant even with incorporation of APMs. However, during operation, none of the established air quality emissions would be exceeded and impacts are considered less than significant. In addition, EIR Section 3.8 addresses greenhouse gas emissions. As discussed in the EIR, the production of renewable power would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants. The Projects would avoid greenhouse gases that could otherwise be emitted by fuel-burning generators at a rate of approximately 448,000 metric tons per year, after accounting for line losses based on an avoided emissions displacement factor of 0.379 metric tons of carbon dioxide (CO₂) per megawatt-hour.

Furthermore, EIR Section 3.4, Biological Resources, provided a detailed analysis of potential impacts to wildlife and plant life. The EIR concludes that with incorporation of APMs and mitigation measures, impacts to wildlife and plant life would be reduced to less than significant. The EIR evaluates impacts to soils in Section 3.7, Geology and Soils. The soils analysis in the EIR concludes that with incorporation of APM AIR-1, APM HWQ-1, APM HWQ-3, and APM GS-1, the proposed Projects would not result in substantial soil erosion or the loss of topsoil, and impacts would be less than significant. CDFW, as CEQA lead agency, will take the Projects' unavoidable impacts into consideration in the Projects' Findings of Fact during their decision-making process.

The second part of the comment repeats the concern with dense solar fields, indicates that adding energy into the grid will exasperate existing grid problems (e.g., brownouts) and that building solar projects diverts resources from implementing costly grid modifications, increases the cost of electricity for the consumer, and reduces job opportunities by not constructing rooftop solar. Refer to Response C1-1 regarding dense solar fields and meeting State of California energy goals. CEQA Guidelines Section 15131(a) indicates that "economic or social effects of a project shall not be treated as significant effects on the environment. . . . The focus of the analysis shall be on the physical changes." In accordance with CEQA, EIR Sections 3.2 through 3.19 provide a detailed analysis of the Projects' physical changes to the environment, and where needed incorporate measures to reduce effects to less than significant, with the exception of air quality emissions, as stated above, and tribal cultural resources.

The remainder of the comment provides the opinions of the commenter and does not raise specific issues related to the adequacy of the environmental analysis in the EIR; therefore, no additional response is required.

C1-3 This comment provides concluding comments that describe temperature fluctuations, panel wattage production, and a green energy definition, and state that dense solar, utility scale, is not recommended nor should it be approved. Refer to Response C1-1. These comments are the opinions of the commenter, and do not raise specific issues related to the adequacy of the environmental analysis in the EIR; therefore, no additional response is required.

References

CPUC (California Public Utilities Commission). 2020. *2020 California Renewables Portfolio Standard: Annual Report*. November 2020. https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/utilities_and_industries/energy_-_electricity_and_natural_gas/2020-rps-annual-report.pdf.

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ES Executive Summary

ES.1 Introduction

Arica Solar₂ LLC and Victory Pass I₂ LLC (Applicants), wholly owned subsidiaries of Clearway Energy Group LLC, have applied to the California Department of Fish and Wildlife (CDFW) for Incidental Take Permits (ITPs) for desert tortoise (*Gopherus agassizii*) under Section 2081(b) of the California Endangered Species Act (California Fish and Game Code Section 2050 et seq.). (Refer also to 14 CCR 783.0 et seq.). The Applicants have also notified CDFW of certain proposed activities subject to the jurisdiction of CDFW's Lake and Streambed Program. (Refer to California Fish and Game Code Section 1600 et seq.) The Applicants have applied for the ITPs and submitted Lake and Streambed Program notifications to CDFW as part of a broader proposal to construct the Arica Solar Project and Victory Pass Solar Project (referred to collectively herein as the "Projects").

Proposed issuance of the ITPs and the prospect that CDFW will issue Lake and Streambed Agreements (LSAs) to the Applicants are regulatory actions involving the exercise of discretion and independent judgment by CDFW, consistent with its jurisdictional authority under the California Fish and Game Code. Issuance of the ITPs by CDFW, subject to specific conditions of approval, including a term of 5 years, would authorize "take" as defined by state law of desert tortoise incidental to the Applicants' otherwise lawful construction of the Projects. Any LSA CDFW issues to the Applicants to construct the Projects, consistent with the notifications, would be conditioned on reasonable measures necessary to protect fish and wildlife subject to CDFW's regulatory jurisdiction under California Fish and Game Code Section 1600 et seq. Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15378(a), "project" means the whole of the action that has the potential to result in either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment, and is an activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies. The Applicants have applied to CDFW for ITPs under the California Endangered Species Act and submitted notifications that CDFW expects will require and lead to the issuance of LSAs necessary for the Applicants to construct the Projects. Construction, operation and maintenance, and future decommissioning of the Projects over 35 to 50 years would cause other environmental impacts across the resource spectrum that are relevant under CEQA. Therefore CDFW, as CEQA lead agency, has analyzed and disclosed the environmental effects of the Projects, in combination, as the "whole of the action."

Both Projects would be located in unincorporated Riverside County on Bureau of Land Management (BLM) administered federal lands in an area designated as a Development Focus Area in the federal Desert Renewable Energy and Conservation Plan. The BLM right-of-way grant applications are subject to review under the National Environmental Policy Act. The CEQA review and the National Environmental Policy Act review by CDFW and BLM, respectively, are being undertaken as separate processes.

ES.2 Environmental Procedures

ES.2.1 Type and Purpose of Draft Environmental Impact Report

This Environmental Impact Report (EIR) has been prepared in conformance with CEQA statute (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.). Issuing an ITP and an LSA are discretionary actions that require CDFW to comply with CEQA in accordance with CEQA Guidelines Sections 15021 and 15040, as well as Title 14, Sections 783.3(b) and 783.5(d), of the California Code of Regulations. Because the Projects are entirely on federal public land, the ITPs and LSAs from CDFW

are the main discretionary approvals under state law that the Applicants need to construct the Projects. There are no other state or local agencies with approval authority of comparable magnitude and CDFW has assumed the role of CEQA lead agency for the Projects, accordingly (refer to, 14 CCR 783.3[b]). Under CEQA, an EIR must be prepared when there is substantial evidence that supports a fair argument that the discretionary approval of a proposed project may cause a significant effect on the environment.

Consistent with Section 15121(a) of the CEQA Guidelines, this EIR is a public information document that assesses and discloses the potential environmental effects of construction, operations, and future decommissioning of two solar photovoltaic projects. CEQA requires a lead agency to impose feasible mitigation that will “substantially lessen or avoid significant effects on the environment, consistent with applicable constitutional requirements such as the ‘nexus’ and ‘rough proportionality’ standards established by case law (citations omitted)” (14 CCR 15041[a]). Thus, the aim of CEQA mitigation is to reduce project impacts to a less-than-significant level. In contrast, the California Endangered Species Act requires that impacts of the authorized take be “minimized and fully mitigated.” For purposes of this requirement, impacts of the taking include all impacts on the species that result from any act that would cause the proposed taking. CDFW may issue an ITP for an otherwise lawful activity if, among other things, all the impacts of the taking are minimized and fully mitigated, there is adequate funding to implement the mitigation measures and monitor compliance and effectiveness of those measures, and the take does not jeopardize the continued existence of the species. Similarly, where CDFW determines that an activity may substantially adversely affect an existing fish and wildlife resource subject to CDFW LSA’s regulatory authority, CDFW may condition implementation of that activity through an agreement that includes reasonable measures necessary to protect those resources.

ES.2.2 EIR Organization

This EIR is organized as follows:

- **Executive Summary:** This chapter provides an overview of the Projects and a summary of the significant impacts identified in the analysis and associated mitigation measures. A summary of the alternatives and environmentally superior alternative is also provided.
- **Chapter 1. Introduction:** This chapter provides an overview of the proposed Projects evaluated in the EIR and a summary of the Projects’ objectives. This section also discusses agency use of the document and provides a summary of the scoping comments.
- **Chapter 2. Description of the Proposed Projects:** This chapter gives an overview of solar technology and details the locations and characteristics of the Projects, along with a description of the surrounding land uses. It includes construction and operational aspects of the Projects and relevant background information.
- **Chapter 3. Environmental Analysis:** This chapter contains a detailed environmental analysis of the existing conditions; provides resource specific Applicant Proposed Measures that the Applicants have committed to implement as part of the proposed Projects, describes impacts from construction, operation, and future decommissioning of the Projects; where needed, identifies and recommends potentially feasible mitigation measures; and includes a discussion of cumulative impacts. The following resource sections are included within Chapter 3:
 - Section 3.1 – Introduction
 - Section 3.2 – Aesthetics
 - Section 3.3 – Air Quality
 - Section 3.4 – Biological Resources
 - Section 3.5 – Cultural Resources
 - Section 3.6 – Energy
 - Section 3.7 – Geology and Soils
 - Section 3.8 – Greenhouse Gas Emissions

- Section 3.9 – Hazards and Hazardous Materials
- Section 3.10 – Hydrology and Water Quality
- Section 3.11 – Land Use and Planning
- Section 3.12 – Noise
- Section 3.13 – Population and Housing
- Section 3.14 – Public Services
- Section 3.15 – Recreation
- Section 3.16 – Transportation
- Section 3.17 – Tribal Cultural Resources
- Section 3.18 – Utilities and Service Systems
- Section 3.19 – Wildfire

- **Chapter 4. Alternatives:** This chapter provides descriptions of the alternatives that were evaluated in the document. The section also presents alternatives that were not evaluated in the document and provides a screening analysis that was used to identify such alternatives. This section provides a comparative analysis (matrix) to distinguish the relative effects of each alternative and its relationship to the Projects’ objectives and impacts. The alternatives analysis also identifies the “environmentally superior alternative,” as required by CEQA Guidelines Sections 15126.6(d) and (e)(2).
- **Chapter 5. Other CEQA Considerations:** This chapter presents an analysis of the Projects’ growth-inducing impacts and other CEQA requirements, irreversible commitment of resources, and significant and unavoidable impacts.
- **Chapter 6. List of Preparers:** This chapter provides a list of individuals that prepared or contributed to this Draft EIR.
- **Chapter 7. References:** This chapter lists reference materials used to prepare the Draft EIR.
- **Appendices:** The ITP applications for the Projects, CEQA Scoping Report, technical reports and studies, and other relevant information are included as appendices to support the environmental analyses.

ES.3 Project Location

The Project sites are located on approximately 3,800 acres (2,000 acres for Arica and 1,800 acres for Victory Pass) of land administered by the U.S. Department of Interior, BLM, in Riverside County approximately 50 miles east of Indio, California, approximately 40 miles west of Blythe, California, and approximately 5 miles east of Desert Center, California (see Figures 2-1 and 2-2 in Chapter 2, Description of the Proposed Projects).

ES.4 Summary of the Proposed Projects

The Applicants propose to construct, operate, and maintain utility-scale solar photovoltaic electrical generating and storage facilities and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The proposal also includes future decommissioning, which is anticipated to occur after 35 to 50 years of operation.

The Projects would disturb approximately 2,724 acres overall (1,355 acres of the Arica site, 1,310 acres of the Victory Pass site, 52 additional acres for the shared generation tie [gen-tie] corridor), and less than 7 acres of the access roads. The boundaries of the Projects’ disturbance areas were designed to minimize impacts to desert dry wash woodland and sensitive plant species to comply with the BLM California Desert

Conservation Area Plan, as amended.¹ The Arica facility would generate up to 265 megawatts (MW) of renewable energy and would include up to 200 MW of battery storage and the Victory Pass facility would generate up to 200 MW of renewable energy and include up to 200 MW of battery storage. The power produced by the Projects would be conveyed to the statewide power grid via a 3.2-mile shared overhead 230-kilovolt gen-tie transmission line interconnecting from a shared switchyard to the Southern California Edison Red Bluff Substation, an existing substation located south of Interstate (I) 10. The Projects are located entirely on federal land. With the proposed issuance of the ITPs and the prospect of issuance of LSAs by CDFW, the Projects would cause other environmental impacts across the resource spectrum that are relevant under CEQA. Therefore, this EIR, has analyzed and disclosed the environmental effects of the proposed Projects, in combination, as the “whole of the action.”

ES.5 Summary of Project Alternatives

Section 15126.6(a) of the CEQA Guidelines states that an EIR “shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives.” An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The CEQA Guidelines state that factors that may be considered when determining the feasibility of alternatives are “site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context) and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent)” (14 CCR 15126.6[f][1]). This EIR analyzed the following alternatives (detailed analysis is provided in Chapter 4, Alternatives, of this EIR).

- No Project Alternative: Under the No Project Alternative, the construction of the Projects and associated infrastructure would not occur (refer to Section 4.1.1).
- Alternative 1: Gen-Tie Alignment 1: Under Alternative 1, the gen-tie line would have an alternative alignment should the proposed Projects be constrained. Under this alternative, the gen tie line would be approximately 0.6 miles shorter than the gen-tie line included in the proposed Projects (refer to Section 4.1.2 and Figure 4-1).
- Alternative 2: Gen-Tie Alignment 2: Under Alternative 2, the gen-tie line would have an alternative alignment should the proposed Projects be constrained. Under this alternative, the gen tie line would be approximately 0.5 miles shorter than the gen-tie line included in the proposed Projects (refer to Section 4.1.3 and Figure 4-1).
- Alternative 3: Access Road Option 1: Under Alternative 3, the access road would use the Corn Springs exit off I-10 instead of the proposed Desert Center exit. As with the proposed access road, this route could require some improvements, including grading and potentially widening (refer to Section 4.1.4 and Figure 4-1).

¹ The Desert Renewable Energy and Conservation Plan amendment to the California Desert Conservation Area Plan includes conservation and management actions that require avoidance of some special plant species and certain types of habitat.

- Alternative 4: Access Road Option 2: Under Alternative 4, the access road would share the Athos access road off the Desert Center exit off I-10. Because this road would have been improved for the Athos Solar Project, no improvements would be required (refer to Section 4.1.5 and Figure 4-1).
- Alternative 5: I-10 Viewshed Avoidance: Under Alternative 5, the Victory Pass Project fenceline would be moved approximately 0.5 miles and possibly up to 0.7 miles away from I-10 to reduce the immediately adjacent views from the freeway (refer to Section 4.1.5 and Figure 4-2).

Because several of the alternatives would not reduce the significant and unmitigable impacts to a less-than-significant level, Table ES-1 compares the alternatives based on differences in the level of similar impacts resulting from ground disturbance, as well as the size and duration of construction activities, O&M, and future decommissioning. Note that the resource topics with the same or similar potential impacts across all alternatives when compared to the proposed Projects are not listed in Table ES-1 (including cultural resources, energy, hydrology and water quality, population and housing, public services, recreation, tribal cultural resources, utilities and service systems, and wildfire). For these topics under Alternatives 1–5, direct and indirect impacts to tribal cultural resources would remain the same as the Projects: significant and unavoidable; cumulative indirect impacts to cultural resources would be similar: significant and avoidable; impacts to energy, hydrology and water quality, public services, recreation, utilities and service systems, and wildfire would all be less than significant with incorporation of the same APMs as would be in the Projects; and impacts to population and housing would be less than significant. Table ES-1 compares the potential impacts of the proposed Projects to the alternatives for key resources.

Table ES-1. Summary of Comparison of Alternatives Impacts

Environmental Issue Area	Project	No Project	Alternative 1: Gen-Tie Alignment 1	Alternative 2: Gen-Tie Alignment 2	Alternative 3: Access Road Option 1	Alternative 4: Access Road Option 2	Alternative 5: I-10 Viewshed Avoidance
Aesthetics	SU	▼ (Eliminates SU impact)	Δ	—	—	—	▼ (Eliminates SU impact)
Air Quality	SU	▼ (Eliminates SU impact)	—	—	▼	—	—
Biological Resources	LTS/MM	▼	Δ	Δ	—	—	Δ (Substantially Greater)
Geology and Soils	LTS	▼	—	—	▼	—	—
Greenhouse Gas Emissions	LTS	▼	—	Δ	—	—	—
Hazards and Hazardous Materials	LTS	▼	—	—	Δ	—	—
Land Use and Planning	LTS	▼	—	—	—	—	Δ (Potentially introduces a new SU impact due to conflict with an existing land use plan)
Noise	LTS	▼	—	—	▼	—	—
Transportation	LTS	▼	—	—	▼	▼	—

Δ Alternative is likely to result in greater impacts to issue when compared to project.

— Alternative is likely to result in similar impacts to issue when compared to project.

▼ Alternative is likely to result in reduced impacts to issue when compared to project.

LTS = Less than Significant, LTS/MM = Less than significant impact with mitigation, LTS = Less than significant impact; SU = Significant and Unavoidable, NI=No Impact.

ES.6 Areas of Controversy/Issues To Be Resolved

Section 15123(b)(2) of the CEQA Guidelines requires that areas of controversy known to the lead agency must be stated in the executive summary prepared as part of the EIR. Issues of interest to the public and public agencies were identified during the 30-day public comment period for the Notice of Preparation. In compliance with CEQA Guidelines Section 15082(c), CDFW conducted a public scoping meeting to inform the public about the Projects and provide information regarding the environmental review process. This scoping meeting was hosted by both CDFW and BLM and was held virtually on October 21, 2020. The scoping process is described and the public input received during scoping is provided in Appendix B, Scoping Report. A total of 12 scoping comments were received during the scoping period. Based on input received from agencies, members of the public, and others, areas of controversy and issues to be resolved related to the Project include the following:

- Concern regarding visual impacts, including impacts to the night sky
- Concern regarding impacts to cultural resources
- Ongoing consultation with California Native American tribes under “Assembly Bill 52” and CDFW’s Tribal Communication and Consultation Policy
- Concern regarding impacts due to valley fever
- Concern regarding impacts to biological resources, including the following:
 - special-status plant and animal species
 - desert tortoise connectivity
 - birds, especially due to mortality potentially caused by the avian “lake effect”
 - microphyll woodland, due to loss of the sensitive habitat
 - sand transport corridor and Mojave fringe-toed lizard habitat
- The need for compensatory mitigation to reduce impacts to biological resources
- Potential impacts due to use of Colorado River water and impacts to the groundwater basin
- Impacts due to dust and soil erodibility
- Concern regarding loss of carbon sequestration
- The need for better greenhouse gas emissions calculation due to battery storage energy use
- Recommendation for fire prevention best management practices
- Recommendation of alternatives, including an alternative that fully meets the BLM Desert Renewable Energy Conservation Plan Conservation Management Actions and an off-site alternative

ES.7 Summary of Environmental Impacts, Applicant Proposed Measures, Mitigation Measures, And Significance Conclusions Following Implementation of Measures

Table ES-2 summarizes the conclusions of the environmental analysis contained in this Draft EIR. The impact analysis in this EIR assumes implementation of all the Applicant Proposed Measures (APMs). The APMs are considered part of the Projects and the Applicants' commitment to complying with and implementing these measures to reduce potential impacts. However, where other significant or potentially significant impacts are identified that are not addressed by the APMs, or where the APMs are not adequate to reduce impacts to less-than-significant levels, additional feasible mitigation measures and other potentially feasible mitigation measures are identified ~~recommended~~ to avoid or substantially lessen potentially significant impacts, to the extent feasible. All APMs and mitigation measures in Table ES-2 and all potentially feasible mitigation measures CDFW determines are feasible and necessary to avoid or substantially lessen significant impacts will be included CDFW's Mitigation Monitoring and Reporting Program developed for the Projects, and the Applicants will implement all monitoring and reporting obligations for the APMs as detailed in this EIR. Table ES-2 identifies the impacts considering the incorporation of the APMs into the Projects, identifies whether the impact is potentially significant or less than significant, and, for all potentially significant impacts, mitigation measures and potentially feasible mitigation measures are provided. The level of significance after implementation of the mitigation measures and potentially feasible mitigation measures, is also presented.

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Aesthetics			
A-1: Have a substantial adverse effect on a scenic vista.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required	Not Applicable
A-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	No Impact	No APMs incorporated or other potentially feasible MMs are required	Not Applicable
A-3: In non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings.	Less than Significant for all Key Observation Points (KOP) except: Significant and Unavoidable (KOP 2 – Eastbound I-10 – Adjacent)	APM AIR-1 (see AQ-2), APM BIO-5 (see BIO-1) APM AES-1 Surface Treatment of Project Structures and Buildings. The Applicants shall treat the surfaces of all permanent, large Project structures and buildings (O&M building, inverters, electrical enclosures, gen-tie poles, conductors, tanks, pipes, and walls) visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; (b) their colors and finishes do not create excessive glare from surface brightness; and (c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. Following consultation with the BLM Visual Resources specialist, and other representatives as deemed necessary, the Applicants shall submit for the CDFW’s and BLM’s review, a specific Surface Treatment Plan that will satisfy these requirements. The consultation would be in-field at the agencies’ election, or as a desktop review if preferred by the agencies. The treatment plan shall include: A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be fielded tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces; B. A list of each major Project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and pantone number; or according to a universal designation system; C. One set of color brochures or color chips showing each proposed color and finish; D. A specific schedule for completion of the treatment; and	Significant and Unavoidable (KOP 2 – Eastbound I-10 – Adjacent)

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
A-3 (cont.)		<p>E. A procedure to ensure proper treatment maintenance for the life of the Project. The Applicants shall not specify to the vendors the treatment of any buildings or structures treated during manufacture or perform the final treatment on any buildings or structures treated in the field, until the Applicants receives notification of approval of the treatment plan by the BLM. Subsequent modifications to the treatment plan are prohibited without the BLM’s approval for components under their respective authorities; however, the Applicants may consider the agencies’ failure to respond to a request for review within 60 days an acceptance of the proposal.</p> <p>APM AES-2 Project Design. The Applicants will use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color, and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals will be based on the following factors:</p> <ul style="list-style-type: none"> ■ <i>Vegetation Manipulation:</i> Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes. ■ <i>Structures:</i> Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of structures to the extent practical. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural landforms and vegetation. Reduce the line contrast created by straight edges. ■ <i>Linear Alignments:</i> Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts. Hug vegetation lines. ■ <i>Reclamation and Restoration:</i> Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Where feasible, replace soil, brush, rocks, and natural debris over disturbed area. Newly introduced plant species should be of a form, color, and texture that blends with the landscape. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
A-3 (cont.)		<p>APM AES-3 Use of minimum necessary nighttime lighting for security purposes, designed to eliminate glare or spillover to areas outside of the project site.</p> <p>APM AES-4 Night Lighting Management. To the extent feasible, consistent with safety and security considerations, the Applicants shall design and install all permanent exterior lighting and all temporary construction lighting such that: (a) lamps and reflectors are not visible from beyond the Projects’ sites, including any off-site security buffer areas; (b) lighting does not cause excessive reflected glare; (c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; (d) illumination of the Project and its immediate area is minimized and (e) it complies with local policies and ordinances.</p> <p>The Applicants shall also consult with the NPS Night Sky Program Manager in the development of the night lighting and comply with stricter standards for light intensity. All permanent light sources shall be below 3,500 Kelvin color temperature (warm white) and shall have cutoff angles not to exceed 45 degrees of nadir. The use of LED lighting with a Correlated Color Temperature (CCT) above 2,700 would introduce blue light into the environment that would have negative impacts on the night skies and wildlife of that area. If LED light bulbs are used, they will have a CCT of 2,700 or less. A CCT above 2,700 would increase blue light into the environment that would impact wildlife and visors and increase light pollution. All lights, temporary and permanent, are to be fully shielded such that the emission of light above the horizontal will be prevented. Prior to construction, the Applicants shall submit to CDFW, BLM and NPS JTNP for review a Night Lighting Management Plan that includes the following:</p> <ul style="list-style-type: none"> A. Location and direction of light fixtures shall take the lighting mitigation requirements into account; B. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated; C. Light fixtures that are visible from beyond the Project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the Project boundary, except where necessary for security; D. All lighting shall be of minimum necessary brightness consistent with operational safety and security; E. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
A-3 (cont.)		<p>switches, or motion detectors so that the lights operate only when the area is occupied;</p> <p>F. Specification that LPS or amber LED lighting will be emphasized, and that white lighting (metal halide) would: (a) only be used when necessitated by specific work tasks; (b) not be used for dusk-to-dawn lighting; and (c) would be less than 3500 Kelvin color temperature;</p> <p>G. Specification and map of all lamp locations, orientations, and intensities, including security, roadway, and task lighting;</p> <p>H. Specification of each light fixture and each light shield;</p> <p>I. Total estimated outdoor lighting footprint expressed as lumens or lumens per acre;</p> <p>J. Specifications on the use of portable truck-mounted lighting;</p> <p>K. Specification of motion sensors and other controls to be used, especially for security lighting;</p> <p>L. Surface treatment specification that will be employed to minimize glare and skyglow;</p> <p>M. Documentation that the necessary coordination with the NPS Night Sky Program Manager has occurred; and</p> <p>N. Exterior lighting would be required to comply with current Title 24 regulations from the State of California and would be coordinated with the California Department of Transportation (Caltrans) to comply with exterior lighting regulations along I-10.</p> <p>APM AIR-1 (see AQ-2), MM BIO-5 (see BIO-1)</p>	
A-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Less than Significant	APM AES-1 (see A-3), APM AES-3 (see A-3), APM AES-4 (see A-3)	Not Applicable
Cumulative Aesthetic Impacts	Cumulatively considerable and significant	APM AES-1 (see A-3), APM AES-3 (see A-3), APM AES-4 (see A-3), APM AIR-1 (see AQ-2), MM BIO-5 (see BIO-1)	Significant and Unavoidable (along Interstate 10 and state route 177)
Air Quality			
AQ-1: Conflict with or obstruct implementation of the applicable air quality plan.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
<p>AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard.</p>	<p>Significant and Unavoidable</p>	<p>APM AIR-1 Fugitive Dust Control Plan. The Applicants shall prepare and implement a Fugitive Dust Control Plan to address fugitive dust emissions during project construction, operation, maintenance, and future decommissioning. The plan shall include measures to minimize fugitive dust emissions from development of laydown and staging areas, site grading, vegetation management, and installation of all project facilities through post-construction cleanup. The Applicants shall take every reasonable precaution to prevent all airborne fugitive dust plumes from leaving the Project sites and to prevent visible particulate matter from being deposited upon public roadways. The Applicants shall submit the plan to South Coast Air Quality Management District for review and approval no less than 60 days prior to the start of construction. The Applicants shall incorporate the plan into all contracts and contract specifications for construction work. The Fugitive Dust Control Plan shall identify a Dust Control Supervisor that shall have the authority to expeditiously employ sufficient dust mitigation measures. The Dust Control Supervisor shall be on the site or available on site within 30 minutes during working hours and shall have the authority to implement enhanced (contingency) measures if dust plumes are visible beyond the property line, which indicates that existing mitigation measures are not resulting in effective mitigation. The following measures would be included within the plan:</p> <ul style="list-style-type: none"> ■ During construction, all unpaved roads, disturbed areas (e.g., areas of scraping, excavation, backfilling, grading, and compacting), and loose materials generated during construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent or watered two times daily or as frequently as necessary to minimize fugitive dust generation. Non-water-based soil stabilizers shall be as efficient as or more efficient for fugitive dust control than California Air Resources Board-approved soil stabilizers and shall not increase any other environmental impacts, including loss of vegetation, adverse odors, or emissions of ozone precursor reactive organic gases or volatile organic compounds. ■ For long-term site operations, the Project owner shall establish a Site Operations Dust Control Plan, which includes all applicable fugitive dust control measures identified for operations activities. The Site Operations Dust Control Plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads, shall restrict vehicular access to established unpaved travel paths within the project boundaries, and shall include the long- 	<p>Significant and Unavoidable</p>

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
AQ-2 (cont.)		<p>term inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized.</p> <ul style="list-style-type: none"> ■ The main access roads through the site shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction. Delivery, laydown, and staging areas for construction or operations and maintenance supplies shall be paved or treated prior to taking initial deliveries. ■ Grading and earthwork activities, including vegetation removal, cut and fill movement, and soil compacting, shall be phased across the site to minimize the amount of exposed or disturbed area on any single day. ■ No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions. ■ Visible speed limit signs shall be posted at the construction site entrances. ■ All construction equipment vehicle tires shall be cleaned free of dirt prior to entering paved roadways to prevent track-out from extending 25 feet or more in cumulative length from the point of origin from an active operation. Actions, including but not limited to sweeping sealed roads, use of stabilized construction/facility entrances, and, if needed, using one or more entrance/exit vehicle tire wash apparatuses, shall be taken to prevent project-related track-out. ■ All unpaved exits from the construction site shall be graveled or treated to prevent track-out onto public roadways. ■ All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris. 	
		<p>At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads to access the construction site or staging areas shall</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
AQ-2 (cont.)		<p>be swept as needed when dirt or runoff resulting from the construction activities is visible on the paved public roadway.</p> <p>APM AIR-2 Control On-Site Off-Road Equipment Emissions. The Project owner, when entering into construction contracts or when procuring off-road equipment or vehicles for on-site construction or operations and maintenance (O&M) activities, shall ensure that only new model year equipment or vehicles are obtained. The following measures would be included with contract or procurement specifications:</p> <ul style="list-style-type: none"> ■ All construction diesel engines not registered under California Air Resources Board’s Statewide Portable Equipment Registration Program, with a rating of 50 hp or higher shall meet the Tier 4 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, Section 2423(b)(1), unless a good faith effort demonstrates that such engine is not available for a particular item of equipment. If a Tier 4 engine is not available for any off-road equipment larger than 50 hp, a Tier 3 engine shall be used or that equipment shall be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 3 levels unless certified by the engine manufacturers that the use of such devices is not practical for specific engine types. ■ All diesel-fueled engines used in the construction of the facility shall have clearly visible tags showing that the engine meets the standards of this measure. ■ All equipment and trucks used in the construction or O&M of the facility shall be properly maintained and the engines tuned to the engine manufacturer’s specifications. ■ All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement. <p>APM AIR-3 Construction Activity Management Plan. Prior to the start of construction, Applicants shall review their construction schedule, updated construction fleet, and construction contractors’ commitments and prepare and implement a construction activity or phasing plan if feasible that requires construction contractors to schedule the overlapping activities of on-road motor vehicles and off-road equipment to reduce excessive daily emissions. The activity</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
AQ-2 (cont.)		management plan shall reflect the ultimate design of the solar facility and gen-tie line development timing and shall reflect the anticipated make-up of the construction equipment fleet and workforce. The plan would need to reflect dust control practices and off-road equipment engine standards.	
AQ-3: Expose sensitive receptors to substantial pollutant concentrations.	Less than Significant	APM AIR-1 (see AQ-2), APM AIR-2 (see AQ-2)	Not Applicable
AQ-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	No impact	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Cumulative Air Quality Impacts	Not cumulatively considerable or significant	APM AIR-1 (see AQ-2), APM AIR-2 (see AQ-2), APM AIR-3 (see AQ-2)	Not Applicable
Biological Resources			
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	Less than Significant with Mitigation	<p>APM BIO-1 Pre-construction biological clearance surveys will be performed at all activity areas to minimize impacts on special-status plants or wildlife species.</p> <p>APM BIO-2 Every effort will be made to minimize vegetation removal and permanent loss at activity sites. If necessary, native vegetation will be flagged for protection. A Project revegetation plan will be prepared and implemented for areas of native habitat temporarily affected during construction.</p> <p>APM BIO-4 Construction and operations crews will be directed to use best management practices where applicable, such as for prevention of soil erosion and sedimentation of streams and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction and maintenance operations.</p> <p>APM BIO-5 Biological monitors will be assigned to the Project at key times during construction and locations. The monitors will be responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, or unique resources will be avoided to the fullest extent possible. Where appropriate, monitors will flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife or special-status species. These restricted areas will be monitored to ensure their protection during construction.</p> <p>APM BIO-6 A Worker Environmental Education Program (WEEP) will be prepared, and all construction crews and contractors will be required to participate in WEEP training prior to starting work on the Project. The WEEP</p>	Less than Significant

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>training will include a review of the special-status species and other sensitive resources that exist in the Project area, as well as the locations of the sensitive biological resources, their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all personnel trained will be maintained.</p> <p>APM BIO-7 Projects will conduct Project-wide nesting bird surveys. No tree or shrub shall be removed within the nesting season (1 February–31 August) and, if removed outside the nesting season, would be removed only in a manner consistent with the California Fish and Game Code. If removal of any tree or shrub is not feasible in a manner consistent with the California Fish and Game Code, the Projects will maintain a buffer adequate to avoid otherwise prohibited take, possession, or destruction of any bird, nest, or egg.</p> <p>APM BIO-8 All transmission and sub-transmission towers and poles will be designed to be raptor-safe in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012).</p> <p>APM BIO-9 New light sources will be minimized and lighting will be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.</p> <p>APM BIO-10 Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.</p> <p>APM BIO-11 Vehicles will not exceed a speed limit of 15 mph in the rights-of-way or on unpaved roads within sensitive land-cover types.</p> <p>APM BIO-13 All trash, food items, and human-generated debris shall be properly contained and/or removed from the site.</p> <p>APM BIO-14 The development of new access and right-of-way roads for reconductoring activities will be minimized and clearing vegetation and blading for temporary vehicle access will be avoided to the extent practicable.</p> <p>APM BIO-16 The Applicants will prepare and implement an operational Habitat Management Plan for the main Project site that contains all the required operational components of the Bird and Bat Conservation Strategy, Vegetation Management Plan, and other wildlife management plans and actions required by the Applicant Proposed Measures and mitigation measures during construction, operations and maintenance, and decommissioning.</p> <p>APM BIO-17 Dust suppression will occur during all construction activities as needed.</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>APM BIO-18 No firearms will be allowed on the project site, unless otherwise approved for security personnel.</p> <p>APM BIO-19 To prevent harassment or mortality of special-status animals, or destruction of their habitats by dogs or cats, no pets will be permitted on project sites.</p> <p>APM BIO-20 All food-related trash items, including wrappers, cans, bottles, and food scraps, will be disposed of and removed from the site each day. Food items may attract coyotes and domestic dogs, consequently exposing special-status animals to increased risk of predation. No deliberate feeding of wildlife will be allowed.</p> <p>APM BIO-21 Use of chemicals, fuels, lubricants, or biocides will comply with all local, state, and federal regulations. This is necessary to minimize the possibility of contamination of habitat or primary or secondary poisoning of badgers and other predators utilizing adjacent habitats, and the depletion of American badger prey. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, the use should be restricted to interiors of buildings and zinc phosphide should be used because of the lower risk of poisoning burrowing mammals.</p> <p>APM BIO-22 Before starting construction, a representative responsible for communications with the California Department of Fish and Wildlife and U.S. Fish and Wildlife shall be appointed as the contact for any employee or contractor who inadvertently kills or injures a special-status species or finds a dead, injured, or entrapped individual. The representative will be identified during the employee education program. The name, business address, and contact information shall be provided to the wildlife agencies, and they shall be notified in writing if a substitute Designated Representative is selected or identified at any time.</p> <p>APM BIO-23 Any contractor or employee that inadvertently kills or injures a special-status animal or finds one either dead, injured, or entrapped will report the incident to the representative immediately. The representative will contact the California Department of Fish and Wildlife (CDFW) by telephone or email and the U.S. Fish and Wildlife Service (USFWS) by telephone by the end of the day, or at the beginning of the next working day if the agency office is closed. In addition, formal notification will be provided in writing within 3 working days of the incident or finding. Notification will include the date, time, location, and circumstances of</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>the incident. Any threatened or endangered species found dead or injured will be turned over immediately to USFWS, CDFW, or its designee for care, analysis, or disposition.</p> <p>APM BIO-24 Site disturbance, grading, and construction activities after dusk, other than panel cleaning, will be minimized. If such activity is necessary, one or more on-site monitors shall be required to ensure special-status species active at night are avoided.</p> <p>APM BIO-25 Bird and Bat Protection. The following measures shall be undertaken during construction and operations and maintenance (O&M) to avoid or minimize impacts to birds and bats.</p> <p>Nesting Bird Management Plan. Pre-construction surveys for active nests shall be conducted by one or more qualified biologists at the direction of the Project Lead Biologist. The biologists' qualifications shall be subject to review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management (BLM). Nest surveys shall be conducted for all Project activities throughout the nesting season, identified here as beginning January 1 for raptors and hummingbirds, beginning February 1 for other species, and continuing in both instances through August 15. Nest surveys shall be completed at each work site no more than 7 days prior to initiation of site preparation or construction activities. Nest surveys shall cover all work sites, including the solar facility and gen-tie and surrounding buffer areas of 1,200 feet for raptors and 250 feet for other species, if nesting habitat occurs in the buffer. If adjacent properties are not accessible to the field biologists, the off-site nest surveys may be conducted with binoculars.</p> <p>At each active nest, the qualified biologist shall establish and mark a buffer area surrounding the nest where construction activities that could disrupt nesting behavior shall be excluded. The Nesting Bird Management Plan may identify species-specific buffer distances or variable distances, depending on activity levels (e.g., driving past the nest to access work sites may be less disruptive than foundation construction). Alternately, buffer distances shall be 500 feet for raptor nests and 250 feet for other species, except as authorized in a particular instance by the qualified biologist. The extent of nest protection shall be based on proposed construction activities, species, human activities already underway when the nest is initiated (e.g., a house finch nest built in the eaves of an occupied structure would warrant less avoidance or protection than a loggerhead shrike nest build in native shrubland), topography, vegetation cover, and other factors. The avoidance and protection measures shall remain in effect until the nest is no longer active.</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>Projects will maintain a buffer adequate to avoid otherwise prohibited take, possession, or destruction of any bird, nest, or egg.</p> <p>Bird and Bat Conservation Strategy (BBCS). The Applicants shall prepare and implement a BBCS to avoid or minimize take of migratory birds that may nest on the site or may be vulnerable to collision with Project components. The BBCS shall identify potential hazards to birds during construction and O&M phases of the Project and specify measures to recognize, minimize, or avoid those hazards. The BBCS shall articulate the Applicants’ commitment to reduce risk to birds and bats. Over the course of construction and O&M, progress and challenges that are encountered may necessitate review or revision of the BBCS, on mutual agreement among the Applicants and the lead agencies and resource agencies. The initial goals of the BBCS are as follows:</p> <ul style="list-style-type: none"> ■ Assess potential risk to birds and bats based on the proposed activities ■ Specify the adaptive management process that will be used to address potential adverse effects on avian and bat species ■ Describe baseline conditions for bird species present within the Project site, including results of site-specific surveys ■ Specify conservation measures that will be employed to avoid, minimize, and/or mitigate potential adverse effects to birds and bats ■ Describe the incidental bird and bat monitoring and reporting that will take place during construction, <u>if not described in the Nesting Bird Management Plan.</u> ■ Provide details for following systematic post-construction bird and bat monitoring and reporting <p>Operations and Maintenance. The BBCS shall specify monitoring and conservation measures to be implemented by the Applicants to document bird mortality that may result from bird injury or mortality, including downed birds on the site that are unable to take flight, or collision with Project components, including solar panel and gen-tie line collisions. The BBCS shall include the following:</p> <ul style="list-style-type: none"> ■ A statement of the Applicants’ understanding of the importance of bird and bat safety and management’s commitment to remain in compliance with relevant laws 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<ul style="list-style-type: none"> ■ Documentation of conservation measures to be implemented through design and operations to minimize bird and bat fatalities at the solar facilities and gen-tie line ■ Consistent, practical, and up-to-date direction to O&M staff on how to avoid, reduce, and monitor bird and bat fatalities ■ Description of the incidental bird and bat mortality and injury monitoring and reporting that will take place during construction ■ Description of the post-construction avian and bat mortality monitoring and reporting of the deaths and injuries of birds and bats from collisions with facility features such as, but not limited to, transmission lines, tower structures (e.g., meteorological towers), and the solar field. The study design shall be approved by BLM and CDFW ■ Specifics regarding the process for using the monitoring data to inform an adaptive management program that would avoid and minimize Project-related avian and bat impacts ■ Specifics regarding the conservation measures that would be implemented if found necessary through the adaptive management program and the criteria to determine whether conservation measures are necessary. Such measures could potentially include efforts to make panels more visible to birds (e.g., white borders around panel edges or the use of noise deterrents) ■ Post-construction mortality monitoring and reporting shall be required for a minimum of 3 years, including the following project components: photovoltaic solar panel arrays (a minimum of 40% survey coverage per year), perimeter fencing (100% survey coverage per year), and the gen-tie line (a minimum of 50% survey coverage per year). If 2 years of monitoring demonstrates bird and bat fatality data are consistent and reliable across years to effectively predict the bird and bat fatalities, then with agreement from U.S. Fish and Wildlife Service (USFWS), BLM, and CDFW, the third year of monitoring will not be conducted and the costs of 1 year of O&M monitoring will be used as funds for conservation measures as mitigation, with BLM, USFWS, and CDFW review and approval, for the predicted impacts on migratory birds in their full life-cycle at their breeding grounds, migratory pathways, or wintering territories 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<ul style="list-style-type: none"> ■ Identification of fatality thresholds that, if surpassed, would trigger adaptive management measures such as changes to Project O&M <p>MM BIO-1 Biological Monitoring. The Applicants shall assign a Lead Biologist as the primary point of contact for the Bureau of Land Management (BLM), the California Department of Fish and Wildlife (CDFW), and the U.S. Fish and Wildlife Service (USFWS) regarding biological resources mitigation and compliance. For desert tortoise protection measures (MM BIO-9, below), the Lead Biologist will serve as the Field Contact Representative or Designated Representative. The Applicants shall provide the resume of the proposed Lead Biologist to BLM, CDFW, and USFWS for concurrence prior to onset of ground-disturbing activities. The Lead Biologist shall have demonstrated expertise with the biological resources within the Projects’ area. The Lead Biologist duties will vary during the construction, operations and maintenance (O&M), and future decommissioning of the Projects. In general, the duties will include, but will not be limited to those listed below:</p> <ul style="list-style-type: none"> ■ Regular, direct communication with representatives of lead agencies and resource agencies, as appropriate. ■ Train and supervise additional Biological Monitors to ensure that all biological monitoring activities are completed properly and according to schedules. Monitoring will include inspections of any area or activity that may impact biological resources to ensure compliance with all mitigation measures for biological resources. ■ Conduct or oversee Worker Environmental Awareness Program training (MM BIO-2). ■ Conduct or oversee clearance surveys and monitoring duties as defined in all adopted mitigation measures. ■ Halt any activities in any area if it is determined that the activity, if continued, would cause an unauthorized adverse impact to biological resources. ■ Clearly mark sensitive biological resource areas during construction, O&M, and future decommissioning, and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions. ■ Conduct or oversee bi-weekly (twice weekly) compliance inspections during ground-disturbing construction activities. Inspections will include delineating 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>limits of disturbance, fence construction activities, pre-construction clearance surveys, and initial clearing, grubbing, and grading.</p> <ul style="list-style-type: none"> ■ Inspect or oversee daily inspection of active construction or O&M activity areas where animals may have become trapped. At the end of each workday, either inspect installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm’s way and relocate them if necessary. ■ During the operations phase of the Project, conduct quarterly compliance inspections (fencing condition, trash management, wildlife mortality logs, etc.); conduct weed monitoring and control (according to the Integrated Weed Management Plan). ■ Immediately notify the Applicants, lead agencies, and resource agencies (as applicable) in writing of dead or injured special-status species, or of any non-compliance with biological mitigation measures or permit conditions. ■ During construction, provide weekly verbal or written updates to the lead agencies and resources agencies including any information pertinent to state or federal permits. ■ During construction, prepare and submit monthly compliance reports. During operations, prepare and submit annual compliance reports. <p>MM BIO-2 Worker Environmental Awareness Training. Applicants shall conduct an education program for all persons employed or otherwise working in the Projects’ area before performing any work. The program shall consist of a presentation from the Authorized Biologist(s) or Biological Monitor(s) that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to the California Endangered Species Act, including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this Incidental Take Permit. Applicants shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Projects’ area. Applicants shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Projects’ area. Upon completion of the</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually. If the training program is presented as a prerecorded presentation, it shall be accompanied by a formal process that allows submission of questions that shall be answered by the Authorized Biologist(s) within 24 hours of submission.</p> <p>The Worker Environmental Awareness Program shall:</p> <ul style="list-style-type: none"> ■ Be developed by or in consultation with the Lead Biologist and consist of an on-site or training center presentation with supporting written material and electronic media, including photographs of protected species, available to all participants. ■ Provide an explanation of the function of flagging that designates authorized work areas and specify the prohibition of soil disturbance or vehicle travel outside designated areas. ■ Discuss general safety protocols such as vehicle speed limits, hazardous substance spill prevention and containment measures, and fire prevention and protection measures. ■ Review mitigation and biological permit requirements. ■ Explain the sensitivity of the vegetation and habitat within and adjacent to work areas and proper identification of these resources. ■ Discuss the federal and state Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act and the consequences of non-compliance with these acts. ■ Discuss the locations and types of sensitive biological resources on the Project sites and adjacent areas and explain the reasons for protecting these resources. ■ Inform participants that no snakes, other reptiles, mammals, birds, bats, or any other wildlife will be harmed or harassed. ■ Place special emphasis on species that may occur on the Project sites and/or gen-tie lines, including special-status plants, desert tortoise, Mojave fringe-toed lizard, burrowing owl, golden eagle, nesting birds, desert kit fox, American badger, and burro deer. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<ul style="list-style-type: none"> ■ Specify guidelines for avoiding rattlesnakes and reporting rattlesnake observations to ensure worker safety and avoid killing or injuring rattlesnakes. Wherever feasible, rattlesnakes should be safely removed from the work area using appropriate snake handling equipment, including a secure storage container for transport. ■ Describe workers’ responsibilities for avoiding the introduction of invasive weeds onto the Project sites and surrounding areas; describe the Integrated Weed Management Plan. ■ Provide contact information for the Lead Biologist and instructions for notification of any vehicle-wildlife collisions or dead or injured wildlife species encountered during Project-related activities. ■ Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines. <u>Along with their signature, each worker will receive a sticker for their hard hats indicating they received the training.</u> <p>MM BIO-3 Minimization of Vegetation and Habitat Impacts. Prior to ground-disturbing activities, work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and spoils) shall be delineated with construction fencing (e.g., the common orange vinyl material) or staking to clearly identify the limits of work and shall be verified by the Lead Biologist. No paint or permanent discoloring agents shall be applied to rocks or vegetation (to indicate surveyor construction activity limits or for any other purpose). Fencing/staking shall remain in place for the duration of construction. Spoils will be stockpiled in disturbed areas. All disturbances, vehicles, and equipment shall be confined to the fenced/flagged areas.</p> <p>When feasible, construction activities shall minimize soil and vegetation disturbance to minimize impacts to soil and root systems. Upon completion of construction activities in any given area, all unused materials, equipment, staking and flagging, and refuse shall be removed and properly disposed of, including wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, and metal or plastic containers. Any unused or leftover hazardous products shall be properly disposed of off site.</p> <p>Hazardous materials shall be handled, and spills or leaks shall be promptly corrected and cleaned up according to applicable requirements. Vehicles will be properly maintained to prevent spills or leaks. Hazardous materials, including</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>motor oil, fuel, antifreeze, hydraulic fluid, grease, shall not be allowed to enter drainage channels.</p> <p>MM BIO-4 Integrated Weed Management Plan. The Applicants shall prepare and implement an Integrated Weed Management Plan (IWMP) to minimize or prevent invasive weeds from infesting the site or spreading into surrounding habitat. The IWMP must comply with existing Bureau of Land Management (BLM) plans and permits including the Vegetation Treatments Using Herbicides (2007) and Vegetation Treatment Using Aminopyralid, Fluroxypyr, and Rimsulfuron (2016a), including requiring a Pesticide Use Permit approved by BLM and adhering to the BLM design features. The IWMP shall also comply with the California Department of Fish and Wildlife (CDFW) measures to minimize impacts to desert tortoise: The Applicants shall only use herbicides containing a harmless dye and registered with the California Department of Pesticide Regulation (DPR). All herbicides shall be applied in accordance with regulations set by DPR. All herbicides shall be used according to labeled instructions. Labeled instructions for the herbicide used shall be made available to CDFW upon request. No herbicide application when winds are greater than 5 miles per hour. CDFW and BLM must approve the plan prior to ground-disturbing activities. The IWMP shall identify weed species occurring or potentially occurring in the Projects’ area, means to prevent their introduction or spread (e.g., vehicle cleaning and inspections), monitoring methods to identify infestations, and timely implementation of manual or chemical (as appropriate) suppression and containment measures to control or eradicate invasive weeds. The IWMP shall identify herbicides that may be used for control or eradication and avoid herbicide use in or around any environmentally sensitive areas. The IWMP shall also include a reporting schedule to be implemented by the Lead Biologist.</p> <p>MM BIO-5 Vegetation Resources Management Plan. The Applicants shall prepare and implement a Vegetation Resources Management Plan (VRMP), to be reviewed and approved by the Bureau of Land Management (BLM) and the California Department of Fish and Wildlife prior to ground-disturbing activities. The VRMP will address revegetation of temporarily disturbed areas and ongoing operations and maintenance management of native vegetation within the solar fields.</p> <p>The goal of revegetation shall be to prevent further degradation of areas that may be temporarily disturbed by Project activities, but not to restore pre-disturbance habitat values (those impacts are mitigated through off-site compensation). The VRMP shall detail the methods to revegetate temporarily impacted sites, salvage</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>cacti from the Project footprint, and long-term vegetation management within the solar facility during its operations.</p> <ul style="list-style-type: none"> ■ <i>Revegetation of temporarily impacted sites.</i> The VRMP shall specify methods to prevent or minimize further site degradation; stabilize soils; maximize the likelihood of vegetation recovery over time (for areas supporting native vegetation); and minimize soil erosion, dust generation, and weed invasions. The nature of revegetation will differ according to each site, its pre-disturbance condition, and the nature of the construction disturbance (e.g., drive and crush vs. blading). The VRMP shall include (a) soil preparation measures, including locations of recontouring, decompacting, imprinting, or other treatments; (b) details for topsoil storage, as applicable; (c) plant material collection and acquisition guidelines, including guidelines for salvaging, storing, and handling plants from the Project sites, as well as obtaining replacement plants from outside the Projects’ area (plant materials shall be limited to locally occurring native species from local sources); (d) a plan drawing or schematic depicting the temporary disturbance areas (drawing of “typical” gen-tie structure sites is appropriate); (e) time of year that the planting or seeding will occur and the methodology of the planting; (f) a description of the irrigation, if used; (g) success criteria; (h) a monitoring program to measure the success criteria, commensurate with the VRMP’s goals; and (i) contingency measures for failed revegetation efforts not meeting success criteria. ■ <i>Cactus Salvage.</i> In conformance with CMA LUPA-BIO-VEG-5, LUPA-BIO-VEG-7, and BLM policy, the Applicants shall include salvaged or nursery stock yuccas (all species) and cacti (excluding cholla species, genus <i>Cylindropuntia</i>) in revegetation plans and implementation affecting BLM lands. The VRMP shall include methods to salvage and replant cacti and yucca found on the site; season for salvaging the plants; methods for salvage, storage, and re-planting them; locations for re-planting; and appropriate monitoring and success criteria for the salvage work. ■ <i>Other Plants Protected under Desert Native Plants Act.</i> The Applicants shall, to the extent feasible, salvage other species protected under the California Desert Native Plants Act, including species in the families Fouquieriaceae; species in the genera <i>Prosopis</i> and <i>Parkinsonia</i> (<i>Cercidium</i>); and the species 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p><i>Acacia greggii</i>, <i>Atriplex hymenelytra</i>, <i>Dalea spinosa</i>, and <i>Olneya tesota</i>. The VRMP shall include methods to salvage these species on site; season for salvaging the plants; methods for salvage, storage, and re-planting them; locations for re-planting; and appropriate monitoring and success criteria for the salvage work.</p> <ul style="list-style-type: none"> ■ <i>Operations Phase On-Site Vegetation Management</i>: The VRMP shall include methods and scheduling for on-site vegetation management throughout the operations phase, describing mowing or other vegetation treatments to be implemented to minimize interference with the solar panels, fire hazard, soil disturbance, and disturbance of any bird nests. It also shall address disposal of mown material and incorporate all applicable components of the Integrated Weed Management Plan, including any proposed herbicide usage. <p>MM BIO-6 Compensation for Special-Status Wildlife Species Impacts. The Applicants shall acquire, protect and fund the management, in perpetuity, of 3,598.5 acres of compensation habitat to offset loss of special-status wildlife species. The Arica Project compensatory mitigation is 1,355 acres and the Victory Pass Project compensatory mitigation is 2,243.5 acres. The California Department of Fish and Wildlife (CDFW) will calculate and identify the final amount of required compensatory mitigation as provided by this measure, and may consider additional minimization measures that may reduce the final amount of required compensatory mitigation, prior to issuance of the Permits and final approval of the Projects under CEQA².</p> <p>Criteria for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of compensation lands shall include all the following: Provide habitat value that is biologically superior or equivalent to the habitat impacted, taking into consideration the habitat requirements and presence of special-status species including desert tortoise, Mojave fringe-toed lizard, and burrowing owl, soils, vegetation, topography, human-related disturbance, invasive species, wildlife movement opportunity, proximity to other protected lands, management feasibility, and other habitat values. The primary focus area for acquiring parcels shall be within the Colorado Desert Recovery Unit. Compensatory</p>	

² The Applicant’s approach to mitigating for special-status wildlife species included compensatory mitigation ratios for impacts to vegetation community types and desert tortoise critical habitat consistent with CMA LUPA-BIO-COMP-1. However, CDFW, for the purposes of CEQA, has taken a different approach to compensation in MM BIO-6 to compensate for special status wildlife species and associated habitat impacted by the Projects.

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>mitigation required for MM BIO-7 and MM BIO-13 may be fulfilled by the compensatory mitigation lands acquired to fulfill MM BIO-6 to the extent that the mitigation lands also meet the requirements of those mitigation measures. The Applicants shall provide funding or bonding, subject to the review and approval of CDFW, for the acquisition in fee title and through a conservation easement, initial habitat improvements and long-term maintenance and management of the compensation lands prior to construction activities on native habitat. Prior to initiating project construction, or within 18 months of initiating construction if financial security is provided, the Applicants shall implement a Compensation Plan approved by CDFW by recording a conservation easement over the compensation lands and funding an endowment or other long-term funding mechanism approved by CDFW. A draft Compensation Plan, identifying proposed compensation lands, proposed land ownership, proposed draft conservation easement language, proposed draft long-term management plan, draft funding analysis, and proposed long-term management funding mechanism amount, along with all supporting information for the acquisition and conservation of the proposed compensation lands, shall be submitted for review and approval to the Bureau of Land Management, CDFW, and the U.S. Fish and Wildlife Service prior to initiating project construction or within 9 months of initiating project construction if financial security is provided.</p> <p>MM BIO-7 Special-Status Plant Species Mitigation. The Applicants shall mitigate impacts to Emory’s crucifixion thorn and Harwood’s milkvetch (CRPR 2) through one or a combination of the following strategies.</p> <ul style="list-style-type: none"> ■ <i>Off-site compensation.</i> The Applicants shall provide compensation lands consisting of occupied Emory’s crucifixion thorn and Harwood’s milkvetch habitat at a 1:1 ratio for any occupied habitat affected by the Project, according to the terms described in MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts). Occupied habitat shall be calculated on the Project sites and on the compensation lands as including each special status plant occurrence and a surrounding 100-foot buffer area. Off-site compensation shall be incorporated into the Projects’ Habitat Compensation Plan for review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management (BLM). Compensatory mitigation required for MM BIO-7 may be fulfilled by the compensatory mitigation lands acquired to fulfill MM BIO-6 to the extent that the mitigation lands also meet the requirements of this mitigation measure. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<ul style="list-style-type: none"> <li data-bbox="804 318 1671 732">■ <i>Salvage</i>. The Applicants shall consult with Rancho Santa Ana Botanic Garden (RSABG) regarding the success of salvage efforts for these species at the Desert Sunlight Solar Farm Project site. If the strategy has been shown to be feasible, then the Applicants shall prepare and implement an Emory’s Crucifixion Thorn and Harwood’s Milkvetch Salvage and Relocation Plan to be reviewed and approved by CDFW and BLM prior to disturbance of any occupied Emory’s crucifixion thorn and Harwood’s milkvetch habitat. Emory’s crucifixion thorn and Harwood’s milkvetch on private lands may also be subject to the provisions of the California Desert Native Plants Act. The Applicants shall contract with RSABG or another entity with comparable experience and qualifications to salvage at minimum 75% of Emory’s crucifixion thorn and Harwood’s milkvetch individuals from the Project sites and transfer them to a suitable off-site location. <li data-bbox="804 748 1671 902">■ <i>Horticultural propagation and off-site introduction</i>. If salvage and relocation is not believed to be feasible for Emory’s crucifixion thorn or Harwood’s milkvetch, then the Applicants shall consult with RSABG or another qualified entity to develop and implement an appropriate experimental propagation and relocation strategy. <p data-bbox="783 919 1671 1057">MM BIO-8 Wildlife Protection. The Applicants shall undertake the following measures during construction, operations and maintenance, and decommissioning to avoid or minimize impacts to wildlife. Implementation of all measures shall be subject to review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management.</p> <ul style="list-style-type: none"> <li data-bbox="804 1073 1671 1292">■ <i>Wildlife avoidance</i>. Wherever feasible, Project activities shall avoid interference with wildlife (include ground-dwelling species, birds, bats) by allowing animals to escape from a work site prior to disturbance; conducting pre-construction surveys and exclusion measures for certain species as specified in other measures; checking existing structures (homes, trailers, etc.) for animals such as bats, barn owls, skunks, or snakes that may be present; and safely excluding them prior to removing the structures. <li data-bbox="804 1308 1671 1393">■ <i>Minimize traffic impacts</i>. The Applicants shall specify and enforce maximum vehicle speed limits as specified in the Traffic Control Plan to minimize risk of wildlife collisions and fugitive dust. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<ul style="list-style-type: none"> <li data-bbox="804 315 1682 407">■ <i>Minimize lighting impacts.</i> Night lighting, when in use, shall be designed, installed, and maintained to prevent side casting of light towards surrounding fish or wildlife habitat. <li data-bbox="804 418 1682 480">■ <i>Avoid use of toxic substances.</i> Soil bonding and weighting agents used for dust suppression on unpaved surfaces shall be non-toxic to wildlife and plants. <li data-bbox="804 492 1682 584">■ <i>Minimize noise and vibration impacts.</i> The Applicants shall conform to noise requirements specified in the noise analysis of this EIR to minimize noise to off-site habitat. <li data-bbox="804 596 1682 850">■ <i>Water.</i> Potable and non-potable water sources such as tanks, ponds, and pipes shall be covered or otherwise secured to prevent animals (including birds) from entering. Prevention methods may include storing water within closed tanks or covering open tanks with 2-centimeter netting. Dust abatement shall use the minimum amount of water on dirt roads and construction areas to meet safety and air quality standards. Water sources (e.g., hydrants, tanks, etc.) shall be checked periodically by biological monitors to ensure they do not create puddles. <li data-bbox="804 862 1682 1052">■ <i>Trash.</i> All food and trash that could attract predators will be properly disposed of in self-closing, sealable containers, with lids that latch to prevent wind, common ravens (<i>Corvus corax</i>), and other scavengers from opening the containers. Applicants shall ensure all trash receptacles are regularly inspected, emptied, and removed from the Project Area at least once a week to prevent spillage and maintain sanitary conditions. <li data-bbox="804 1063 1682 1318">■ <i>Firearms and Dogs.</i> The Applicants shall prohibit Project personnel and any other individuals associated with the Project from bringing any firearms on the Project site, except those in the possession of authorized security personnel or local, state, or federal law enforcement officials. To prevent harassment or mortality of special-status animals or destruction of their habitats by dogs or cats, no pets should be permitted on project sites except dogs that may be used to aid in official and approved monitoring procedures/protocols or service dogs under Title II and Title III of the American with Disabilities Act. <li data-bbox="804 1330 1682 1425">■ <i>Wildlife netting or exclusion fencing.</i> The Applicants may install temporary or permanent netting or fencing around equipment, work areas, or Project facilities to prevent wildlife exposure to hazards such as toxic materials or 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>vehicle strikes or prevent birds from nesting on equipment or facilities. Bird deterrent netting shall be maintained free of holes and shall be deployed and secured on the equipment in a manner that, insofar as possible, prevents wildlife from becoming trapped inside the netted area or within the excess netting. The biological monitor shall inspect netting (if installed) twice daily, at the beginning and close of each workday. The biological monitor shall inspect exclusion fence (if installed) weekly.</p> <ul style="list-style-type: none"> ■ <i>Wildlife entrapment.</i> Any pipes, culverts, or similar structures with a diameter greater than 3 inches and less than 8 inches aboveground shall be inspected by the Authorized Biologist(s) and/or Biological Monitor(s) before the material is moved, buried, or capped. The Authorized Biologist(s) and/or Biological Monitor(s) shall inspect all open holes and trenches within the project site a minimum of once a day and just prior to backfilling. At the end of each workday, Applicants shall place an escape ramp at each end of trenches to allow any animals that may have become trapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees. If any worker discovers an animal has become trapped, they shall halt activities and notify the Biological Monitor(s), Authorized Biologist(s), or Lead Biologist immediately. Project workers shall allow the animal to escape unimpeded if possible, or an approved biologist shall move the animal out of harm’s way before allowing work to continue. ■ <i>Dead or injured wildlife</i> shall be reported to CDFW or the local animal control agency, as appropriate (special-status species must be reported to CDFW). A biological monitor shall safely move the carcass out of the road or work area if needed and dispose of the animal as directed by the agency. If an animal is entrapped, a biological monitor shall free the animal if feasible, or work with construction crews to free it, in compliance with safety requirements, or work with animal control or CDFW to resolve the situation. ■ <i>Pest control.</i> No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project sites, on off-site project facilities and activities, or in support of any other project activities. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>MM BIO-9 Desert Tortoise Protection. No desert tortoise may be handled or relocated without authorization from U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). The Applicants shall obtain incidental take authorization from both agencies to address any potential take of desert tortoise, including authorization to handle or translocate desert tortoise. Desert tortoises would be handled or translocated according to a Desert Tortoise Relocation Plan, pending approval by both agencies.</p> <p>The Applicants shall employ an approved Authorized Biologist(s) who is qualified to handle desert tortoises and an approved Biological Monitor(s). Additionally, the Applicants shall designate a Lead Biologist as the Designated Representative for purposes of the desert tortoise protection measures identified below. The Authorized Biologist may be the Project’s Lead Biologist, a biological monitor, or another individual.</p> <p><u>Biological Monitor(s).</u> The Biological Monitor(s) shall be knowledgeable and experienced in the biology and natural history of the desert tortoise. They shall be responsible for monitoring activities to help minimize and fully mitigate or avoid the incidental take of desert tortoise and to minimize disturbance of habitat.</p> <p><u>Authorized Biologist.</u> The Authorized Biologist(s) shall be knowledgeable in the biology and natural history of the desert tortoise. They shall be responsible for monitoring activities to help minimize and fully mitigate and avoid the incidental take of individual desert tortoise and to minimize disturbance of habitat. Additionally, the Authorized Biologist(s) shall have experience with all activities that will be carried out for the Project including, but not limited to, excavating burrows; handling and temporarily holding the desert tortoise; relocating/translocating; reconstructing burrows; unearthing and relocating eggs; locating, identifying, and recording all forms of signs; collecting blood samples; conducting health assessments; conducting protocol level surveys; and/or attaching and removing transmitters to and from the Covered Species.</p> <p><u>Biologists and Veterinarians Approvals.</u> The Applicants shall obtain CDFW approval of the Authorized Biologist(s), Biological Monitor(s), and if needed veterinarian(s), in writing before starting ground disturbance, and shall also obtain advance written approval if any of these entities are changed.</p> <p><u>Authorized Biologist(s) and Biological Monitor(s) Authority.</u> To ensure compliance with protective measures, the Biological Monitor(s) and/or Authorized Biologist(s) shall have authority and take necessary steps to immediately stop work if necessary and/or Authorized Biologist(s) shall order any reasonable measure to</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>avoid the unauthorized take of a desert tortoise. If a Biological Monitor or Authorized Biologist stops work, work shall not resume until an Authorized Biologist determines that all activities are in compliance and communicates that determination to the on-site manager. The applicant shall inform all persons employed or otherwise working in the Projects' area that the Biological Monitor(s) and Authorized Biologist(s) have the authority described in this subsection.</p> <p>The Authorized Biologist shall conduct or direct pre-construction clearance surveys for each work area, direct Biological Monitors to watch for tortoises wandering into the construction areas, check under vehicles, and examine excavations and other potential pitfalls for entrapped animals. The Authorized Biologist shall be responsible for overseeing compliance with desert tortoise protective measures and for coordination with the Project's Lead Biologist or Designated Representative.</p> <p>Neither the Designated Representative nor any other Project employee may bar or limit any communications between the lead agencies or resource agencies and any Project biologist, Biological Monitor, or contracted biologist. Upon notification by the Authorized Biologist or another Biological Monitor of any noncompliance, the Field Contact Representative shall ensure that appropriate corrective action is taken. Corrective actions shall be documented by the Authorized Biologist. The following incidents shall require immediate cessation of any Project activities that could harm a desert tortoise: (1) location of a desert tortoise within a work area; (2) imminent threat of injury or death to a desert tortoise; (3) unauthorized handling of a desert tortoise, regardless of intent; (4) operation of construction equipment or vehicles outside a Project area cleared of desert tortoise, except on designated roads; and (5) conducting any construction activity without a biological monitor where one is required.</p> <p>The Applicants shall be responsible for implementing the following requirements, under direction by the Authorized Biologist and Designated Representative where appropriate.</p> <ul style="list-style-type: none"> ■ <i>Preconstruction Clearance Survey.</i> Clearance surveys shall use the methods described in the most recent USFWS Desert Tortoise (Mojave Population) Field Manual. Pre-construction clearance surveys shall be completed using perpendicular survey routes within the Project Area. Pre-construction clearance surveys cannot be combined with other clearance surveys conducted for other species while using the same personnel. Ground disturbance cannot start until two negative results from consecutive surveys 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>using perpendicular survey routes for the desert tortoise are documented. Clearance surveys must be conducted during the active season for desert tortoises (April through May or September through October), unless authorized by CDFW and USFWS. If a tortoise or an occupied tortoise burrow is located during clearance surveys, work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord, or if it has been translocated off the site under authorization by USFWS and CDFW.</p> <ul style="list-style-type: none"> ■ <i>Worker Training:</i> The Applicants shall conduct an education program for all persons employed or otherwise working in the Projects' area before performing any work. The program shall consist of a presentation from the Authorized Biologist(s) or Biological Monitor(s) that includes a discussion of the biology and general behavior of the Covered Species; information about the distribution and habitat needs of the Covered Species; sensitivity of the Covered Species to human activities; its status pursuant to the California Endangered Species Act, including legal protection, recovery efforts, and penalties for violations; and Project-specific protective measures. The Applicants shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. They shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Projects' area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. If the training program is presented as a prerecorded presentation, it shall be accompanied by a formal process that allows submission of questions that shall be answered by the Authorized Biologist(s) within 24 hours of submission. ■ <i>Construction phase, operation phase, and decommissioning phase tortoise exclusion fencing.</i> Prior to initiation of Project construction, permanent desert tortoise exclusion fencing shall be installed around work areas where a permanent chain link fence will also be installed (such as the solar arrays). The permanent desert tortoise exclusion fencing shall be attached to the 6-foot-high standard chain link security fencing. This fencing shall be installed around the array fields, operation and maintenance facilities, warehouses, 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>substations, switchyard, and interconnection facilities. The desert tortoise fence shall be constructed according to Chapter 8 of the USFWS Field Manual, but if any tortoises less than or equal to 100 millimeters Midline Carapace Length are translocated within 500 meters of the Project site, tortoise fencing shall be 16 gauge or heavier galvanized after welded wire with mesh opening of ½ inch horizontal by ½ inch vertical.</p> <ul style="list-style-type: none"> ■ The Authorized Biologist shall direct a clearance survey before the tortoise fence is enclosed to ensure no tortoises are in the work area. Any potentially occupied burrows shall be avoided until monitoring or field observations (e.g., with a motion-activated camera or fiber-optic mounted video camera) determine absence. If live tortoises or an occupied tortoise burrow are identified in the work area, tortoises shall be relocated under authorization by USFWS and CDFW or allowed to leave on their own accord before enclosing the fence. The fence shall be either continuously monitored prior to closure, or clearance surveys shall be repeated prior to closure after tortoises are removed. Once installed, exclusion fencing shall be inspected at least monthly and within 24 hours following all major rain events, and corrective action taken if needed to maintain it. Tortoise exclusion fencing shall include a “cattle guard” or desert tortoise exclusion gate at each entry point. This gate shall remain closed at all times, except when vehicles are entering or leaving. If it is deemed necessary to leave the gate open for extended periods of time (e.g., during high traffic periods), the gate may be left open as long as a qualified biologist is present to monitor for tortoise activity in the vicinity. The permanent desert tortoise exclusion fencing shall be maintained for the life of the Project. ■ <i>Unfenced work areas.</i> As an alternative to installation of permanent desert tortoise exclusion fencing, any work conducted in an area that is not fenced to exclude desert tortoises (e.g., gen-tie tower sites) shall be monitored by a qualified biologist who must stop work if a tortoise enters the work area. Work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord or been translocated off the site under authorization by USFWS and CDFW. Work sites with potential hazards to desert tortoise (e.g., auger holes, steep-sided depressions) that are outside of the desert tortoise exclusion fencing shall be 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>fenced by installing exclusionary fencing, covered, or shall not be left unfilled overnight.</p> <ul style="list-style-type: none"> ■ <i>Tortoises under vehicles.</i> The ground beneath vehicles parked outside of desert tortoise exclusion fencing shall be inspected immediately prior to the vehicle being moved. If a tortoise is found beneath a vehicle, the vehicle shall not be moved until the desert tortoise leaves of its own accord. ■ <i>Tortoises on roads.</i> If a tortoise is observed on or near the road accessing a work area, vehicles shall stop to allow the tortoise to move off the road on its own. ■ <i>Tortoise observations.</i> Any time a tortoise is observed within or near a work site, Project work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord or been translocated off the site under authorization by USFWS and CDFW. If a tortoise is observed outside of exclusion fencing, construction shall stop and the tortoise shall be allowed to move out of the area on its own. If a tortoise or tortoise burrow is observed within the exclusion fencing, construction in the vicinity shall stop, pending translocation of the tortoise or other action as authorized by USFWS and CDFW. ■ <i>Dead or injured specimens.</i> Applicants shall immediately notify the Biological Monitor(s) and/or Authorized Biologist(s) if a Covered Species is taken or injured by a Project-related activity, or if a desert tortoise is otherwise found dead or injured within the vicinity of the Project. The Biological Monitor(s), Authorized Biologist(s), or Designated Representative shall provide initial notification to CDFW and USFWS. Following initial notification, a written report shall be emailed within 3 calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and, if possible, a photograph, explanation as to cause of take or injury, and any other pertinent information. The Applicants or their agent shall also immediately notify the Palm Springs Fish and Wildlife Office by email or telephone. Written notification must be made within 5 days of the finding, both to the appropriate USFWS field office and to USFWS’s Division of Law Enforcement. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>■ Raven Management Plan. The Applicants shall develop and implement a Raven Management Plan to address activities that may occur during the pre-construction, construction, future decommissioning, and operations and maintenance phases of the Project that may attract common ravens (<i>Corvus corax</i>), a nuisance species that is a subsidized predator of desert tortoises and other sensitive species in the Project vicinity. The measures contained in the Raven Management Plan shall be designed to:</p> <ul style="list-style-type: none"> ○ Identify conditions associated with the Project that might provide raven subsidies or attractants ○ Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities ○ Describe monitoring during construction and operations, including methods to identify individual ravens that prey on desert tortoises ○ The Project Applicants shall submit payment to the Project sub-account of the Renewable Energy Action Team Account held by the National Fish and Wildlife Foundation to support the Service’s Regional Raven Management Program. The one-time fee shall be as described in the cost allocation methodology or more current guidance as provided by the Service or CDFW. The contribution to the regional raven management plan shall be \$105 per acre impacted <p>MM BIO-10 Gen-Tie Lines. Gen-tie line support structures and other facility structures shall be designed in compliance with current standards and practices to discourage their use by raptors for perching or nesting (e.g., by use of anti-perching devices). This design would also reduce the potential for increased predation of special-status species, such as the desert tortoise. Mechanisms to visually warn birds (permanent markers or bird flight diverters) shall be placed on gen-tie lines at regular intervals to prevent birds from colliding with the lines (APLIC 2006). To the extent practicable, the use of guy wires shall be avoided because they pose a collision hazard for birds and bats. Necessary guy wires shall be clearly marked with bird flight diverters to reduce the probability of collision. Shield wires shall be marked with devices that have been scientifically tested and found to significantly reduce the potential for bird collisions. Gen-tie lines shall maintain sufficient distance between all conductors and grounded components to prevent potential for electrocution of the largest birds that may occur in the area</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>(e.g., golden eagle and turkey vulture). They shall utilize non-specular conductors and non-reflective coatings on insulators.</p> <p>MM BIO-11 Burrowing Owl Avoidance and Relocation. The Applicants shall prepare and implement a plan for burrowing owl. The plan shall be reviewed and guidance provided by the lead agencies prior to the start of ground-disturbing activities. Burrowing owl protection and relocation shall follow the Staff Report on Burrowing Owl Mitigation (CDFG 2012) and incorporate the following requirements:</p> <ul style="list-style-type: none"> ■ Pre-construction surveys for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash) shall be conducted throughout each work area. Survey schedules shall be coordinated with constructing the desert tortoise exclusion fence and the pre-construction desert tortoise clearance surveys. As needed, follow-up surveys shall be conducted no more than 14 days prior to construction. ■ Should any of the pre-construction surveys identify burrowing owl or active burrows within the solar facility, the Lead Biologist shall coordinate with the Construction Contractor to implement avoidance and setback distances as specified in the Staff Report on Burrowing Owl Mitigation (CDFG 2012). ■ Any unoccupied suitable burrows within the solar facility footprint shall be excavated and filled in under the supervision of the Lead Biologist prior to site preparation during the non-breeding season. ■ The plan shall specify detailed methods for passive relocation of burrowing owls if needed and monitoring and management of the passive relocation including a 3-year monitoring program. <p>MM BIO-12 Desert Kit Fox and American Badger Relocation. The Applicants shall prepare and implement a plan for desert kit fox and American badger. The plan shall be reviewed and guidance provided by the lead agencies prior to the start of ground-disturbing activities. Under direction of the Lead Biologist, biological monitors shall conduct pre-construction surveys for desert kit fox and American badger. Survey schedules shall be coordinated with construction of the desert tortoise exclusion fence and the pre-construction desert tortoise clearance surveys. Surveys shall also consider the potential presence of dens within 100 feet of the Project boundary (including utility corridors and access roads). If dens are detected, each den shall then be further classified as inactive, potentially active, or</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-1 (cont.)		<p>active. Active dens shall be avoided between January 15 and July 1 (or when pups are independent) and a 500-foot (no vegetation removal) buffer will be created around the den. Depending on the location of the den, a 500-foot buffer of intact vegetation may need to be maintained all the way up to the fenceline to allow cover for desert kit fox and/or American badger to get on and off the site before animals can be passively relocated. CDFW may authorize a reduction in the buffer distance in limited circumstances where site access is inhibited and a buffer reduction would not adversely affect desert kit fox and/or American badger.</p> <p>Inactive dens directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse. During the non-breeding/pupping season potentially active dens within the construction footprint shall be monitored by a Biological Monitor for 3 consecutive nights using a tracking medium such as diatomaceous medium or fire clay and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after 3 nights, the den shall be excavated and backfilled by hand. If tracks are observed, dens shall be fitted with one-way trap doors to encourage animals to move off site. After 48 hours post-installation, the den shall be excavated by hand and collapsed. Dens shall be collapsed prior to construction of the perimeter fence, to allow animals the opportunity to move off site without impediment. If an active natal den is detected on the site, the California Department of Fish and Wildlife (CDFW) shall be contacted within 24 hours. The course of action would depend on the age of the pups, location of the den site, status of the perimeter fence, and the pending construction activities proposed near the den. A 500-foot no disturbance buffer shall be maintained around all active dens. Additionally, the following measures are required to minimize the likelihood of distemper transmission:</p> <ul style="list-style-type: none"> ■ Disinfection procedures for equipment and personnel will be followed during any activities related to kit fox on site. Any documented kit fox mortality shall be reported to CDFW within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until CDFW determines if the collection of necropsy samples is justified. 	
<p>BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California</p>	<p>Less than Significant with Mitigation</p>	<p>APM BIO-2, APM BIO-4, APM BIO-5, APM BIO-6, APM BIO-10, APM BIO-14, APM BIO-16, and APM BIO-17 (see BIO-1)</p> <p>MM BIO-13 Stream Protection and Compensation. Prior to ground-disturbing activities in jurisdictional waters of the state including streams, the Applicants shall enter into a Lake and Streambed Agreement with the California</p>	<p>Less than Significant</p>

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		<p>Department of Fish and Wildlife (CDFW) and obtain applicable authorization from the Regional Water Quality Control Board. The Applicants shall implement all conditions associated with regulatory agency agreements/authorizations including compensatory mitigation and shall implement Best Management Practices identified below to minimize adverse impacts to streams and watersheds.</p> <ul style="list-style-type: none"> ■ Vehicles and equipment shall not be operated in ponded or flowing water except as specified by resource agencies. ■ The Applicants shall minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible. ■ The Applicants shall prevent water containing mud, silt, or other pollutants from grading or other activities from entering ephemeral drainages or being placed in locations that may be subjected to high storm flows. ■ Spoil sites shall not be located within 30 feet from the boundaries of drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages. ■ Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources resulting from Project-related activities shall be prevented from contaminating the soil and/or entering ephemeral drainages. The Applicants shall ensure that safety precautions specified by this measure, as well as all other safety requirements of other measures and permit conditions, are followed during all phases of the Project. ■ When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high-water mark of any drainage during construction, operation, and future decommissioning the Project. ■ No petroleum products or other pollutants from the equipment shall be allowed to enter any state-jurisdictional waters under any flow. ■ With the exception of the drainage control system installed for the Project, the installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-2 (cont.)		<ul style="list-style-type: none"> ■ No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters. ■ Stationary equipment such as motors, pumps, generators, and welders located within or adjacent to a drainage shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as brooms, absorbent pads, and skimmers shall be on site prior to the start of construction. ■ The cleanup of all spills shall begin immediately. CDFW and the Bureau of Land Management shall be notified immediately by the Applicants of any spills and shall be consulted regarding clean-up procedures. ■ Projects impacts to 8.65 acres of desert dry wash woodland and 80.66 acres of unvegetated ephemeral dry wash shall be mitigated by providing compensatory mitigation. CDFW will calculate and identify the final amount of required compensatory mitigation as provided by this measure prior to issuance of the Permits. Compensatory mitigation required for MM BIO-13 may be fulfilled by the compensatory mitigation lands acquired to fulfill MM BIO-6 to the extent that the mitigation lands provide adequate acres of desert dry wash woodland and unvegetated ephemeral dry wash as agreed to in the Lake and Streambed Agreement. 	
BIO-3 Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	Less than Significant with Mitigation	<p>MM BIO-1 through MM BIO-6 (see BIO-1)</p> <p>APM BIO-3 Construction crews will avoid affecting wetlands, streambeds, and banks of any streams to the extent feasible.</p> <p>APM BIO-12 No vehicles or equipment shall be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to drainages or wetlands shall be checked and maintained daily to prevent leaks of materials.</p> <p>APM BIO-15 Development will maintain existing hydrologic patterns with respect to runoff supporting seasonal wetlands.</p> <p>APM BIO-4, APM BIO-5, APM BIO-6, APM BIO-10, APM BIO-14, and APM BIO-21 (see BIO-1)</p> <p>MM BIO-1 through MM BIO-6 (see BIO-1), MM BIO-13 (see BIO-2)</p>	Less than Significant

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
BIO-4 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Less than Significant with Mitigation	APM BIO-1, APM BIO-5, APM BIO-6, APM BIO-7, APM BIO-10, and APM BIO-25 (see BIO-1) MM BIO-1 through MM BIO-6 and MM-BIO-8 through MM BIO-12 (see BIO-1)	Less than Significant
BIO-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	Less than Significant with Mitigation	MM BIO-1 through MM BIO-13 (see BIO-1 and BIO-2)	Less than Significant
BIO-6 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved, local, regional, or state habitat conservation plan.	Less than Significant	No APMs incorporated or MMs are required.	Not Applicable
Cumulative Biological Resources Impacts	Not cumulatively considerable or significant	APM BIO-1 through APM BIO-25 (see BIO-1 and BIO-3) MM BIO-1 through MM BIO-13 (see BIO-1 and BIO-2)	Not Applicable
Cultural Resources			
C-1: Cause a substantial adverse change in the significance of an historical resource pursuant to Section 15064.5.	Less than Significant	APM CUL 1 Retain a Qualified Archaeologist. Prior to the start of construction, a Project Cultural Resources Specialist (CRS) whose training and background conforms to the U.S. Secretary of Interior’s Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, Part 61, shall be retained to supervise monitoring of construction excavations and to prepare a Cultural Resources Monitoring Plan for the approved Projects. The CRS’s qualifications shall be appropriate to the needs of the Projects, specifically an archaeologist with demonstrated prior experience in the Southern California desert and previous experience working with Southern California Tribal Nations. A copy of the CRS’s qualifications shall be provided to the California Department of Fish and Wildlife and the Bureau of Land Management for review and approval. APM CUL-2 Develop and Implement Cultural Resources Environmental Awareness Training. Prior to issuance of a Notice to Proceed by the Bureau of	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
C-1 (cont.)		<p>Land Management (BLM) and for the duration of ground disturbance (as defined in APM CUL-4), the Applicants shall provide Worker Environmental Awareness Program (WEAP) training to all workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the Cultural Resources Specialist (CRS), may be conducted by any member of the archaeological team, and may be presented in the form of a video. Tribal representatives will be given the opportunity to participate in the WEAP training. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed if ground disturbance resumes. Training shall include the following:</p> <ul style="list-style-type: none"> ■ a discussion of applicable laws and penalties under the law ■ samples or visuals of artifacts that might be found in the project vicinity ■ a brief review of the cultural sensitivity of the Projects and the surrounding area ■ a discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed ■ a discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits ■ instruction that only the CRS, alternate CRS, and supervisory cultural resource field staff have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS ■ instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or supervisory cultural resource field staff, and that redirection of work would be determined by the construction supervisor and the CRS ■ an informational brochure that identifies reporting procedures in the event of a discovery ■ an acknowledgement form signed by each worker indicating that they have received the training 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
C-1 (cont.)		<ul style="list-style-type: none"> ■ a sticker that shall be placed on hard hats indicating that environmental training has been completed <p>This is a mandatory training, and all construction personnel must attend prior to beginning work on the Project sites. A copy of the sign-in sheet shall be kept ensuring compliance with this measure. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the BLM.</p> <p>APM CUL-3 Cultural Resources Monitoring and Treatment Plan. Prior to start of construction, the Cultural Resources Specialist (CRS) shall develop a Cultural Resource Monitoring and Treatment Plan (CRMTP) that addresses the details of all activities and provides procedures that must be followed to reduce the potential impacts to undiscovered buried archaeological resources associated with the proposed Projects.</p> <p>The CRMTP shall describe a program for avoiding and monitoring undiscovered National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) eligible cultural resources that can be avoided during Project construction. The CRMTP may require that protective fencing or other markers, at the discretion of the Bureau of Land Management (BLM), be erected and maintained to protect these resources from inadvertent adverse effects during construction. The CRMTP shall also include maps and narrative discussion of areas considered to be of high sensitivity for discovery of buried archaeological resources, if any. The CRMTP shall detail provisions for monitoring construction activities in these high-sensitivity areas. It shall also detail the methods, consultation procedures, and timelines for addressing all post-review discoveries.</p> <p>The CRMTP shall identify person(s) expected to perform any monitoring tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team. It shall also specify monitoring reporting and what forms/documentation needs to be completed daily during monitoring.</p> <p>The CRS shall manage all monitoring, mitigation, curation, and reporting activities under the CRMTP. The CRS shall have a BLM California cultural resource use permit and all supervisory cultural resource field staff (principal investigators and field directors or crew chiefs) shall be listed on that permit and otherwise meet the requirements outlined in BLM Manual 8150. The Applicants shall ensure that the CRS makes recommendations regarding the eligibility for listing in the NRHP and</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
C-1 (cont.)		<p>CRHR of any cultural resources that are newly dis-covered or that may be affected in an unanticipated manner.</p> <p>The CRMTP shall address the authority to halt ground disturbance during construction. If a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by BLM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting shall continue during the Projects’ ground-disturbing activities elsewhere. Additional procedures regarding halting ground disturbance to address a post-review discovery or unanticipated effects shall be described in the CRMTP.</p> <p>The CRMTP shall include, but not be limited to, the following elements, and shall be consistent with all other mitigation measures contained in this document:</p> <ul style="list-style-type: none"> ■ Preparation and implementation of a data recovery plan to be used to guide the data recovery and disposition of the tribal cultural resources (as defined under the California Environmental Quality Act) that cannot be avoided, and any other tribal cultural resources that may be encountered during construction. The data recovery plan shall include, minimally, a regional cultural setting, appropriate regional research questions, field and laboratory methods for the data recovery effort, and analysis and reporting requirements. The data recovery plan shall include treatment measures that focus on recovering information related to tribal values as they are conveyed through archaeological data. The treatment measures shall be developed through consultation among the California Department of Fish and Wildlife (CDFW), the Native American Heritage Commission–listed traditionally culturally affiliated tribes, and BLM as the landowner. Treatment measures may include detailed resource documentation, preparation of interpretative or educational materials, reburial of artifacts that convey tribal values, or other measures identified in coordination with the tribes and, as needed, authorized by BLM. <p>Following implementation of data recovery and other treatment protocols, a report documenting the methods and results of the data recovery and treatment program shall be prepared by a Secretary of the Interior-qualified archaeologist and shall be submitted to CDFW for review and approval.</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
C-1 (cont.)		<p>Materials that are archaeological resources under the Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act (NAGPRA) materials, and historic properties under the NHPA are subject to the processes and procedures set forth in the applicable laws and regulations. In accordance with Title 43 Code of Federal Regulations Section 7.33, the BLM land manager may determine that certain materials (excluding those regulated by NAGPRA) are not or are no longer of archaeological interest and therefore not considered archaeological resources. For materials determined not to be archaeological resources under Title 43 Code of Federal Regulations Section 7.33, the BLM land manager may determine appropriate conservation measures, including, but not limited to, avoidance, leaving materials in situ or relocation to the nearest discovery locale as practicable, reburial, curation, or any other measure as the BLM land manager deems appropriate under applicable laws, regulations, and BLM policies related to such activity.</p> <p>APM CUL-4 Archaeological Monitoring. A qualified archaeological monitor that meets the Secretary of the Interior’s Professional Qualifications Standards (as defined in Title 36 Code of Federal Regulations Part 61), shall be present for initial grading activities in undisturbed soil. The archaeological monitor shall complete daily monitoring forms. The archaeological monitor will have the authority to increase or decrease the monitoring effort should the monitoring results indicate that a change is warranted.</p> <p>APM CUL-5 Unanticipated Discovery. In the event that previously unknown cultural resources (sites, features, or artifacts) are exposed during grading or other construction activities, all construction work occurring within 50 feet of the find shall immediately stop until a qualified archaeologist can evaluate the significance of the find and determine (in consultation with the California Department of Fish and Wildlife and the Bureau of Land Management) whether or not additional study is warranted, consistent with the rules and stipulations detailed in the Cultural Resource Monitoring and Treatment Plan (APM CUL-3). Depending upon the significance of the find, the archaeologist may record the find and allow work to continue. If the discovery proves significant under the California Environmental Quality Act, specific resource documentation or recovery shall be implemented, including preparation of an archaeological treatment plan, testing, or data recovery. During the assessment and recovery time, construction work may proceed in other areas.</p> <p>APM CUL-6 Treatment of Human Remains. In accordance with state law (California Health and Safety Code Section 7050.5; California Public Resources</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
C-1 (cont.)		<p>Code, Section 5097.98), if human remains are found, all ground-disturbing activities shall halt within 165 feet (50 meters) of the discovery. The Bureau of Land Management and County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the discovery or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined whether the remains are subject to his or her authority. The County Coroner must make this determination within 2 working days of notification of the discovery (pursuant to California Health and Safety Code Section 7050.5[b]). If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are, or are believed to be Native American, the Coroner must notify the Native American Heritage Commission by telephone within 24 hours, which must in turn immediately notify those persons it believes to be the most likely descendant (MLD) of the deceased Native American. The MLD shall complete its inspection and make recommendations within 48 hours of being granted access to the site. The MLD may recommend means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods.</p> <p>APM CUL-7 Monitoring Report. Within 6 months of finishing construction of the Projects, a Cultural Resources Monitoring Report shall be prepared and provided to the Bureau of Land Management and the California Department of Fish and Wildlife. The report shall include evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting(s) and evidence that any artifacts have been treated in accordance with procedures stipulated in the Cultural Resources Monitoring Plan.</p>	
C-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.	Less than Significant	APM CUL-1 through APM CUL-7 (see C-1)	Not Applicable
C-3 Disturb any human remains, including those interred outside of dedicated cemeteries.	Less than Significant	APM CUL-1 through APM CUL-7 (see C-1)	Not Applicable
Cumulative Cultural Resources Impacts	Cumulatively considerable and significant (visual intrusion of the prehistoric	APM CUL-8 DTC/CAMA Feature Recording. To address cumulative impacts to the Desert Training Center California Arizona Maneuvers Area (DTC/CAMA), the projects owner shall retain cultural resources specialists who are qualified to obtain a Cultural Resources Use Permit and Fieldwork Authorization from the Bureau of Land Management (BLM) to record a DTC/CAMA feature within the	Significant and Unavoidable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Cumulative Cultural Resources Impacts (cont.)	archaeological value of the Prehistoric Trails Network Cultural Landscape/Historic District)	<p>Projects APE. The specific feature and type of recordation required will be determined in consultation with the BLM.</p> <p>APM CUL-9 Prehistoric Trails. To address cumulative and indirect visual impacts to the Prehistoric Trails Network Cultural Landscape/Historic District (PTNCL) prior to ground disturbance, the Applicants shall either draft a summary report of the region or contribute direct funding to non-profit groups approved by the Bureau of Land Management (BLM) to implement actions to preserve pre-construction evidence of PTNCL sites for future generations. The amount of direct funding would be determined under consultation with the BLM taking into consideration the indirect impacts to the resource.</p> <p>The summary report would be drafted by a cultural resources specialists with prior experience working with prehistoric resources in the Blythe and/or Desert Center vicinity. These specialists shall review and synthesize the information contained in DPR forms and previously prepared reports regarding prehistoric trails and associated artifacts and features in the Chuckwalla Valley. Ethnographic documentation and reports describing local landscapes will also be reviewed to provide interpretive context. The results shall be summarized in a report and district DPR form, if appropriate, for the Desert Center vicinity. The report and DPR forms shall be submitted to BLM for review prior to completion of the proposed Projects. Within 30 days after BLM review and approval, the report and DPR forms shall be submitted to the California Historical Resources Information System Eastern Information Center.</p> <p>APM CUL-1 through APM CUL-7 (see C-1)</p>	
Energy			
E-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	Less than Significant	APM AIR-2 (see AQ-2), APM TRA-2 (see T-1)	Not Applicable
E-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	No Impact	No APMs incorporated or additional MMs are required.	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Cumulative Energy Impacts	Not cumulatively considerable or significant	APM AIR-2 (see AQ-2), APM TRA-2 (see T-1)	Not Applicable
Geology and Soils (Paleontological Resources)			
GS-1i: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
GS-1ii: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
GS-2: Result in substantial soil erosion or the loss of topsoil.	Less than Significant	APM GS-1 Desert Pavement Avoidance. Prior to final Project design, the Applicants shall retain a Bureau of Land Management (BLM) approved geologist, geomorphologist, or biologist, if not already completed during the CEQA review, to identify areas of desert pavement in areas of proposed ground disturbance, in the southwest portion of the Victory Pass Project site. A map shall be prepared delineating these areas of desert pavement. Based on the map, the final Project design shall be completed such that desert pavement is avoided to the maximum extent possible and/or practical. These areas of desert pavement shall also be avoided during grading and construction to the maximum extent possible and/or practical. A geologist, geomorphologist, or biologist shall monitor grading and construction near the areas of desert pavement to ensure that areas of desert pavement are not disturbed to the extent feasible. APM AIR-1 (see AQ-2), APM HWQ-1 (see HWQ-1), APM HWQ-3 (see HWQ-3a)	Not Applicable
G-3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading,	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
subsidence, liquefaction, or collapse.			
G-4: Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial risks to life or property.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
G-5: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water.	Less than Significant	APM GS-2 An on-site septic system and leach field will meet all specifications of the applicable governmental jurisdictions.	Not Applicable
GS-6: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less than Significant	<p>APM GS-3 Paleontological Resource Monitoring and Mitigation Plan. Prior to the start of any Project-related construction activities, the Applicants shall retain a Bureau of Land Management (BLM) approved paleontologist (Project Paleontologist) to prepare and implement a Project-specific Paleontological Resource Monitoring and Mitigation Plan (PRMMP) to be approved by BLM. The Project Paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work and field monitoring. Information to be contained in the PRMMP, at a minimum and in addition to other information required by industry, Society of Vertebrate Paleontology, and BLM paleontology standards, are as follows:</p> <ul style="list-style-type: none"> ■ Description of the Project sites and planned earthwork and excavation. ■ Description of the level and intensity of monitoring required in various areas of the Projects where construction activities require earthwork and excavation. ■ Directions for sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. ■ Identification of personnel with authority and responsibility to temporarily halt or divert earthmoving equipment to allow for recovery of large specimens. <p>The PRMMP shall be submitted to BLM for review 60 days prior to start of Project construction.</p>	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
GS-6 (cont.)		<p>APM GS-4 Pre-construction Resource Survey and Collection. Prior to the initiation of any ground-disturbing activities, including geotechnical work, grubbing, or grading, all scientifically significant specimens will be collected from the surface of the Projects’ sites by the Project Paleontologist and other qualified personnel. This includes the specimens noted but not collected during prior surveys by Aspen (2020), as well as any previously undiscovered localities that may have been exposed by erosion in the interim. Additional areas, as identified by Aspen (2020), to be surveyed prior to construction shall include:</p> <ul style="list-style-type: none"> ■ The southwest quarter of section 13, in proposed disturbance areas, to verify whether it has a dune area that produces abundant vertebrate fossils. ■ Reconnaissance surveys of the east half of sections 23 and 26, in proposed disturbance areas, should be completed to see whether the fossils in this area are as dense as the surveyed areas just west them. If they are as dense, the remainder of the sections 24 and 26 in the Project disturbance areas should be surveyed. <p>The Project Paleontologist will work with the Bureau of Land Management (BLM) to develop project-specific significance definitions, sampling protocols, and procedures for screening the sites. After completion of the geotechnical investigation the Project Paleontologist will use the findings to determine whether there are paleosols of multiple ages or whether there is a single paleosol and conduct a testing program designed to test each paleosol for microvertebrate fossils prior to construction. If microvertebrates are present, this information should be incorporated into the Paleontological Resource Monitoring and Mitigation Plan as monitoring activities are different from those for larger fossils. Collection activities shall be conducted in accordance with BLM guidelines and the Paleontological Preservation Act of 2009 and carried out by BLM-approved paleontological staff. Any paleontological fieldwork occurring on lands administered by BLM will require a Paleontological Resources Use Permit issued by the BLM state office. All specimens collected shall be curated with a BLM-approved repository.</p> <p>APM GS-5 Worker Environmental Awareness Program (WEAP). Prior to the start of Project-related construction activities, a WEAP shall be developed by the Project Paleontologist. The WEAP shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program shall also include the set of reporting procedures that workers</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
GS-6 (cont.)		<p>are to follow if paleontological resources are encountered during Project activities. The WEAP may be combined with other environmental training programs for the Project.</p> <p>APM GS-6 Paleontological Construction Measures and Monitoring. The Paleontological Resource Monitoring and Mitigation Plan shall identify monitoring frequency and intensity of all areas the Projects' sites. Areas identified as having High paleontological resource potential (PYFC Class 4) or higher, by Aspen (2020) or during the Pre-construction Resource Survey required in APM GS-3 shall be monitored full time by a Bureau of Land Management approved paleontological monitor during ground-disturbing activities. The Project Paleontologist will have the authority to reduce monitoring in specific Project areas or for the remainder of the site once he/she determines the probability of encountering any additional fossils in those areas has dropped below an acceptable level.</p> <p>APM GS-7 Paleontological Resources Monitoring Report. The Applicants shall ensure preparation of a paleontological resources monitoring report by the Project Paleontologist. The report shall be prepared following completion of ground-disturbing or earthmoving construction activities. The contents of the report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; proof of accession of fossil materials into the pre-approved museum or other repository, and a statement by the project Paleontologist that Project impacts to paleontological resources have been mitigated. In addition, all appropriate fossil location information shall be submitted to the Western Science Center, the San Bernardino County Museum, and the Los Angeles County Museum of Natural History, at a minimum, for incorporation into their Regional Locality Inventories.</p>	
Cumulative Geology and Soils Impacts	Not cumulatively considerable or significant	APM GS-1 (see G-2), APM GS-3 through APM GS-7 (see GS-6), APM AIR-1 (see AQ-2), APM HWQ-1 (see HWQ-1), APM HWQ-3 (see HWQ-3a)	Not Applicable
Greenhouse Gas Emissions			
GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	Less than Significant	APM AIR-2 (see AQ-2), APM AIR-3 (see AQ-2)	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Cumulative Geology and Soils Impacts	Not cumulatively considerable or significant	APM AIR-2 (see AQ-2), APM AIR-3 (see AQ-2)	Not Applicable
Hazards and Hazardous Materials			
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Less than Significant	<p>APM HAZ-1 Hazardous Materials Management Plan. A Hazardous Materials Management Plan will be prepared, and all construction crews, contractors, and operations crews will be briefed on the plan prior to starting work on the Project. All fuels, fluids, components with hazardous materials/wastes will be handled in accordance with applicable regulations. All such materials will be kept in segregated storage with secondary containment as necessary. Projects will maintain all records of storage and inspection and will provide for proper offsite disposal.</p> <p>APM HAZ-2 Environmental Inspection and Compliance Monitoring Program and Plan. An Environmental Inspection and Compliance Monitoring program and plan for construction and operation will be developed and implemented to ensure that hazardous materials are properly stored, and potentially hazardous waste is properly disposed. A Project Environmental Manager will be designated to oversee the program and plan. All contractors and employees will be educated about hazardous materials storage, waste sorting, appropriate recycling storage areas, and reduction of landfill waste.</p> <p>APM HAZ-3 UXO Identification, Training, and Reporting Plan. Where ground disturbance work is involved, contractor(s) shall be Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response trained, in accordance with Title 29 Code of Federal Regulations 1910.120, and hold a current certification. The Applicants shall prepare an Unexploded Ordnance (UXO) Identification, Training, and Reporting Plan to properly train all site workers in the recognition, avoidance, and reporting of military debris and ordnance that will meet all applicable requirements. The Applicants shall submit the plan to the California Department of Fish and Wildlife and U.S. Bureau of Land Management for review 60 days prior to the start of construction. The plan shall contain, at a minimum, the following:</p>	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HAZ-1 (cont.)		<ul style="list-style-type: none"> ■ A description of the training program outline and materials and the qualifications of the trainers ■ Notification and avoidance requirements when potential UXO or munitions debris are noted by site workers ■ Identification of available trained experts and appropriate agencies that will respond to notification of discovery of any munitions debris or ordnance (unexploded or not) ■ Work plan to recover and remove discovered ordnance and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near-surface, or buried ordnance in all proposed land disturbance areas 	
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Less than Significant	<p data-bbox="779 703 1314 730">APM BIO-21 (see BIO-1), APM USS-1 (see USS-3),</p> <p data-bbox="779 732 1680 906">APM HAZ-4 Health, Safety, and Noise Plan. A Health, Safety, and Noise Plan shall be prepared, and all construction crews and contractors shall be briefed on the plan prior to starting work on the Project. The plan shall address health and safety issues associated with normal and unusual (emergency) conditions and shall include a respiratory protection program. The plan shall include, but not be limited, to the following information and guidance:</p> <ul style="list-style-type: none"> ■ Environmental health and safety protocol (including, but not limited to, hazards of valley fever, including the symptoms, proper work procedures, when and how to use personal protective equipment, and informing supervisors of suspected symptoms of work-related valley fever) ■ An emergency response plan ■ Worker Education and Awareness Program training, which would include environmental, cultural, health, and safety training ■ Noise/ear protection protocol ■ First aid training ■ Fire protection and extinguisher maintenance, guidance, and documentation <p data-bbox="779 1287 1619 1344">Disposal of hazardous materials and waste guidance in accordance with local, state, and federal regulations.</p> <p data-bbox="779 1352 1629 1408">APM HAZ-1 (see HAZ-1), APM HAZ-2 (see HAZ-1), APM AIR-1 (see AQ-2), APM BIO-12 (see BIO-3)</p>	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HAZ-3: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment.	Less than Significant	APM HAZ-3 (see HAZ-1)	Not Applicable
HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
HAZ-5: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	Less than Significant	APM FIRE-1 (see FIRE-1), APM FIRE-2 through APM FIRE-5 (see FIRE-2)	Not Applicable
Cumulative Hazards and Hazardous Materials Impacts	Not cumulatively considerable or significant	APM HAZ-1 through APM HAZ-3 (see HAZ-1), APM HAZ-4 (see HAZ-2), APM AIR-1 and APM AIR-3 (see AQ-2), APM BIO-12 (see BIO-3), APM FIRE-1 (see FIRE-1), APM FIRE-2 through APM FIRE-5 (see FIRE-2)	Not Applicable
Alternative 3: Access Road Option 1	Less than Significant	APM HAZ-5 Identify Pesticide/Herbicide Contamination [For Alternative 3]. Prior to Project construction, a soil investigation shall be conducted and prepared by a qualified environmental consultant to evaluate the potential presence of residual pesticide or herbicide contaminants in the soils along the portion of Alternative 3: Access Road Option 1 that passes through the agricultural land within areas proposed for disturbance. Soil samples shall be collected and analyzed for pesticides and/or herbicides in proposed construction disturbance areas to verify the presence of pesticide or herbicide contamination. Any soils found to contain residual contaminants in exceedance of regulatory action levels that are determined by the consultant to represent a potential hazard to construction workers or future workers and visitors shall be handled and disposed of in accordance with applicable laws and regulations. APM HAZ-1 through APM HAZ-3 (see HAZ-1), APM HAZ 4 (see HAZ-2)	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Hydrology and Water Quality			
<p>HWQ-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.</p>	Less than Significant	<p>APM HWQ-1 Drainage Erosion and Sedimentation Control Plan (DESCP). Prior to site mobilization, the Applicants shall submit a Drainage Erosion and Sedimentation Control Plan (DESCP) to the California Department of Fish and Wildlife (CDFW) and the U.S. Bureau of Land Management (BLM) for managing stormwater during Project construction and operations. The DESCPC must ensure proper protection of water quality and soil resources, address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. The plan must also cover all linear Project features such as the proposed gen-tie line. The DESCPC shall contain, at minimum, the elements presented below that outline site management activities and erosion and sediment-control Best Management Practices (BMPs) to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.</p> <p>A. <i>Vicinity Map</i> – A map(s), at a minimum scale 1 inch to 500 feet, shall be provided indicating the location of all Project elements with depictions of all significant geographic features including swales, storm drains, drainage concentration points, and sensitive areas.</p> <p>B. <i>Site Delineation</i> – All areas subject to soil disturbance for the proposed Project shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures and drainage facilities.</p> <p>C. <i>Clearing and Grading Plans</i> – The DESCPC shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography shall be illustrated by tying in proposed contours with existing topography.</p> <p>D. <i>Clearing and Grading Narrative</i> – The DESCPC shall include a table with the estimated quantities of material excavated or filled for the site and all Project elements, whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.</p> <p>E. <i>Erosion Control</i> – The plan shall address exposed soil treatments to be used during construction and operation including specifically identifying all chemical-based dust palliatives, soil bonding, and weighting agents appropriate for use that would not cause adverse effects to vegetation. BMPs</p>	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HWQ-1 (cont.)		<p>shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use.</p> <p>F. <i>Best Management Practices Plan</i> – The DESC shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, Project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control stormwater runoff and sediment transport.</p> <p>G. <i>Best Management Practices Narrative</i> – The DESC shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each Project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information would be available.</p> <p>The DESC shall be prepared, stamped, and sealed by a professional engineer or erosion control specialist. The DESC shall include copies of recommendations, conditions, and provisions from CDFW and/or BLM.</p>	
HWQ-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	Less than Significant	<p>APM BIO-4 (see BIO-1), APM HAZ-1 (see HAZ-1)</p> <p>APM HWQ-2a Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin (PVMGB). If water for the Projects is to be obtained from on-site <u>or off-site wells drilled by the Applicants</u>, the Applicants shall develop a Colorado River Water Supply Plan (Plan) to monitor groundwater extractions and prevent, replace, or mitigate Project impacts that deplete the PVMGB groundwater safe yield (i.e., budget balance). The amount of PVMGB depletion requiring mitigation shall be equal to the amount of withdrawals from below the Colorado River accounting surface. If the Project results in consumption of any water from within or below the Colorado River accounting surface, the Plan shall identify measures to replace water on an acre-foot to acre-foot basis, towards the purpose of ensuring that no allocated water from the Colorado River is consumed without entitlement to that water.</p> <p>The Plan shall describe groundwater monitoring activities and quarterly data reports to be closely reviewed for depth to groundwater information, and proximity of the depth of Project related groundwater pumping to the Colorado River accounting surface. The Plan shall further describe that if Project-related</p>	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HWQ-2 (cont.)		<p>groundwater pumping draws water from below the accounting surface the following shall occur:</p> <ul style="list-style-type: none"> A. Based on groundwater monitoring data, the quantity of groundwater pumped from below the accounting surface shall be recorded, and B. The project owner shall implement water conservation/offset activities to replace Colorado River water on an acre-foot by acre-foot basis. <p>To effectively implement item (B) above, the Plan shall include the following information:</p> <ul style="list-style-type: none"> ■ Identification of water conservation/offset activities to replace the quantity of water diverted from the Colorado River, including identification of any replacement water source(s) if deemed necessary, in consultation with regional water purveyors, regional water agencies, and the Colorado River Board; ■ Identification of any required permits or approvals and compliance of conservation/ offset activities with CEQA and NEPA; ■ An estimated schedule of completion for each identified activity; ■ Performance measures that would be used to evaluate the amount of water replaced by each identified activity; and ■ Monitoring and reporting protocol to ensure that water conservation/offset activities are effectively implemented and achieve the intended purpose of replacing Colorado River water diversions. <p>The Plan shall be submitted to the U.S. Bureau of Reclamation for review and approval prior to the initiation of construction and is required to be implemented at any time during the life of the Project that groundwater withdrawals reach the accounting surface, based on the results of the Groundwater Monitoring, Reporting, and Mitigation Plan (APM HWQ-2b). No pumping of groundwater below the accounting surface shall occur without compensatory mitigation according to the approved plan. A copy of the Plan shall also be submitted to the Metropolitan Water District for review and comment.</p> <p>APM HWQ-2b Groundwater Monitoring, Reporting, and Mitigation Plan. Before the Projects' use groundwater pumped from any well drilled by the <u>Applicants</u> (on site or off site) that extracts water from the Chuckwalla Valley Groundwater Basin (CVGB), the Project owner shall retain a U.S. Bureau of Land Management (BLM) approved qualified hydrogeologist to develop a Groundwater</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HWQ-2 (cont.)		<p>Monitoring, Reporting, and Mitigation Plan (GMRMP), in coordination with the California Department of Fish and Wildlife (CDFW) and BLM, to ensure that groundwater wells surrounding the Projects’ sites and Projects’ supply well(s) are not adversely affected by project activities. The Applicants shall submit the GMRMP to the CDFW for review and BLM for review and approval. Additionally, although no Groundwater Sustainability Agencies (GSAs) has been established for the Riverside County portions of the CVGB, in the event that such agencies have been established when the GMRMP is developed, the Applicants also shall submit the plan to the GSAs. The Applicants shall implement the approved GMRMP throughout any Project phase that pumps groundwater for consumptive use.</p> <p>The GMRMP shall provide detailed methodology for monitoring <u>on-site and off-site</u> groundwater levels and comparisons for levels within the basin, including identification of the closest private wells to the Projects’ sites. Monitoring shall be performed during pre-construction, construction, and operation of the Projects, to establish pre-construction and Projects-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Projects’ pumping well(s) and near potentially impacted existing wells. The GMRMP shall include a schedule for submittal of quarterly data reports by the Applicants to the GMRMP designated agencies and the GSA (if established), for the duration of the construction period. These quarterly data reports shall be prepared and submitted for review and shall include water level monitoring data and effect on the nearest off-site private wells. The designated agencies shall determine whether groundwater wells surrounding the Projects sites and Projects supply well(s) are adversely affected by Project activities in a way that requires additional mitigation and, if so, shall determine what remedial measures are needed. Examples of additional mitigation, if approved by the designated agencies, could include:</p> <ul style="list-style-type: none"> ■ cessation or reduction of pumping fromat the Projects’ wellssites until groundwater levels return to levels that allow nearby wells to resume pre-Project pumping levels; ■ acquisition/sourcing of additional water for the Projects from local agricultural wells, from Riverside County Service Area (CSA) 51, which provides water service to the Desert Center area, or from the Metropolitan Water District, among other sources; 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HWQ-2 (cont.)		<ul style="list-style-type: none"> ■ compensation for whatever additional equipment is necessary to lower nearby pumps to levels that can adequately continue pumping; ■ compensation to repair or replace wells found to be damaged or inoperable due to lowered groundwater levels; or ■ compensation for increased energy cost due to Projects-related well drawdown. <p>After the completion of construction, the Applicants and the BLM shall jointly evaluate the effectiveness of the GMRMP and determine if monitoring and reporting frequencies or procedures should be revised or eliminated.</p>	
<p>HWQ-3a: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site.</p>	Less than Significant	<p>APM HWQ-3 Project Drainage Plan. The Applicants shall provide the California Department of Fish and Wildlife (CDFW) and the U.S. Bureau of Land Management (BLM) with a drainage plan for review by CDFW and review and approval by BLM prior to construction, which includes the following information:</p> <ul style="list-style-type: none"> A. Hydrologic assessment of flood discharges affecting each parcel. B. A detailed on-site hydraulic analysis utilizing FLO-2D or similar two-dimensional hydraulic model which models pre- and post-development flood conditions for the 10- and 100-year storm events. The post-development model must include all proposed Project features, contours, and drainage improvements. Graphical output must include depth and velocity mapping as well as mapping which graphically shows the changes in both parameters between the pre- and post-development conditions. C. The Drainage Plan shall show the location of all watercourses, drainage concentration points, and drainage ditches as those features enter, traverse, and exit the site. The Drainage Plan shall include pre-development and post-development peak flow rate estimates, as well as hydraulic calculations to determine flood conditions, floodplain limits, flood depths, and velocities. The Drainage Plan shall show the relationship of drainage and flood features to the features of the proposed Project, including buildings, fences, substations, access roads, culverts, linear features, and panel supports. The Drainage Plan shall demonstrate adequate design to protect from flooding, erosion, and scour, and to do so without adversely affecting adjacent property, inducing erosion, or concentrating or diverting flows. D. The Drainage Plan shall show how drainage would be conveyed through the site without adversely affecting other property, either through increased flood hazard or increased potential for scour and erosion. No flow obstructing 	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
HWQ-3a (cont.)		<p>fences (e.g., block wall) shall be constructed perpendicular to existing drainage patterns. Proposed fencing shall allow runoff to traverse the Project sites unencumbered.</p> <p>E. The Drainage Plan shall include an assessment of existing diversion berms and channels around parcel perimeters, the magnitude and frequency of flood events that would be diverted by these existing features, and the probable integrity of these features to withstand flows. The Drainage Plan shall demonstrate how on-site drainage features would be affected by Project grading and shall include an assessment of stormwater flows approaching proposed perimeter fences and whether or not those flows would be adjacent to existing berms. The Drainage Plan shall include design recommendations to avoid diversion of flows by perimeter fences, such as creation of fence openings large enough to allow the passage of debris-laden flows without the potential for diversions to other property.</p> <p>F. The Drainage Plan shall include detailed design of flood retention features necessary to avoid any increase in downstream flood peak flow rates.</p> <p>G. The Drainage Plan shall include a narrative of the measures necessary to protect the Project sites and Project features from flooding, erosion, and sedimentation, including proposed measures to prevent Project-induced erosion and flooding of adjacent property.</p> <p>APM HWQ-1 (see HWQ-1), APM BIO-3 (see BIO-3), APM BIO-15 (see BIO-3)</p>	
<p>HWQ-3b: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.</p>	Less than Significant	APM HWQ-3 (see HWQ-3a)	Not Applicable
<p>HWQ-3c: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a</p>	Less than Significant	APM HWQ-3 (see HWQ-3a), APM HAZ-1 (see HAZ-1)	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Less than Significant	APM HWQ-4 Flood Protection. Proposed substations, operations and maintenance buildings, energy storage systems, and all other Project buildings shall either be located outside of primary drainages and the 100-year floodplain, or if located within such areas, designed such that flood flows would not impede or redirect flood flows, resulting in increased flooding of off-site properties. APM HWQ-3 (see HWQ-3a)	Not Applicable
HWQ-3d: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would impede or redirect flood flows.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
HWQ-4: In a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.	Less than Significant	APM HWQ-1 (see HWQ-1), APM HWQ 2a (see HWQ-2), APM HWQ-2b (see HWQ-2)	Not Applicable
HWQ-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	Not cumulatively considerable or significant	APM HWQ-1 (see HWQ-1), APM HWQ 2 and APM HWQ-2b (see HWQ-2), APM HWQ-3 (see HWQ-3a), APM HWQ-4 (see HWQ-3d), APM BIO-3 (see BIO-3), APM BIO-4 (see BIO-1), APM BIO-15 (see BIO-3), APM HAZ-1 (see HAZ-1)	Not Applicable
Cumulative Hydrology and Water Quality Impacts	Not cumulatively considerable or significant	APM HWQ-1 (see HWQ-1), APM HWQ 2 and APM HWQ-2b (see HWQ-2), APM HWQ-3 (see HWQ-3a), APM HWQ-4 (see HWQ-3d), APM BIO-3 (see BIO-3), APM BIO-4 (see BIO-1), APM BIO-15 (see BIO-3), APM HAZ-1 (see HAZ-1)	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Land Use and Planning			
LU-1: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Cumulative Land Use and Planning Impacts	Not cumulatively considerable or significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Noise			
N-1: Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies	Less than Significant	<p>APM N-1 Construction Restrictions. Heavy equipment operation and noisy construction work relating to any features of the Projects within 0.25 miles of a sensitive receptor shall be restricted to the times delineated below, unless a special permit has been issued by the County of Riverside:</p> <ul style="list-style-type: none"> ■ June through September: 6 a.m. to 6 p.m. ■ October through May: 7 a.m. to 6 p.m. <p>Haul truck engines and other engines powering fixed or mobile construction equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.</p> <p>The construction contractor shall locate equipment staging in areas to create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Projects during Project construction. Where feasible, the construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receptors nearest the Projects. No music or electronically reinforced speech from construction workers shall be audible at noise-sensitive properties.</p> <p>APM N-2 Public Notification Process. At least 15 days prior to the start of ground disturbance, the Projects' owner shall notify all residents within 500 feet of Ragsdale Road, if selected as the approved access road, and the access driveway, by mail or by other effective means, of the commencement of construction. At the same time, the Projects' owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with construction and/or operation of the Projects. If the telephone is not staffed 24 hours a day, the</p>	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
N-1 (cont.)		<p>Projects' owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the Projects during construction where it is visible to passersby. This telephone number shall be maintained until the Project has been operational for at least 1 year.</p> <p>APM N-3 Noise Complaint Process. Throughout construction and operation of the Projects, the Projects' owner shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints. The Projects' owner or authorized agent shall do the following:</p> <ol style="list-style-type: none"> 1. Use a Noise Complaint Resolution Form, or other documentation procedure acceptable to the County of Riverside (County), to record and report the Project owner's response to resolving each noise complaint. 2. Attempt to contact the person(s) making the noise complaint within 24 hours. 3. Conduct an investigation to determine the source of noise in the complaint. 4. If the noise is Projects-related, take all feasible measures to reduce the source of the noise. 5. Submit a report to the County documenting the complaint and actions taken. The report shall include a complaint summary, including the final results of noise reduction efforts, and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction. 	
N-2: Result in generation of excessive groundborne vibration or groundborne noise levels?	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
N-3: For projects located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
Cumulative Noise Impacts	Not cumulatively considerable or significant	APM N-1 through APM N-3 (see N-1)	Not Applicable
Population and Housing			
PH-1: Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
PH-2: Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	No Impact	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Cumulative Population and Housing Impacts	Not cumulatively considerable or significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Public Services			
PS-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services (fire protection, police protection, schools,	Less than Significant	APM FIRE-5 (see F-2)	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
parks, other public facilities, and libraries).			
Cumulative Public Services Impacts	Not cumulatively considerable or significant	APM FIRE-5 (see F-2)	Not Applicable
Recreation			
REC-1: Construction or operation activities directly or indirectly disturb recreational users, reduce, or block access to recreational areas, or change the character of a recreational area, diminishing its value.	Less than Significant	APM AES-4 (see A-3)	Not Applicable
Cumulative Recreation Impacts	Not cumulatively considerable or significant	APM AES-4 (see A-3), APM AIR-1 through APM AIR-3 (see AQ-2), APM N-1 and APM N-3 (see N-1)	Not Applicable
Transportation			
T-1: Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities	Less than Significant	APM TRA-1 Construction Traffic Commute and Control Plan. Prior to the start of construction, the Project Applicants shall submit a Construction Traffic Commute and Control Plan for review and approval by the California Department of Transportation (Caltrans) and Riverside County, as applicable, for affected roads and intersections that would be directly affected by the construction activities and/or would require permits and approvals. The Construction Traffic Commute and Control Plan shall include, but not be limited to: <ul style="list-style-type: none"> ■ Methods to achieve up to 50% (as feasible) reduction in workers arriving and departing outside of the peak hours (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.), including but not limited to plans to encourage or provide ridesharing opportunities for construction workers or staggering the arrival/departure for workers to be outside of peak hours during peak construction when significant impacts to affected intersections are anticipated. ■ A proposal to utilize multiple freeway exits to access the Project sites (Desert Center exit and the Corn Springs exit). 	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
T-1 (cont.)		<ul style="list-style-type: none"> ■ If multiple construction projects in the immediate area occur at the same time, if the worker commutes occurring outside of peak hours cannot be met, or if conditions, such as substantial delays and off-ramp queues that spill back to the mainline, at the intersection of I-10 and SR-177 warrant, include plans for working with other solar project developers in the immediate area to install a temporary signal or use manual intersection control (morning peak hour only) during the construction period at the I-10 westbound ramp at SR-177. Geometry changes shall be considered and potentially implemented in addition to signalization at the I-10 westbound ramp and SR-177. These geometry changes would include a 50-foot westbound right turn pocket and a southbound 50-foot right turn pocket. If manual intersection control is used in the morning peak hour, the southbound right turn pocket would likely not be needed because delays and queues along Ragsdale Road would not result in undesirable conditions. ■ While not required to reduce impacts, methods to reduce vehicle miles traveled by construction employees and construction-related truck trips would be included, where feasible, such as encouraging hiring of local construction workers. ■ The locations and use of flaggers, warning signs, barricades, delineators, cones, arrow boards, etc., established according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual. ■ The locations of any road or traffic lane segments that would need to be temporarily closed or disrupted due to construction activities. ■ The locations where guard poles, netting, or similar means to protect transportation facilities for any construction or conductor installation work requiring the crossing of a local street or highway are proposed. ■ Provisions for ensuring detours or safe movement of vehicles, pedestrians, and bicycles through all affected facilities. ■ A defined method to maintain close coordination, prior to and during construction, with adjacent solar project developers, Caltrans, and Riverside County to minimize cumulative impacts of multiple simultaneous construction projects affecting shared portions of the circulation system. Coordination with 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
T-1 (cont.)		<p>adjacent development projects to spread work shifts into multiple hours (instead of peak hour) or the installation of additional temporary traffic signals or manual traffic control officers during peak hours to mitigate the temporary impacts.</p> <p>APM TRA-2 Employee Carpool Incentive Program. During the construction phase of the Projects, the Applicants shall offer employees incentives to carpool to the Project sites.</p> <p>APM TRA-3 Public Outreach Campaign. During the construction phase of the Projects, the Applicants shall implement an outreach campaign (signage, direct mail, website, recorded telephone update line, newspaper notices, etc.) to notify the public of potential delays during times when truck escorts are proposed.</p> <p>APM TRA-4 Repair Roadways and Transportation Facilities Damaged by Construction Activities. If roadways, sidewalks, medians, curbs, shoulders, or other such transportation features are damaged by Project construction activities, as determined by the affected public agency, such damage shall be repaired and restored to their pre-Project condition. Prior to construction, the Project Applicants shall confer with the California Department of Transportation (Caltrans) and Riverside County, as applicable, regarding the roads within 500 feet in each direction of Project access points (where heavy vehicles will leave public roads to reach the Project sites). At least 30 days prior to construction, or as requested by Caltrans or Riverside County, the Project Applicants shall photograph or video record all affected roadway segments and shall provide Caltrans and Riverside County with a copy of these images, if requested.</p> <p>At the end of major construction, the Project Applicants shall coordinate with each affected jurisdiction to confirm what repairs are required. Any damage demonstrable to the Projects is to be repaired to the pre-construction condition within 60 days from the end of all construction, or on a schedule mutually agreed to by the Project Applicants and the affected jurisdiction. If multiple projects are using the transportation features, the Project Applicants will pay its fair share of the required repairs. The Project Applicants shall provide Caltrans and Riverside County (as applicable) proof when any necessary repairs have been completed.</p>	
<p>T-2: Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).</p>	Less than Significant	APM TRA-1 (see T-1), APM TRA-2 (see T-1)	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
T-3: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less than Significant	APM TRA-1 (see T-1), APM TRA-4 (see T-1)	Not Applicable
T-4: Result in inadequate emergency access.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Cumulative Transportation Impacts	Not cumulatively considerable or significant	APM TRA-1 through APM TRA-4 (see T-1)	Not Applicable
Tribal Cultural Resources			
TCR-1: Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: <ul style="list-style-type: none"> ■ Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or ■ A resource determined by the lead agency, in its discretion and supported by substantial evidence, to 	Significant and Unavoidable	<p>APM TCR-1 Cultural Sensitivity Training. Prior to the commencement of grading or other activities that disturb previously undisturbed earth or soils, interested tribes shall be invited to prepare the content of a cultural sensitivity training module that will be included in the worker environmental awareness program (WEAP) training for all construction personnel and project biologists. Training will include a brief description of tribal history and cultural affiliation of the Projects' location and the surrounding area and the resources that could potentially be identified during earthmoving activities. The first presentation of this training may be videotaped or otherwise recorded for use in future trainings. If interested tribes are unable to prepare a cultural sensitivity training module suitable for inclusion in the WEAP training prior to the commencement of earthmoving activities, the Applicants are not obligated to delay such activities.</p> <p>APM TCR-2 Tribal Monitoring. Prior to any grading or other activities that disturb previously undisturbed earth or soils within the Project area, the Applicants shall hire as many tribal monitors as may reasonably be necessary to facilitate observation of all such activities by one monitor (i.e., if one tribal monitor designated by tribal representatives from tribes that request monitors to observe all such ground disturbing activities cannot observe all of the activities on a given day because they will happen simultaneously in different areas of the Project, then more than one monitor will be needed for that day). These monitors shall be known as the Tribal Observers for this Project, and shall have the authority to identify resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, has determined are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 (i.e., which CDFW has identified as tribal cultural resources).</p>	Significant and Unavoidable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
<p>be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</p>		<p>APM TCR-3 Long-Term Preservation Plan. Consultation under Assembly Bill 52 is ongoing and may yet reveal new resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, may determine are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 and recommendations of the tribes. Such tribal cultural resources (TCRs) so identified, even if not located within the footprint of the Projects, may nevertheless be impacted indirectly as a result of Project operations and decommissioning. To address these potential <u>indirect</u> impacts, the Applicants will develop a Long-Term Preservation Plan (LTPP) in consultation with consulting tribes, prior to the Projects’ commencement of operations. The LTPP will require post-construction monitoring/condition assessments for the CDFW-identified TCRs on a quarterly basis for the first year of Project operations and will specify procedures for addressing unanticipated effects to TCRs covered under the LTPP. The LTPP shall identify the responsible entity for care, maintenance, and guidance in the event the TCR resources are vandalized or damaged by the Applicants or their agents or employees. The TLPP shall include reporting to the Bureau of Land Management.</p> <p>APM TCR-4 Identification of Human Remains. For human remains discovered on Bureau of Land Management (BLM) administered land, the plan for securing the discovery site and subsequent actions shall be included in the Monitoring and Treatment Plan required under APM CUL-3. In the event of a discovery, BLM must be contacted immediately. California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. If the discovery is determined to be subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 and Title 43 Code of Federal Regulations Part 10), the plan will describe the necessary process for notification of tribes and subsequent steps as required by law and regulations (i.e., development and implementation of a NAGPRA Plan of Action, which would be separate from the Monitoring and Treatment Plan required under APM CUL-3 and its contents and consultation process directed by NAGPRA).</p> <p>For human remains discovered on state or private lands, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code (PRC), Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission (NAHC)</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
TCR-1 (cont.)		<p>shall be contacted within the period specified by law. The NAHC shall identify the Most Likely Descendant, who shall then make recommendations to and engage in consultation with the property owner concerning the treatment of the remains as provided in PRC Section 5097.98. The landowner may reach an agreement with the Most Likely Descendant for treating and disposing of human remains pursuant to California Environmental Quality Act Guidelines Section 15064.5(d). Human remains from other ethnic/cultural groups with recognized historical associations to the Project area shall also be subject to consultation between appropriate representatives from that group and the California Department of Fish and Wildlife.</p> <p>PFMM TCR-1 Cultural Sensitivity Training. As part of APM TCR-1, prior to the commencement of ground-disturbing activities, the Applicants shall require all personnel to attend a cultural sensitivity training provided by the Soboba Band of Luiseño Indians. The training will be included as part of the worker environmental awareness program training, and include a brief description of Tribal history and cultural affiliation of the Project’s location and the surrounding area; what resources could potentially be identified during earthmoving activities; the protocols that apply in the event unanticipated cultural resources or wildlife species of Tribal cultural patrimony are identified, including who to contact and appropriate avoidance measures until the impacts can be properly evaluated; and any other appropriate protocols. This is a mandatory training and all project personnel must attend prior to beginning work on site.</p> <p>PFMM TCR-2 Tribal Monitoring. The Applicants, as part of APM TCR-2, shall enter into a contract with and retain monitors designated by the Soboba Band of Luiseño Indians. The Applicants shall also enter into contracts with other tribes that request to be part of the tribal monitoring efforts. These monitors shall be known as the Tribal Monitors for the Project and shall be on site to identify tribal cultural resources (TCRs), which include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe. The Tribal Monitors, in conjunction with the Archeological Monitor(s), shall have the authority to temporarily divert, redirect, or halt the ground disturbing activities to allow the Tribal Monitors to identify, evaluate, and potentially recover the TCR(s).</p> <p>PFMM TCR-3 Long-Term Preservation Plan. The Long-Term Preservation Plan (LTPP) prepared by the Applicants as part of APM TCR-3 shall include measures to avoid and minimize impacts to contributing elements of tribal cultural resources (TCRs) during construction, include requirements for post-construction monitoring/condition assessment procedures to address unanticipated effects to TCRs, and require</p>	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
TCR-1 (cont.)		<p>coordination with consulting tribes for any Project design modifications that may affect a TCR. The LTPP, with respect to any TCR that is vandalized or damaged, shall include required consultation with the Tribal Monitors regarding appropriate management of the TCR. An objective of the LTPP shall be to maximize retention of TCRs in proximity to important tribal locations, which may include preservation in place and minimizing impacts to plant and wildlife resources and from excess light.</p> <p>PFMM TCR-4 Tribal Cultural Resources Management Plan. Prior to the initiation of ground-disturbing activities, the Applicants shall retain a Secretary of the Interior-qualified archaeologist, who in consultation with the consulting tribes and the U.S. Fish and Wildlife Service (USFWS), will develop a Tribal Cultural Resources Management Plan (CRMP). The CRMP shall address the procedures for avoidance or minimization of impacts to tribal cultural resources, consistent with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(b). The CRMP shall consider Project impacts on tribal values as identified by consulting tribes, and as those impacts relate to indirect and direct impacts to TCRs. The CRMP shall cover all Project activities across the entire Project site and for the life of the Project. For Historic Properties located on lands administered by the Bureau of Land Management (BLM), actions identified within the CRMP shall be implemented where permissible according to BLM guidelines.</p> <p>The CRMP shall include, but not be limited to, the following elements, and shall be consistent with all other Applicant Proposed Measures identified in this EIR, including treatment requirements developed as part of a Memorandum of Agreement:</p> <ul style="list-style-type: none"> ■ Preparation and implementation of a data recovery plan to be used to guide the data recovery excavation of tribal cultural resources (considered historical resources under CEQA) that cannot be avoided, and any other tangible tribal cultural resources that may be encountered during construction where data recovery is an appropriate method for mitigating tribal values. The data recovery plan shall include, minimally, a regional cultural setting, appropriate regional research questions, field and limited laboratory methods for the data recovery effort, and non-destructive methods for analysis and reporting requirements. The data recovery plan shall include treatment measures that focus on recovering information related to tribal values. The treatment measures shall be developed through the Native American Heritage Commission-listed traditionally culturally affiliated tribes and BLM as the landowner. Treatment measures may include detailed resource 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
TCR-1 (cont.)		<p>documentation, preparation of interpretative or educational materials, reburial of artifacts that convey tribal values, or other measures identified in coordination with the tribes.</p> <ul style="list-style-type: none"> ○ For data recovery affecting tribal cultural resources on BLM-administered land, a BLM-issued Archaeological Resources Protection Act permit shall be required for fieldwork. ○ Following implementation of data recovery excavation and other treatment protocols, a report documenting the methods and results of the data recovery and treatment program shall be prepared by a Secretary of the Interior–qualified archaeologist following Archaeological Resources Management Report guidelines. The final report shall be submitted to the California Department of Fish and Wildlife. 	
Cumulative Tribal Cultural Resources Impacts	Cumulatively considerable and significant (direct and indirect effects to the Cahuilla Traditional Use Area Tribal Cultural Landscape and individual TCRs)	<p>APM CUL-9 (see cumulative CUL)</p> <p>APM TCR-1 through APM TCR-4 (see TCR-1), PFMM TCR-1 through PFMM TCR-4 (see TCR-1), and APM CUL-9 (see cumulative CUL)</p>	Significant and Unavoidable
Utilities and Services Systems			
USS-1: Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
USS-2: Have sufficient water supplies available to serve the project and reasonably	Less than Significant	No APMs incorporated or other potentially feasible MMs s are required.	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
foreseeable future development during normal, dry and multiple dry years.			
USS-3: Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	Less than Significant	APM USS-1 Waste Recycling Plan (WRP). Prior to issuance of a notice to proceed, the Project Applicants shall submit a WRP to the California Department of Fish and Wildlife and the Bureau of Land Management. At a minimum, the WRP must identify the materials (e.g., solar panels, cardboard, concrete, asphalt, wood) that will be generated by construction and development; the projected amounts of each; the applicable state and local laws and regulations governing waste disposal and recycling (e.g., Department of Toxic Substances Control regulations regarding photovoltaic modules); the measures/methods that will be taken to recycle, reuse, and/or reduce the amount of materials; the facilities and/or haulers that will be utilized; and the targeted Projects-specific recycling or reduction rate. During construction, the Project sites shall each have, at a minimum, two bins: one for waste disposal and the other for the recycling of Construction and Demolition (C&D) materials. Additional bins are encouraged to be used for further source separation of C&D recyclable materials and shall be provided if required by applicable state and local laws. The Project Applicants shall maintain accurate records (receipts or other types of verification) for recycling of C&D recyclable materials and solid waste disposal; arrangements for such receipts can be made through the franchise hauler. These receipts will be retained to demonstrate compliance with the approved WRP if requested by the agencies and must clearly identify the amount of waste disposal and C&D materials recycled.	Not Applicable
USS-4: Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	Less than Significant	No APMs incorporated or other potentially feasible MMs are required.	Not Applicable
Cumulative Utilities and Service Systems Impacts	Not cumulatively considerable or significant	APM USS-1 (see USS-3)	Not Applicable
Wildfire			
F-1: Substantially impair an adopted emergency response plan or emergency evacuation plan.	Less than Significant	APM FIRE-1 County Fire Department Technical Policy (T) 15-002 Compliance. The Applicants shall ensure that circulation and access for fire protection purposes within the site and at the entrance are provided, with roads not less than 20 feet consistent with County Fire Department Technical Policy TP 15-002. Compliance with the requirement shall be documented in the construction documents.	Not Applicable

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
F-1 (cont.)		APM TRA-1 (see T-1)	
F-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	Less than Significant with Mitigation	<p>APM FIRE-2 Water Tank Installation - Riverside County Fire Department Compliance. The Applicants shall install water tanks if required by Riverside County Fire Department. The required volume of water for fire use shall be based on the County Fire Marshall’s requirement following review of the Project plans. RCFD approved number of water tanks and volume shall be included in the construction documents.</p> <p>APM FIRE-3 Maintenance Truck Equipment. The Applicants shall ensure all maintenance trucks are equipped with a fire extinguisher or other fire-fighting equipment in accordance with state and federal regulations. Compliance with this measure shall be documented in monitoring logs provided to CDFW and BLM.</p> <p>APM FIRE-4 Occupational Safety and Health Administration and California Code of Regulations Compliance. The Applicants shall ensure that welding and all construction hot work abides by the appropriate Occupational Safety and Health Administration and California Code of Regulations standards (8 CCR 4846). Compliance with this measure shall be documented in monitoring logs provided to CDFW and BLM.</p> <p>APM FIRE-5 Fire Management and Prevention Plan. The Applicants shall prepare and implement a Fire Management and Prevention Plan to ensure the safety of workers and the public during construction, operation and maintenance, and future decommissioning activities for the Projects. The owner must provide the Fire Management and Prevention Plan to the Bureau of Land Management (BLM) for review and approval and to the Riverside County Fire Department (RCFD) for review and comment before construction. The Fire Management and Prevention Plan shall include, but not be limited to, the following elements:</p> <ul style="list-style-type: none"> ■ Procedures for minimizing potential ignition, including, but not limited to, vegetation clearing, parking requirements/restrictions, idling restrictions, smoking restrictions, proper use of gas-powered equipment, and hot work restrictions. ■ Work restrictions during Red Flag Warnings and High to Extreme Fire Danger days. ■ All internal combustion engines used at the Projects’ sites shall be equipped with spark arrestors. Spark arrestors shall be in good working order. ■ Once initial two-track roads have been cut and initial fencing completed, light trucks and cars shall be used only on roads where the roadway is cleared of 	Less than Significant

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
F-2 (cont.)		<p>vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.</p> <ul style="list-style-type: none"> ■ Fire rules shall be posted on the project bulletin board at the contractor’s field office and areas visible to employees. ■ Equipment parking areas and small stationary engine sites shall be cleared of all flammable materials. ■ Smoking shall be prohibited in all vegetated areas and within 50 feet of combustible materials storage and shall be limited to paved areas or areas cleared of all vegetation. ■ Each construction site (if construction occurs simultaneously at various locations) shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. ■ The Applicants shall coordinate with BLM and RCFD to create a training component for emergency first responders to prepare for specialized emergency incidents that may occur at the Projects’ sites. ■ All construction workers, plant personnel, and maintenance workers visiting the plant and/or transmission lines to perform maintenance activities shall receive training on fire prevention procedures, the proper use of fire-fighting equipment, and procedures to be followed in the event of a fire. Training records shall be maintained and be available for review by BLM and RCFD. Fire prevention procedures shall be included in the Project’s Worker Environmental Awareness Program (Mitigation Measure BIO-17). ■ Vegetation near all solar panel arrays, ancillary equipment, and access roads shall be controlled through periodic cutting and spraying of weeds, in accordance with the Weed Management Plan. ■ BLM and RCFD shall be consulted during plan preparation and fire safety measures recommended by these agencies included in the plan. ■ The plan shall list fire prevention procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations. 	

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
F-2 (cont.)		<ul style="list-style-type: none"> ■ All on-site employees shall participate in annual fire prevention and response training exercises with BLM and RCFD. ■ The plan shall list all applicable wildland fire management plans and policies established by state and local agencies and demonstrate how the Project will comply with these requirements. ■ The Applicants shall designate an emergency services coordinator from among the full-time on-site employees who shall perform routine patrols of the site during the fire season equipped with a portable fire extinguisher and communications equipment. The Applicants shall notify BLM and RCFD of the name and contact information of the current emergency services coordinator in the event of any change. ■ Remote monitoring of all major electrical equipment (transformers and inverters) will screen for unusual operating conditions. Higher than nominal temperatures, for example, can be compared with other operational factors to indicate the potential for overheating which under certain conditions could precipitate a fire. Units could then be shut down or generation curtailed remotely until corrective actions are taken. ■ Fires ignited on site shall be immediately reported to BLM and RCFD. ■ The engineering, procurement, and construction contract(s) for the project shall provide reference to or clearly state the requirements of this measure. 	
<p>F-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.</p>	<p>Less than Significant with Mitigation</p>	<p>APM FIRE-1 (see F-1), APM BIO-10 (see BIO-1), MM BIO-4 (see BIO-1), MM BIO-5 (see BIO-1), APM HAZ-1 (see HAZ-1), APM HAZ-4 (see HAZ-2)</p> <p>APM FIRE-1 (see F-1), APM FIRE-2 through APM FIRE-5 (see F-2), APM BIO-10 (see BIO-1), MM BIO-4 (see BIO-1), MM BIO-5 (see BIO-1), APM HAZ-1 (see HAZ-1), APM HAZ-4 (see HAZ-2)</p>	<p>Less than Significant</p>

Table ES-2. Summary of Proposed Project Impacts

Environmental Topic	Impact	Applicant Proposed Measures (APMs) and/or Mitigation Measures (MMs)	Level of Significance After Mitigation
F-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	Less than Significant	APM BIO-4 (see BIO-1), APM HWQ-1 (see HWQ-1), APM HWQ-4 (see HWQ-3d)	Not Applicable
Cumulative Wildfire Impacts	Not cumulatively considerable or significant	APM FIRE-1 (see F-1), APM FIRE-2 through APM FIRE-5 (see F-2)	Not Applicable

1 Introduction

1.1 Overview

Arica Solar₂ LLC and Victory Pass I₂ LLC (Applicants), wholly owned subsidiaries of Clearway Energy Group LLC, have applied to the California Department of Fish and Wildlife (CDFW) for Incidental Take Permits (ITPs) for desert tortoise (*Gopherus agassizii*) under Section 2081(b) of the California Endangered Species Act (California Fish and Game Code Section 2050 et seq.) (refer to Appendix A). (Refer also to 14 CCR 783.0 et seq.) The Applicants have also notified CDFW of certain proposed activities subject to the jurisdiction of CDFW's Lake and Streambed Program. (Refer to California Fish and Game Code Section 1600 et seq.) The Applicants have applied for the ITPs and submitted Lake and Streambed Program notifications to CDFW as part of a broader proposal to construct the Arica Solar Project and Victory Pass Solar Project. Both Projects are referred to collectively herein as the "Projects." The Arica and Victory Pass Projects propose to generate 265 megawatts and 200 megawatts of energy, respectively, using alternating current solar photovoltaic (PV) technology. The proposed Projects would be constructed, operated, and maintained for 35 to 50 years and then decommissioned.

CDFW is California's Trustee Agency for fish and wildlife and holds those resources in trust by statute for all the people of the state (California Fish and Game Code Section 711.7[(a)]; California Public Resources Code, Section 21070; 14 CCR 15386[a]). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (California Fish and Game Code Section 1802). Proposed issuance of the ITPs and the prospect that CDFW will issue Lake and Streambed Agreements (LSAs) to the Applicants are regulatory actions involving the exercise of discretion and independent judgment by CDFW, consistent with its jurisdictional authority under the California Fish and Game Code. Issuance of the ITPs by CDFW, subject to specific conditions of approval, including a term of 5 years, would authorize "take" as defined by state law of desert tortoise incidental to the Applicants' otherwise lawful construction of the Projects. Any LSA CDFW issues to the Applicants to construct the Projects, consistent with the notifications, would be conditioned on reasonable measures necessary to protect fish and wildlife subject to CDFW's regulatory jurisdiction under California Fish and Game Code Section 1600 et seq.

Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15378(a), "project" means the whole of the action that has the potential to result in either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment, and is an activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies. Section 15378(c) also says the term "project" refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies, and does not refer to each separate governmental approval. Here, as noted above, the Applicants have applied to CDFW for ITPs under the California Endangered Species Act and submitted notifications that CDFW expects will require and lead to the issuance of LSAs necessary for the Applicants to construct the Projects. Notwithstanding the proposed exercise of CDFW's regulatory authority under the California Fish and Game Code, construction, operation and maintenance (O&M), and decommissioning of the Projects over 35 to 50 years would cause other environmental impacts across the resource spectrum that are relevant under CEQA. CDFW, as CEQA lead agency, has analyzed and disclosed the environmental effects of the Projects, in combination, as the "whole of the action." Although the Applicants are seeking ITPs and LSAs for construction that would remain in effect over an initial 5-year term, post-construction O&M and decommissioning are reasonably foreseeable future phases of the Projects and are also considered in the environmental analysis as part of the whole of the action. CDFW, as the CEQA lead agency, has prepared

this Draft Environmental Impact Report (EIR) consistent with that obligation and will complete a Final EIR following public review of the Draft as required by CEQA. The Draft and Final EIR (collectively, the EIR) will address the environmental effects of both Projects because they are immediately adjacent to one another, would share the same switchyard and single operations and maintenance facility, and would share a 3.2-mile gen-tie line to the existing Red Bluff Substation.

The Project sites are located approximately 50 miles east of Indio, California, approximately 40 miles west of Blythe, California, and 70 miles north of the California-Mexico border. Both Projects would be located on Bureau of Land Management (BLM) administered federal lands within a Development Focus Area in unincorporated Riverside County. The BLM right-of-way applications cover approximately 2,000 acres for Arica, and 1,800 acres for Victory Pass, but the developable area would be approximately 1,355 acres for Arica and 1,310 acres for Victory Pass (within the Projects' fencelines). The Projects' shared gen-tie would require 52 acres and the access roads would require less than 7 acres of disturbance during construction. The Projects' developable acreage including the solar facilities, the shared gen-tie, and access roads is 2,724 acres. The BLM right-of-way grant applications are subject to review under the National Environmental Policy Act. The CEQA review and the National Environmental Policy Act review by CDFW and BLM, respectively, are being undertaken as separate processes.

1.2 Project Objectives

The CDFW will consider the Applicants' Project objectives in developing a reasonable range of alternatives to the Projects under CEQA. The Applicants have identified seven objectives for the Projects:

- To construct and operate solar PV energy facilities using the best-fit PV technology and storage to provide a renewable and reliable source of electrical power to California utilities
- To comply with the BLM's "all-of-the-above"¹ energy strategy to improve the management of energy resources found on federal lands in a balanced way to ensure the nation's economic and energy security and quality of life
- To locate the Projects on lands with high solar insolation and relatively flat terrain at sufficient scale to maximize operational efficiency
- To minimize environmental impacts and land disturbance by locating the Projects in areas prioritized for solar development, in proximity to an established utility corridor, where the Projects could share a gen-tie line with each other, and with existing road access, all of which would result in the Projects by avoiding sensitive environmental areas, recreational resources, and wildlife habitats (e.g., Areas of Critical Environmental Concern, Desert Wildlife Management Areas, Critical Habitat Units, Category I and II desert tortoise habitat)
- To assist California and its investor-owned utilities in meeting the state's Renewable Portfolio Standard and greenhouse gas emission reduction requirements, including the requirements under Senate Bill 100 to increase the state's Renewable Portfolio Standard to 60% renewable power by 2030 and that all California's electricity come from carbon-free resources by 2045
- To provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandates
- To provide community benefits through new jobs, spending in local businesses, and additional sales tax revenues

¹ "All of the above" refers to BLM's domestic energy strategy to promote America's energy prosperity (BLM 2019).

CDFW's additional project objectives include the following:

- Protect and conserve fish and wildlife resources and minimize environmental impacts and land disturbance by, among other things, siting the facility on relatively flat lands with high solar insolation and near established utility corridors, an existing substation with available capacity to facilitate interconnection, and accessible roads.
- Promote environmentally responsible development that minimizes incidental take by implementing species-specific minimization and avoidance measures.
- Protect and conserve the resources of the State of California and mitigate any impacts on these resources, consistent with CDFW's mission, its status as California's trustee agency for fish and wildlife, and the public trust doctrine.
- Assist in the implementation of the Desert Renewable Energy Conservation Plan. Together with federal agencies, CDFW staff is working to ensure that the state is able to expedite siting and permitting of renewable energy projects that will assist in achieving greenhouse gas reduction targets set forth in Assembly Bill 32 while minimizing the impacts to natural resources and further mitigating the impacts of climate change (CDFW 2021).

1.3 Environmental Procedures

1.3.1 California Environmental Quality Act

This EIR has been prepared in conformance with CEQA statute (California Public Resources Code Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.). Issuing an ITP and an LSA are discretionary actions that require CDFW to comply with CEQA in accordance with CEQA Guidelines Sections 15021 and 15040, as well as Title 14, Sections 783.3(b) and 783.5(d), of the California Code of Regulations. Because the Projects are entirely on federal public land, the ITPs and LSAs are the main discretionary approvals under state law requested of CDFW for the Projects by the Applicants, and there are no other state or local agencies with approval authority of comparable magnitude, CDFW has assumed the role of CEQA lead agency for the Projects. (Refer to 14 CCR 783.3[b].) Under CEQA, an EIR must be prepared when there is substantial evidence that supports a fair argument that significant effects may result from project implementation.

Consistent with Section 15121(a) of the CEQA Guidelines, this EIR is a public information document that assesses and discloses the potential environmental effects of construction, operations, and future decommissioning of two solar PV projects. CEQA requires a lead agency to impose feasible mitigation that will "substantially lessen or avoid significant effects on the environment, consistent with applicable constitutional requirements such as the 'nexus' and 'rough proportionality' standards established by case law (citations omitted)" (14 CCR 15041[a]). Thus, the aim of CEQA mitigation is to reduce project impacts to a less-than-significant level. In contrast, the California Endangered Species Act requires that impacts of the authorized take be "minimized and fully mitigated." For the purposes of this requirement, impacts of the taking include all impacts on the species that result from any act that would cause the proposed taking. CDFW may issue an ITP for an otherwise lawful activity if, among other things, all the impacts of the taking are minimized and fully mitigated, there is adequate funding to implement the mitigation measures and monitor compliance and effectiveness with and effectiveness of those measures, and the take does not jeopardize the continued existence of the species. Similarly, where CDFW determines that an activity may substantially adversely affect existing fish and wildlife resources subject to the CDFW LSA's regulatory authority, CDFW may condition implementation of that activity through an agreement that includes reasonable measures necessary to protect those resources.

This Draft EIR has been distributed for review to responsible agencies and other interested agencies and individuals. CDFW will consider the Draft EIR, comments received on the Draft EIR, responses to those comments, and any changes to the Draft EIR to prepare, before deciding whether to certify the Final EIR as complying with CEQA and take final action on the proposed Projects.

Comments on this Draft EIR should focus on the adequacy of the document in identifying and analyzing the potential environmental effects, determination of significance, and effectiveness of mitigation measures.

1.3.2 Notice of Preparation

In compliance with CEQA Guidelines Section 15082, a Notice of Preparation (NOP) was issued on October 5, 2020. The notice briefly described the proposed Projects, location, environmental review process, potential environmental effects, and opportunities for public involvement. A map of the Project sites was included.

The NOP was uploaded to the Office of Planning and Research (State Clearinghouse) website for issuance to state agencies. It was mailed to agencies, organizations, local governments, elected officials, Native American Tribes, residents in the Desert Center area, and interested parties.

A notice regarding joint (CDFW and BLM) scoping meetings was published in the Desert Sun and Hi-Desert newspapers. Along with the NOP, the public notice solicited input regarding the scope and content of the environmental information to be included in the draft environmental review documents being prepared by CDFW and BLM. The public comment period ended on November 4, 2020. The Scoping Report, including a copy of the NOP, is provided in Appendix B. A total of 12 comment letters were received during the scoping period. Section 1.5 includes a summary of the comments received.

1.3.3 Public Scoping Meeting

In compliance with CEQA Guidelines Section 15082(c), CDFW conducted a public scoping meeting to inform the public about the Projects and provide information regarding the environmental review process. This scoping meeting was hosted by both CDFW and BLM. Due to the COVID-19 pandemic, the traditional format of in-person meetings was not used. The public scoping meeting was held virtually through the online web-based platform Zoom on October 21, 2020. The CEQA Scoping Report, provided in Appendix B of this EIR, contains copies of the PowerPoint presentation and scoping meeting attendee list.

1.3.4 Scoping Comments

A total of 12 scoping comments were received during the scoping period. The Scoping Report includes all scoping comments received during the scoping period (refer to Appendix B).

Scoping concerns included the following:

- Concern regarding visual impacts, including impacts to the night sky
- Concern regarding impacts to cultural resources and request from the Colorado River Indian Tribes for consultation
- Concern regarding impacts due to valley fever
- Concern regarding impacts to biological resources, including the following:
 - special-status plant and animal species
 - desert tortoise connectivity
 - birds, especially due to mortality and the avian lake effect theory

- microphyll woodland, due to loss of the sensitive habitat
- sand transport corridor and Mojave fringe-toed lizard habitat
- The need for compensatory mitigation to reduce impacts to biological resources
- Potential impacts due to use of Colorado River water and impacts to the groundwater basin
- Impacts due to dust and soil erodibility
- Concern regarding loss of carbon sequestration
- The need for better greenhouse gas emissions calculation due to battery storage energy use
- Recommendation for fire prevention best management practices
- Recommendation of alternatives, including an alternative that fully meets the BLM Desert Renewable Energy Conservation Plan Conservation Management Actions and an off-site alternative

Applicable scoping comments for each resource are summarized in the introduction to each issue area section in Chapter 3 and considered during the impact analysis.

1.3.5 CEQA Tribal Consultation and CDFW's Communication and Consultation Policy

Per CEQA requirements, tribal cultural resources are primarily identified through outreach to the Native American Heritage Commission (NAHC) and government-to-government consultation between the lead agency and appropriate California Native American Tribes. On June 23, 2020, CDFW sent a request to the NAHC for a search of the Sacred Lands File and a list of Tribes that may be affiliated with the area of the Projects. The NAHC performed a record search of the Sacred Lands File and provided a list of Native American Tribes who may have knowledge of cultural resources in the Projects' area. On August 4, 2020, CDFW provided notification of the Projects under the CEQA Section 21080.3.1 and CDFW's Tribal Communication and Consultation Policy to the 18 Tribes identified by the NAHC.

CDFW mailed certified letters to representatives of the following tribes: Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Indians, Campo Band of Diegueno Mission Indians, Ewiiaapaayp Band of Kumeyaay Indians, La Posta Band of Diegueno Mission Indians, Los Coyotes Band of Cahuilla and Cupeño Indians, Manzanita Band of Kumeyaay Nation, Mesa Grande Band of Diegueno Mission Indians, Morongo Band of Mission Indians, Quechan Tribe of the Fort Yuma Reservation, Ramona Band of Cahuilla, Santa Rosa Band of Cahuilla Indians, Soboba Band of Luiseño Indians, Sycuan Band of the Kumeyaay Nation, Torres-Martinez Desert Cahuilla Indians, and Twenty-Nine Palms Band of Mission Indians. The letters included a brief description of the proposed Projects, information on how to contact the lead agency Project Manager, and a U.S. Geological Survey topographic quadrangle showing the Projects' components and lay-down areas. The letters noted that requests for consultation needed to be received within 30 days of the date of receipt of the notification letter. Four responses were received prior to publication of the Draft EIR, which came from the Quechan Tribe of the Fort Yuma Reservation, the Agua Caliente Band of Cahuilla Indians, the Soboba Band of Luiseño Indians, and the Colorado River Indian Tribes. In compliance with their Communication and Consultation Policy, CDFW contacted and had discussions with the four tribes who requested meetings and additional information regarding the Projects. During the Draft EIR public review period (August 6, 2021 to September 20, 2021) CDFW continued discussions with tribes. Refer to Section 3.17, Tribal Cultural Resources, of this document for additional information regarding Tribal outreach conducted by CDFW.

1.3.6 Overview of Environmental Impact Report Process

The Draft EIR will be available for 45 days for review and comment by public agencies and interested organizations and individuals.

A Notice of Completion has been filed with the State Clearinghouse to begin the public review period (California Public Resources Code, Section 21161) for this Draft EIR. Pursuant to California Public Resources Code, Section 21092.3, and CEQA Guidelines Section 15087(c), a Notice of Availability of this Draft EIR was posted in the Riverside County Clerk's office.

Once the 45-day public review period for the Draft EIR has concluded, CDFW will review all public comments, prepare written responses to comments received, and propose revisions to the Draft EIR text, if necessary. The written responses to comments and the revisions to the Draft EIR will constitute the Final EIR. Should CDFW approve the Projects, CDFW will file a Notice of Determination with the State Clearinghouse and a Notice of Decision with the California Natural Resources Agency. The filing of the Notice of Determination/Decision will complete CDFW's lead agency CEQA review of the Projects.

1.3.7 Mitigation, Monitoring, and Reporting Program

As mandated by CEQA Guidelines Sections 15091 and 15097, CDFW will prepare a mitigation, monitoring, and reporting program (MMRP) prior to approval of the Projects. CDFW will use the MMRP to track compliance with mitigation measures it imposes through the exercise of its independent regulatory authority for each Project, and the MMRP will remain available for public review during the compliance period for the Projects. As the Projects are on BLM-administered lands, BLM will also implement environmental compliance monitoring plans that require the implementation of mitigation measures established through the National Environmental Policy Act process and that establish the frequency of reporting requirements for the various plans and monitoring activities required. CDFW's MMRP, to this end, will identify the agency responsible for imposing, overseeing, and enforcing all of the mitigation measures and other measures volunteered and committed to by the Applicants in the Final EIR to avoid or substantially lessen to the extent feasible all of the potentially significant environmental effects that may result from approval of the Projects.

1.4 Environmental Impact Report Format and Content

This EIR was prepared in accordance with state administrative guidelines established to comply with CEQA. (Refer also to California Public Resources Code, Section 21080.5; 14 CCR 15251[o].) CEQA Guidelines Section 15151 provides the following standards for EIR adequacy:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection; but for adequacy, completeness, and a good faith effort at full disclosure.

This EIR is divided into the following major chapters. Figures are provided as necessary in each section to graphically represent the topic at hand.

- **Executive Summary:** This chapter provides an overview of the Projects and a summary of the significant impacts identified in the analysis and associated mitigation measures. A summary of the alternatives and environmentally superior alternative is also provided.
- **Chapter 1. Introduction:** This chapter provides an overview of the proposed Projects evaluated in the EIR and a summary of the Projects’ objectives. This section also discusses agency use of the document and provides a summary of the scoping comments.
- **Chapter 2. Project Description:** This chapter gives an overview of solar technology and details the locations and characteristics of the Projects, along with a description of the surrounding land uses. It includes construction and operational aspects of the Projects and relevant background information.
- **Chapter 3. Environmental Analysis:** This chapter contains a detailed environmental analysis of the existing conditions; provides resource specific Applicant Proposed Measures that the Applicants have committed to implement as part of the proposed Projects; describes impacts from construction, O&M, and future decommissioning of the Projects; where needed, identifies and recommends potentially feasible mitigation measures; and includes a discussion of cumulative impacts.
- **Chapter 4. Alternatives:** This chapter provides descriptions of the alternatives that were evaluated in the document. The section also presents alternatives that were not evaluated in the document and provides a screening analysis that was used to identify such alternatives. This section provides a comparative analysis (matrix) to distinguish the relative effects of each alternative and its relationship to the Projects’ objectives and impacts. The alternatives analysis also identifies the “environmentally superior alternative,” as required by CEQA Guidelines Sections 15126.6(d) and (e)(2).
- **Chapter 5. Other CEQA Considerations:** This chapter presents an analysis of the Projects’ growth-inducing impacts and other CEQA requirements, irreversible commitment of resources, and significant and unavoidable impacts.
- **Chapter 6. List of Preparers:** This chapter provides a list of individuals that prepared or contributed to this Draft EIR.
- **Chapter 7. References:** This chapter lists reference materials used to prepare the Draft EIR.
- **Appendices:** The ITPs for the Projects, CEQA Scoping Report, technical reports and studies, and other relevant information are included as appendices to support the environmental analyses.

1.5 Agency Use of this Document and Permits Required

CDFW will exercise its regulatory authority as provided by the California Fish and Game Code in evaluating issuance of the ITPs for the Projects, along with LSAs. Because issuance of the ITPs and LSAs may result in environmental impacts associated with construction, O&M, and future decommissioning activities, CDFW as CEQA lead agency is analyzing and disclosing all of the potentially significant environmental impacts that may result directly or as an indirect consequence of the proposed regulatory action under the California Fish and Game Code. This EIR reflects CDFW’s independent lead agency analysis of the significant or potentially significant effects on the environment that may result from the construction, O&M, and future decommissioning of the Projects as the “whole of the action” under CEQA. Under CEQA requirements, CDFW will determine the adequacy of the EIR and, if adequate, will certify the document. After the Final EIR is certified, CDFW will make a decision whether to issue the ITPs and LSAs, subject to various conditions of approval consistent with CDFW’s regulatory jurisdiction. Other state and local

agencies or regulatory entities could exercise authority over specific elements of the proposed Projects. Table 1-1 lists the federal, state, and regional permits and authorizations that may be required prior to construction, O&M, and future decommissioning of the Projects.

Table 1-1. Permits and Approvals for the Projects

Agency Type	Agency Name	Permit	Applicability
Federal	Bureau of Land Management	Right-of-Way Grants	For use of federal land for the Projects and gen-tie line
Federal	United States Fish and Wildlife Service	Biological Opinion or Concurrence	For compliance with Section 7 of the Endangered Species Act under the Biological Opinion for the Desert Renewable Energy Conservation Plan Land Use Plan Amendment
State or Regional	California Department of Fish and Wildlife	Incidental Take Permit under Fish and Game Code 2081	Projects could potentially impact desert tortoise
State or Regional	California Department of Fish and Wildlife	1602 Permit	Projects would result in construction-related impacts to state jurisdictional streams
State or Regional	South Coast Air Quality Management District (SCAQMD)	Dust Control Plan	A dust control plan is required to be submitted and approved by SCAQMD prior to initiation of ground disturbance activities associated with construction
State or Regional	South Coast Air Quality Management District (SCAQMD)	Indirect Source Review	An Indirect Source Review (District Rule 9510) will be filed with the SCAQMD to determine potential mitigation, if any, for emissions of oxides of nitrogen and particulate matter less than or equal to 10 microns in diameter
State or Regional	Regional Water Quality Control Board	Waste Discharge Requirements	For discharges that could affect the quality of waters of the state
State or Regional	California Department of Transportation, District 8	Encroachment Permit	An encroachment permit would be required for construction of the gen-tie line across Interstate 10 to access the Red Bluff Substation

2. Description of the Proposed Projects

2.1 Introduction

Arica Solar₂ LLC and Victory Pass I₂ LLC (Applicants), wholly owned indirect subsidiaries of Clearway Energy Group LLC, propose to construct, operate, and maintain utility-scale solar photovoltaic (PV) electrical generating and storage facilities and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The proposal also includes future decommissioning, which is anticipated to occur after 35 to 50 years of operation. Individually, the Applicants' Projects are known as the Arica Solar Project and the Victory Pass Solar Project; in this Environmental Impact Report (EIR), they will be referred to collectively as the "Projects." The information used in the project description was provided by the Applicants in the Plan of Development (POD) prepared for each Project (Arica Solar₂ LLC ~~2021, unpubl. report~~; Victory Pass I₂ LLC ~~2021, unpubl. Report~~).

The Applicants have applied to the California Department of Fish and Wildlife (CDFW) for Incidental Take Permits¹ (ITPs) for the desert tortoise (*Gopherus agassizii*) under California Fish and Game Code Section 2081 (refer to Appendix A). Proposed issuance of the ITPs and the prospect that CDFW will issue Lake and Streambed Agreements (LSAs) to the Applicants are regulatory actions involving the exercise of discretion and independent judgment by CDFW, consistent with its jurisdictional authority under the California Fish and Game Code. Issuance of the ITPs by CDFW, subject to specific conditions of approval, including a term of 5 years, would authorize "take" as defined by state law of desert tortoise incidental to the Applicants' otherwise lawful construction of the Projects. Any LSA CDFW issues to the Applicants to construct the Projects, consistent with the notifications, would be conditioned on reasonable measures necessary to protect fish and wildlife subject to CDFW's regulatory jurisdiction under California Fish and Game Code Section 1600 et seq. CDFW as California Environmental Quality Act lead agency has analyzed and disclosed the environmental effects of the Projects, in combination, as the "whole of the action" in this EIR. Although the Applicants are seeking ITPs and LSAs for construction that would remain in effect over an initial 5-year term, post-construction operations and maintenance (O&M) and decommissioning are reasonably foreseeable future phases of the Projects and are also considered in the environmental analysis as part of the whole of the action.

The proposed Projects are located on approximately 3,800 acres (2,000 acres for Arica and 1,800 acres for Victory Pass) of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM), Palm Springs-South Coast Field Office, in the Desert Center area of Riverside County. The Projects would disturb approximately 2,724 acres overall (1,355 acres for the Arica site, 1,310 acres for the Victory Pass site, 52 additional acres for the shared generation tie [gen-tie] corridor, and less than 7 acres for the access roads). The boundaries of the Projects' disturbance areas were designed to avoid desert dry wash woodland and sensitive plant species to comply with the BLM California Desert Conservation Area Plan, as amended.² The Arica facility would generate up to 265 MW of renewable energy and would include up to 200 MW of battery storage and the Victory Pass facility would generate up to 200 MW of renewable energy and include up to 200 MW of battery storage. The power produced by the Projects would be conveyed to the statewide power grid via a 3.2-mile shared overhead 230-kilovolt (kV) gen-tie

¹ An ITP allows take of a species listed under the California Endangered Species Act if such take is incidental to, and not the purpose of, carrying out an otherwise lawful activity.

² The Desert Renewable Energy and Conservation Plan amendment to the California Desert Conservation Area Plan includes conservation and management actions that require avoidance of some special plant species and certain types of habitat.

transmission line interconnecting from a shared switchyard to the Southern California Edison (SCE) Red Bluff Substation, an existing substation located south of Interstate (I) 10. The Projects are located entirely on federal land. The BLM will perform a separate review of the Projects under the National Environmental Policy Act.

2.2 Description of the Proposed Projects

2.2.1 Project Locations and Land Uses

The Projects are located on BLM-administered land in Riverside County, north of I-10 and approximately 5 miles east of Desert Center, California. Figure 2-1, Project Vicinity, illustrates the location of the proposed Projects relative to major highways, access roads, and cities. The shared 230 kV gen-tie line would be located north and south of the I-10 freeway to connect into the existing SCE Red Bluff 500/220 kV Substation. Access to the sites would be from State Route (SR) 177, just under 8 miles west of the access gates. Access would be via improved existing BLM open routes and agricultural roads. Figure 2-2, Proposed Projects, shows the Projects' areas and the areas that would be developed.

The Projects would use primarily undeveloped land crossed by an SCE transmission line and with a borrow pit adjacent to I-10 that dates from 1975. BLM designated these lands as part of the Riverside East Solar Energy Zone of its Western Solar Plan and as part of a Development Focus Area under the Desert Renewable Energy Conservation Plan. The Western Solar Plan and Desert Renewable Energy Conservation Plan amended the California Desert Conservation Area Plan to allow for development of solar energy generation and appurtenant facilities (refer to Figure 2-3, Proposed Projects and BLM Land Management) on public lands in this specific area. A portion of the gen-tie line would also be sited within the Section 368 Federal Energy Corridor as established by the West-Wide Energy Corridor Final Programmatic Environmental Impact Statement (PEIS) and Record of Decision. South of I-10, the gen-tie line would cross the Chuckwalla Area of Critical Environmental Concern and Special Recreation Management Area, within an existing overhead transmission corridor. The existing Desert Sunlight and Desert Harvest solar projects are northwest of the Project sites; the Palen Solar Project, under construction, is located 1 mile east of the Project sites; parcels of the approved Athos Solar Project, under construction, are located immediately east and west of the Project sites; and the proposed Oberon Solar Project, under environmental review, is located directly to the west of the Project sites. The proposed gen-tie line has been routed to parallel the gen-ties associated with other existing and proposed solar projects in the area. Figure 2-4 shows the proposed Projects in relation to other proposed, existing, and approved solar facilities in the Desert Center area.

2.2.2 Summary of Projects Components

Solar cells, also called PV cells, convert sunlight directly into electricity. PV gets its name from the process of converting light (photons) to electricity (voltage), which is called the "PV effect." PV cells are located on panels, which are mounted at a fixed angle facing south or on a tracking device that follows the sun. Many solar panels on multiple rows and controlled by a single motor create one system called a solar tracker. For large electric utility or industrial applications, hundreds of solar trackers are interconnected to form a utility-scale PV system.

Battery storage systems absorb, hold, and then reinject electricity into the electrical system. Utility-scale battery storage systems have a typical storage capacity ranging from around a few megawatt-hours to hundreds of megawatt-hours. Different battery storage technologies, such as lithium-ion (Li-ion), sodium sulfur, and lead acid batteries, can be used for grid applications.

Each Project's components include the following:

- solar modules
- tracker components
- direct current (DC) to AC power inverters
- medium voltage transformers
- a medium voltage collection system
- a battery storage component
- a single shared O&M building
- up to ~~one~~^{two} substations for Arica and one substation for Victory Pass
- a shared switchyard
- a shared 230 kV gen-tie line to connect the shared switchyard to SCE's Red Bluff Substation

The type of solar PV system used would depend on the technology ultimately selected at the time of procurement. The PV panels would be self-contained units designed to withstand exposure to the elements for a period of 35 years or greater.

2.2.3 Solar Facilities

Both Projects would include the following components:

- **Solar PV panels.** Types of panels that may be installed include thin-film panels (including cadmium telluride and copper indium gallium diselenide technologies), crystalline silicon panels, bifacial panels, or any other commercially available PV technology. The panels would be dark blue or black in color. The panels would include an anti-reflective coating.
- **Mounting systems.** Panels would be arranged on the sites in solar arrays mounted on either fixed-tilt or tracking technology, depending on the PV panels ultimately selected. Structures supporting the PV modules would consist of steel piles (e.g., cylindrical pipes, H-beams, or similar), which would be driven into the soil using pneumatic techniques, such as a hydraulic rock hammer attachment on the boom of rubber-tired or tracked equipment. The piles would be spaced 10–15 feet apart. For a single-axis tracking system, piles typically would be installed to a reveal height of approximately 4 feet above grade but could be higher or lower in certain areas depending on site topography. The fixed-tilt system reveal height would vary based on the racking configuration specified in the final design. For single-axis tracking systems, following pile installation the associated motors, torque tubes, and drivelines (if applicable) would be placed and secured. Some designs allow for PV panels to be secured directly to the torque tubes using appropriate panel clamps. For some single-axis tracking systems, and for all fixed-tilt systems, a galvanized metal racking system, which secures the PV panels to the installed foundations, would be field assembled and attached according to the manufacturer's guidelines. Panels would be arranged in strings with a maximum height of 14 feet.
- **Inverter Stations and Transformers.** The Projects would be designed and laid out primarily in increments that would include an inverter equipment area and transformers. It is estimated that Arica would use between 80 and 85 inverters/transformers and Victory Pass would use between 60 and 65 inverters/transformers.

- **Electrical Collection System.** Panels would be electrically connected into panel strings using wiring secured to the panel racking system. Underground or aboveground cables would be installed to convey the DC electricity from the panels via combiner boxes located throughout the PV arrays to inverters to convert the DC to AC electricity. The output voltage of the inverters would be stepped up to the collection system voltage via transformers located close to the inverters. The collector lines would be 34.5 kV.
- **Battery Storage Component.** Each Project may include the installation of up to 200 MW of battery storage. The battery system is expected to be located adjacent to each Project substation. The battery system would consist of batteries housed in storage containers. The containers themselves would be approximately 8 feet wide by 4 feet long by 10 feet high (2.4 meters wide by 1.2 meters long by 2.6 meters high), with approximately 6.5 feet (2 meters) of clearance on all sides. The battery storage component would have a footprint of ~~up to 5 acres~~ 8 acres, with 2 acres of impervious surface. Site preparation required for the battery storage containers would be the same as those contemplated for storage buildings; the area for battery storage would need to be level so that the resulting pad is a flat cement or concrete foundation.

Temporary Construction Facilities

Each Project site would have several temporary construction staging areas and an area for construction worker parking for use throughout the approximate 16- to 18-month construction period; these areas would then be decommissioned and/or replaced by solar arrays. Graded roads would be required in selected locations on the Project sites during construction to bring equipment and materials from the staging areas to the construction work areas, and for long-term operation. Long-term O&M access roads would be built at least 20 feet in width to meet Riverside County Technical Policy No. TP 15-002.

The staging areas would include material laydown and storage areas and an equipment assembly area. During construction, the area near the location of the O&M facility would potentially contain a guard shack, construction trailers, construction worker parking, and portable toilet facilities that would serve each Project's sanitation needs during construction. Temporary construction fencing would surround this area and the guard shack would be manned to provide security during construction.

Substations

The Arica Solar Project and Victory Pass Project substations are anticipated to be in the north section of the Victory Pass Project site, as depicted in Figure 2-2; the final selected substation locations are subject to final design and engineering. The substations would include transformers, breakers, switches, meters, and related equipment. All interconnection equipment, including the control room if required, would be installed aboveground and within the footprint of each substation. The overall footprint of each substation is anticipated to be approximately 300 by 300 feet with poles up to 100 feet in height.

The substations may include a 100 kW emergency generator for use if the regional transmission system fails. If necessary, the substations would contain a control room building approximately 15 by 30 feet with an overall height up to 20 feet. The substations would be surrounded by a barbed wire chain-link fence to comply with electrical codes.

The substations must have access to communication systems in the area to comply with Federal Energy Regulatory Commission/California Independent System Operator/Utility monitoring and control requirements. Compliance may be accomplished by underground lines, aboveground lines, or wirelessly.

Operations and Maintenance Facility

The Projects would include a single 3,500-square-foot O&M facility. The facility would be monitored by on-site O&M personnel and/or remotely. The O&M facility may consist of offices, a restroom, and a storage area and would include a heating, ventilating, and air conditioning system. A septic system and leach field would be located at the O&M building to serve the sanitary wastewater treatment needs.

Telecommunications

The Projects may require redundant telecommunications connections. The primary telecommunication line would consist of either a microwave tower or fiber-optic cable and/or copper telecommunication line, installed aboveground and/or belowground outside of the Project sites. The telecommunication route may use a combination of existing poles, new poles, and/or belowground installations between the point of connection to existing telecommunications infrastructure and the Projects' substations and may include rooftop transmission equipment. Telecommunication lines may also be attached to the new gen-tie line. A digital radio system may also be used. A secondary (backup) Internet connection would be provided using a point-to-point microwave wireless link.

Solar Facility Fencing, Site Security, and Lighting

The boundaries of the Project sites would be secured by 6-foot-tall chain-link perimeter fences, topped by three strands of barbed wire that would add an additional foot to the fence height. The security fence would be collocated with a desert tortoise fence at its base. The ingress/egress would be accessed via a locked remote gate.

Motion sensitive, directional security lights would be installed to provide adequate illumination around the substation areas, around each inverter cluster, at gates, and along perimeter fencing. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. No project component is 200 feet tall or greater; thus, there would be no safety lighting required per Federal Aviation Administration regulations. Off-site security personnel could be dispatched during nighttime hours or could be on site, depending on security risks and operating needs. Infrared security cameras, motion detectors, and/or other similar technology may be installed to monitor the site through review of live footage 24 hours a day, 7 days a week. If such equipment were required, the equipment would be placed along the perimeter of the facility and/or at the inverters.

Erosion Control and Stormwater Drainage

Except for the inverters and transmission facility, solar field development would maintain sheet flow where possible, with water exiting the site in existing natural contours and flows. The Projects specifically avoid the largest washes that cross the sites as shown on Figure 2-2.

A Stormwater Pollution Prevention Plan would be prepared by a qualified engineer or erosion control specialist and implemented before construction. The Stormwater Pollution Prevention Plan would be designed to reduce potential impacts related to erosion and surface water quality during construction activities and throughout the life of the Projects. It would include best management practices (BMPs). The BMPs ~~would~~ may include, but not be limited to, dewatering procedures, retention basins, swales, stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed.

2.2.4 Shared Switchyard and 230 kV Gen-Tie Transmission Line

A 230 kV shared gen-tie line would interconnect the shared switchyard with the existing Red Bluff Substation. The overall footprint of the switchyard is estimated at approximately 300 by 300 feet. The gen-tie line would exit the shared switchyard near the western end of the Victory Pass Project site and head west for 2 miles and then south for 1 mile to reach the Red Bluff Substation's 230 kV bus at its western end. The gen-tie line right-of-way (ROW) would be 150 feet wide and approximately 3.2 miles long. New poles would be constructed of steel and would be between 100 to 140 feet tall. Because the transmission structures would be less than 200 feet tall, they would not require lighting, avoiding potential interference with aviation.

2.2.5 Access Roads

Access to the sites would be from SR-177. The Projects' construction and operation traffic would exit I-10 at SR-177, then take SR-177 to Ragsdale Road, then to BLM route DC 425, and to BLM route DC 379. Route DC 379 would reach the site boundaries. It is shared with numerous other ROW holders and ranges between 16 and 24 feet wide. Some improvements such as grading and widening may be required in areas where it has not been improved previously, which would require less than 7 acres of additional disturbance. The proposed access roads would be widened up to 24 feet wide.

Alternate routes to reach the solar sites include using the Corn Springs exit off I-10 instead of the proposed Desert Center exit. After exiting at Corn Springs road, the existing BLM roads DC 950 and DC 511 could be used to access the site and are considered in Chapter 4, Alternatives; refer to Figure 4-1.

2.2.6 Water Requirements

Construction

Construction water usage rates and total requirements would vary depending on the length and intensity of construction activities but would likely be an estimated total of 650 acre-feet for each Project for the full construction. The construction timeframes for the Projects are estimated to be 16 months for Victory Pass and 18 months for Arica, with most of the water (369 acre-feet for Victory Pass and 397 acre-feet for Arica) being used in the second year of construction. Water would be needed primarily for dust control and soil compaction, with small amounts used for sanitary and other purposes.

Water for construction-related dust control and operations would be obtained from several potential sources, including an ~~on-site or~~ off-site groundwater well or trucked from an off-site water purveyor. During construction, restroom facilities would be provided by portable units to be serviced by licensed providers.

Potable water for construction would be provided either as bottled water, brought from home, or as a separate bottled water delivery.

Operation and Maintenance

During the O&M phase, water would be required for panel washing and maintenance and for substation restroom facilities. O&M would likely require between 15 to 25 acre-feet per year per Project. One or two small, aboveground portable sanitary waste facilities may be installed to retain wastewater for employee use. If installed, these facilities would remain on site for the duration of the Projects. These facilities would be installed in accordance with state requirements and emptied as needed by a contracted wastewater service vehicle.

Water would be used for cleaning of the solar PV panels. It is anticipated that the solar PV panels would be washed up to three times per year to ensure optimum solar absorption by removing dust particles and other buildup. No wastewater requiring treatment would be generated during panel washing as water would be absorbed into the surrounding soil or evaporate.

Water required for O&M may be provided by on-site or off-site wells, purchased and trucked in from off site and stored in storage tanks, or a combination of these sources. ~~There is one existing water production well on site that may be used, and others may be developed.~~ Water storage tanks would be installed if required by the Riverside County Fire Department. Water for bathroom facilities in the O&M building would be provided by well water and/or purchased from off site and stored in a water tank. A septic system would be constructed to serve the O&M building.

Potable water would be brought to the site in water bottles or as a potable water service delivery.

2.2.7 Waste Generation

Construction of the Projects would involve the use of hazardous materials, such as fuels and greases for construction equipment. Such substances may be stored in temporary aboveground storage tanks or sheds located on the Project sites. The fuels stored on site would be in a locked container within a fenced and secure temporary staging area.

The small quantities of chemicals to be stored at the Project sites during construction include equipment and facilities maintenance chemicals. These materials would be stored in their appropriate containers in an enclosed and secured location such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable chemical storage cabinets may be moved to different locations around the site as construction activity locations shift. The chemical storage area would not be located immediately adjacent to any drainage. Disposal of excess materials and wastes would be performed in accordance with local, state, and federal regulations; excess materials/waste would be recycled or reused to the maximum extent practicable.

If quantities exceed regulatory thresholds, the Projects would ensure that storage is undertaken in compliance with the Spill Prevention, Control, and Countermeasure Rule and the Hazardous Materials Business Plan, which would be developed prior to construction. The use, storage, transport, and disposal of hazardous materials used in construction of the facility would be carried out in accordance with federal, state, and county regulations. No extremely hazardous substances are anticipated to be produced, used, stored, transported, or disposed of during construction. Material Safety Data Sheets for all applicable materials would be made readily available to on-site personnel. Construction materials would be sorted on site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility.

It is anticipated that at least 75% of construction waste would be recyclable. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and composted. Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at municipal county landfills. Hazardous waste and electrical waste would be transported to a hazardous waste handling facility (e.g., electronic-waste recycling). All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

2.2.8 Fire Safety

There is limited potential for wildfire at the Project sites. Vegetation is sparse, thus fire risk from vegetation is minimal. The Projects would coordinate with BLM, Riverside County Fire Department, and other applicable jurisdictions as appropriate to define measures to control the risk of fire. During operations, one or more aboveground water storage tank(s) would be installed adjacent to the O&M facility if required by Riverside County Fire Department. The tank(s) would be sized to meet BLM requirements to supply sufficient fire suppression water during operations. Additional fire protection measures would include sprinkler systems in the O&M building; an FM200 fire suppression system, or equivalent, in the facility control room at the O&M building; and portable carbon dioxide fire extinguishers mounted at the power conversion system units.

Project facilities would be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health, and safety requirements. Effective maintenance and monitoring programs are vital to productivity as well as to fire protection, environmental protection, and worker protection.

Each Project would have a Project Fire Safety Plan in place for construction and operation. The plans would comply with applicable BLM and Riverside County regulations and would be coordinated with the Riverside County Fire Department. The following steps would be taken to identify and control fires and similar emergencies:

- Electrical equipment that is part of the Projects would be energized only after the necessary inspection and approval, so there is minimal risk of any electrical fire during construction.
- Project staff would monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks.
- Transformers located on site would be equipped with coolant that is biodegradable and contains no polychlorinated biphenyls or other toxic compounds.

2.3 Construction Activities

The following sections provide detail about the timeline and process for construction of the Projects. Once construction is complete, the Projects would be in operation for approximately 35 years, with the potential for repowering, thereby extending their lives to approximately 50 years.

2.3.1 Construction Schedule and Workforce

The construction of the Projects would begin once all applicable approvals and permits have been obtained. It would take approximately 18 months for Arica and 16 months for Victory Pass from the start of construction to completion of the Projects. The Projects are anticipated to start construction at the same time, so the bulk of the construction for each Project would overlap.

The construction schedule would have overlapping stages. Stage 1 would include mobilization, site preparation, fencing, preparation of laydown areas, and trenching. Stage 2 would include installation of cables, piles, racking systems, inverters, and modules. Stage 3 would include installation of modules and commissioning and testing. For both Projects, Stage 1 would be completed in months 1 to 8 and Stage 2 would be from months 4 to 12. Arica Stage 3 would occur during months 10 to 18 and for Victory Pass it would be months 10 to 16.

The typical construction work schedule is expected to be from 7:00 a.m. to 5:00 p.m., Monday through Friday. However, to meet schedule demands or to reduce impacts, it may be necessary to work early mornings, evenings, or nights and on weekends during certain construction phases. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the workday earlier in the summer months to avoid work during the hottest part of the day for health and safety reasons). If construction work takes place outside these typical hours, activities would comply with Riverside County standards for construction noise levels. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. The Projects would use restricted nighttime task lighting during construction. Lighting would include only what is needed to provide a safe workplace, and lights would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure outside the construction area.

The construction workforce would average 468 employees for both Projects with a peak of 1,016 during month seven of construction. The construction workforce would be recruited from within Riverside County and elsewhere in the surrounding region to the extent practicable.

2.3.2 Pre-Construction Activities

Surveying. Surveying includes two main objectives: (1) obtaining detailed topographic information for supporting the stormwater modeling and grading design and (2) construction layout surveying with staking. The Projects would develop detailed topographic information for the ROWs using photogrammetry and field cross sections. Concurrent with the acquisition of topographic data, aerial photographs would be obtained and analyzed to determine changes in land use and stream channel configurations. The final site plans for the Projects would be based on the detailed topographic survey of the site that is performed as a part of the permitting and engineering design process.

Road corridors, buried electrical lines, PV array locations, and the locations of other facilities would be located and staked to guide construction activities.

Staking and Flagging. Pre-construction survey work would consist of staking and flagging the following: (1) ROW and construction area boundaries, (2) work areas (permanent and short term), (3) cut and fill, (4) access and roads, (5) transmission structure centers, (6) foundation structure, and (7) desert tortoise or endangered plant avoidance areas, if any. Staking and flagging would be maintained until final cleanup.

2.3.3 Site Preparation

Site preparation activities include installing desert tortoise fencing and completing pre-construction clearance surveys, preparing and constructing site access roads, establishing temporary construction trailers and sanitary facilities, and preparing construction staging areas. Mobilization would include bringing construction equipment to the sites prior to start of construction. The Project sites would include several temporary staging areas. These staging areas would be used in phases throughout the 16- to 18-month Project construction period.

Vegetation Removal/Clearing. Vegetation would not be removed from the Project sites until the onset of a given construction activity. Within the solar fields, roadways, and areas around the O&M building, vegetation would be disced under, mulched or composted, and retained on site to assist in erosion control and limit waste disposal. In some areas to be graded outside of the solar field, native vegetation may be harvested for replanting to augment soil stabilization.

Vegetation would be cleared for construction of the drainage controls, including berms. Organic matter would be mulched and redistributed within the construction area (except in trenches and under

equipment foundations). Plant root systems would be left in place to provide soil stability except where grading and trenching are required for placement of solar module foundations, underground electric lines, inverter and transformer pads, road and access ways, and other facilities.

Grading. The Project sites are flat, nearly level, and require minimal grading to allow for installation of the PV panels. Grading would be required only for the inverter pads, substation, driveways, and other improvements, including potentially to the access roads. Access driveways may be constructed by placing 2 to 4 inches of decomposed granite or comparable material directly on the existing soil. Soil compaction, soil strengthening agents, or geo fabric may be used for access and circulation driveways. Compaction may also be required for the construction of inverter pads, substations, control rooms, and driveways. Driveways and other work areas would be sprayed periodically with water to reduce dust. Driveways and work areas may also be treated with BLM-approved dust suppression products.

Areas comprising the solar fields would be prepared using conventional farming equipment including tractors with discing equipment and vibratory rollers, with limited use of scrapers to perform micrograding within sections of the solar array field. The sites would be contour graded level. The overall topography and drainage patterns would remain unchanged, but within each solar array, high spots would be graded and the soil cut from these areas used to fill low spots within the same array. With this approach, rubber-tired farming tractors towing discing equipment would disc the top 5 to 7 inches of soil. A water truck would follow closely alongside the tractor to moisten the soil to keep dust at or below acceptable levels. The tractor may make several passes to fully disc the vegetation into the topsoil, preserving the underground root structure, topsoil nutrients and seed base. A drum roller would then be used to flatten the surface and return the soil to a compaction level similar to the pre-construction stage. The intent of the roller is to compact the soil under the solar field area and even out the surface after the discing is complete.

Lastly, limited use of scrapers for micrograding would be employed only where needed to produce a more level surface than can be produced by the disc and roll technique. Very limited cut and fill would be completed within specific arrays to limit slope to within 3.0% and produce a consistent grade in each solar field area. Requirements for cut and fill grading would be defined after completion of initial site studies. Hydrology analysis would evaluate the areas that are susceptible to scour from stormwater runoff. Vegetation would be cleared from roadways, access ways, and where concrete foundations are used for inverter equipment, substations, and the O&M facilities.

2.3.4 Solar Array Assembly and Construction

Construction activities would include the installation of civil infrastructure (e.g., driveways, utilities, fencing), mechanical infrastructure (e.g., piles, tracking components), and electrical infrastructure (e.g., PV panels, cable harnesses). The following would be included:

Civil Infrastructure

- Completion of survey and Project layout, including road, panel, substations, switchyard, and support buildings
- Construction of driveway, including placement of aggregate
- Installation of temporary facilities, parking, and staging areas
- Installation of the chain-link fence and gates
- Watering for dust control and soil compaction
- Installation of switchyard, skid/inverter, and control room pads

Mechanical and Electrical Infrastructure

- Installation of tubular steel foundations and placement of a racking system on top of tubular steel
- Placement of PV solar modules and DC collection system
- Installation of a wire harness, fuses, and wire grounding
- Trenching for buried wires
- Installation of buried wiring
- Installation of inverter/transformer structures
- Wiring and interconnection
- Construction of AC collection system
- Trenching and overhead installation of the medium-voltage collector lines from inverters/transformers to the Project substation
- Construction of the Project substations
- Construction of the switchyard and interconnection to the transmission/distribution system
- Installation of telecommunications
- Installation of meteorological equipment
- Installation of water storage tanks
- Construction of on-site well for operations water

2.3.5 Solar Module Electrical Construction Activities

Underground cables to connect panel strings would be installed using ordinary trenching techniques, which typically include a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, state, and federal requirements, and would likely be buried at a minimum of 18 inches below grade by excavating a trench approximately 3 to 6 feet wide to accommodate the conduits or direct buried cables. After excavation, cable rated for direct burial or cables installed inside a polyvinyl chloride conduit would be installed in the trench, and the excavated soil would likely be used to fill the trench and lightly compressed. All cabling excavations would be to a maximum depth of 10 feet.

All electrical inverters and the transformer would be placed on concrete foundation structures or steel skids. Commissioning of equipment would include testing, calibrating equipment, and troubleshooting. The substation equipment, inverters, collector system, and PV array systems would be tested prior to commencement of commercial operations. Upon completion of successful testing, the equipment would be energized.

Certified electricians in the construction workforce would perform appropriate electrical construction activities starting with combiner box connections. Utility journeymen may be required to perform or supervise the higher-voltage electrical construction activities for the on-site substations and gen-tie line.

2.3.6 230 kV Gen-Tie Line Construction

The gen-tie line structures would be constructed of either tubular steel monopoles or lattice structures. Construction of the gen-tie line would cause temporary disturbance within a construction corridor estimated at a width of 150 feet. However, the long-term disturbance associated with the gen-tie line

would be limited to the foundations of the transmission structures and the footprint of the access roads. Existing access roads would be used where feasible.

Pre-construction activities for the gen-tie line would consist of surveying and marking the ROW and structure locations and mobilizing equipment and materials. A laydown yard (within each Project site) would be prepared for storage of materials.

Access roads, if not existing, would be developed to access the gen-tie line facilities. This would include the permanent roads to the new transmission structure locations and temporary roads for construction. Temporary work areas around the transmission structures would be necessary during construction to accommodate pole assembly and erection. Clearing and grading would also be needed for wire setup sites. Puller and tensioner sites require a large, relatively level area to safely accommodate all the equipment required on a wire stringing operation. These sites would be determined once the wire pulls have been planned. Permanent disturbance would be limited to areas within the gen-tie corridor.

Structures would be assembled in sections on cribbing that provides for the proper alignment of the steel members. Steel sections would be laid out with hydraulic cranes. The pole base and top sections would be assembled at each structure site. Insulators and hardware may be placed on the structure prior to erection.

Foundations would be constructed at each transmission structure location. Various foundation types are being considered, including drilled-shaft anchor-bolted foundations, drilled-shaft embedded foundations, and vibrated steel casings. A crane would be used for pole erection to set the pole base sections on foundations.

For the Projects, conventional wire stringing using tension stringing equipment has been assumed. After stringing, wires would be sagged in accordance with specified sagging data, corrections, and offsets. After sagging, the wires would be dead-ended on the dead-end structures and clipped-in on the tangent and angle structures. Final inspection and testing would need to be coordinated with functional checkout and commissioning of the substation equipment at each end of the line.

Within the Red Bluff Substation, SCE would install equipment supporting a new 220 kV switchrack position to terminate the Projects' gen-tie. All work would occur within the substation fenceline. SCE would also install the 220 kV transmission tower structures between the Projects' last structure and the substation, and install two diverse paths of telecommunications infrastructure, including fiber-optic cable, as appropriate, from the point of change where SCE takes ownership and into the substation.

2.3.7 Construction Site Stabilization and Restoration

Before construction begins, the Projects would determine the appropriate site stabilization measures. A detailed geotechnical study is planned to support detailed design for each Project. The study would include surveying work, drilling geotechnical borings, soil sampling, and electrical resistivity testing. Numerous bores would be drilled throughout the sites up to a depth of 20 feet. The study would provide input with respect to soil conditions and needed stabilization measures. After construction is completed, relatively minimal O&M activities are required during operations. Access roads and aisle ways would need to be maintained, but the areas covered by panels can support revegetation.

At the end of the Projects' useful lives, the Applicants would decommission the facilities and remove aboveground facilities, including the PV arrays and supporting electrical and facility systems. Following facility decommissioning and removal, the area would be reclaimed per applicable regulations in effect at the time of decommissioning.

2.3.8 Construction Access and Traffic

All materials for the Projects' construction would be delivered by truck. Most truck traffic would occur on designated truck routes and major streets. Construction traffic would include periodic truck deliveries of materials and supplies, recyclables, trash, and other truck shipments, and construction worker commuting vehicles. Most construction equipment and vehicles would be brought to the sites at the beginning of the construction process during construction mobilization and remain on site throughout the duration of the construction activities for which they were needed. Generally, the equipment and vehicles would not be driven on public roads while in use for each Project.

The number of truck deliveries expected over the Projects' construction period would be between 10 and 65 per week. Peak truck deliveries (65 per week) would likely occur between month 6 and month 10. Construction truck deliveries and shipments would typically avoid the peak traffic hours in the morning and evening. Materials would typically be delivered starting a few weeks before the start of the associated task, apart from electrical gear, which would be shipped prior to installation. Materials deliveries during construction would travel up to 150 miles one way from source to the Project sites but would average 60 miles. During construction, an average of 468 workers per day would commute to the sites, with a maximum of 1,016 workers during peak construction.

2.4 Operation and Maintenance

2.4.1 Operation and Maintenance Activities

Maintenance activities generally include road maintenance; vegetation restoration and management; scheduled maintenance of inverters, transformers, and other electrical equipment; and occasional replacement of faulty modules or other site electrical equipment. The access roads would be regularly inspected, and any degradation due to weather or wear and tear would be repaired. The Projects may apply a dust palliative on dirt access roads if indicated.

Washing of solar panels is expected to occur up to three times per year. Water for on-site maintenance purposes would likely be sourced from an existing nearby well, but if found to not be potable or of sufficient volume, a new well may be developed, or water may be trucked from off site.

2.4.2 Operation and Maintenance Workforce

It is anticipated that maintenance of each Project would require up to six workers to perform daily visual inspections and minor repairs. Typical work schedules are expected to be in two 12-hour shifts. During operations, potable water would be trucked into the site (one truck a week from Blythe) or on-site groundwater would be used, including treatment, as necessary. The O&M workforce would generate small amounts of sanitary wastewater that would be handled by an on-site septic system and leach field. Only limited deliveries would be necessary for replacement PV modules and equipment during operations.

On intermittent occasions, the presence of 10 to 15 workers may be required for repairs or replacement of equipment and panel cleaning. Overall, minimal maintenance requirements are anticipated. Maintenance and other operational staff would use standard size pickup trucks and vehicles.

2.4.3 Site Security During Operation

Each Project facility would have an on-site O&M building, and the Projects would be monitored by on-site O&M personnel and/or remotely by the Applicants or an affiliated company. Security would be

maintained through installation of a 6-foot-tall wire fence topped by three strands of 1-foot-tall barbed wire. The fencing would be designed for appropriate wildlife protection, based on consultation with state and federal wildlife agencies. Should the security system detect the presence of unauthorized personnel, a security representative would be dispatched to the facility, and appropriate local authorities would be notified. A Knox-Box containing keys for each Project would be installed to permit emergency access to the sites.

2.4.4 Vegetation Treatment and Weed Management

The Projects would develop a plan for vegetation management at the sites. An Integrated Weed Management Plan would be developed and implemented to control invasive exotic weeds. The plan would comply with existing BLM plans and permits, including the Vegetation Treatments Using Herbicides (BLM 2007) and Vegetation Treatment Using Aminopyralid, Fluroxypyr, and Rimsulfuron (BLM 2016). The POD for each Project includes a Vegetation Management Plan (refer to Appendix C.6 in each POD [Arica Solar₂ LLC 2021, ~~unpubl. report~~; Victory Pass I₂ LLC 2021, ~~unpubl. Report~~]).

Weed control activities would include non-mechanical, mechanical, and herbicide control methods. Manual non-mechanical means of vegetation management would be limited to the use of hand-operated power tools and hand tools to cut, clear, or prune species. Hand-operated tools such as hoes, shovels, and hand saws could be used under the program, as well as hand-pulling of plants. Mechanical control activities, such as chaining, disking, grubbing, and mowing using tractors or other heavy equipment, may also be used.

If herbicides or pesticides are required, they would be BLM-approved herbicides to control weed populations when manual control methods are not successful in managing the spread of invasive plants. Use of herbicides and pesticides, if required to control weed populations when manual control methods are not successful in managing the spread of invasive plants, would be limited to those analyzed and approved by BLM in the 2007 Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States PEIS and the 2016 Final Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States PEIS. The PEISs provide design features that need to be adhered to when using the herbicides. The process for treatments would be characterized in a Pesticide Use Proposal approved by the BLM. Herbicides would likely be necessary to control the spread of invasive weeds following construction disturbance as part of an integrated pest management strategy. CDFW will require that herbicides used contain a harmless dye and are registered with the California Department of Pesticide Regulation, and that all herbicides are applied in accordance with regulations set by the Department of Pesticide Regulation.

2.5 Decommissioning and Repowering

If at the end of the BLM ROW grant term there is no contract extension available for a power purchaser, no other buyer of the energy emerges, or there is no further funding of the Projects, the Projects would be decommissioned and dismantled. When either Project concludes operations, much of the wire, steel, and modules of which the system is comprised would be recycled to the extent feasible. Each Project's components would be deconstructed and recycled or disposed of safely, and the sites could be converted to other uses in accordance with applicable land use regulations in effect at the time of closure.

A detailed Decommissioning and Reclamation Plan would be developed in a manner that both protects public health and safety and is environmentally acceptable (refer to Appendix L in each POD [Arica Solar₂ LLC 2021, ~~unpubl. Report~~; Victory Pass I₂ LLC 2021, ~~unpubl. Report~~]). The BLM would require a performance and reclamation bond to provide financial guarantees to cover the potential liabilities or

specific requirements identified by the BLM for the construction, O&M, decommissioning, and reclamation of the solar Projects on public lands. A performance and reclamation bond must be provided to the BLM for its review and then accepted prior to the issuance of a Notice to Proceed and the start of land-disturbing activities for all solar energy authorizations. The performance and reclamation bond is secured by the BLM to ensure compliance with the terms and conditions of the ROW grant.

2.5.1 Removal of Power Generation, Substation, and Panels

The decommissioning and restoration process involves the removal of aboveground and belowground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be used during each Project's decommissioning phase.

Solar panels would be removed and placed in secure transport crates or container boxes for storage, and transported to another facility for reuse, material recycling, or disposal. The bolts and reusable fasteners that attached each module to the racks would be removed and saved for reuse. Once the solar modules are removed, the racks would be disassembled and the structures supporting the racks would be removed and salvaged or recycled.

Electrical equipment would be de-energized prior to removal, salvaged (where possible), placed in appropriate shipping containers, and secured in a truck transport trailer for shipment off site. Electrical equipment, transformers and switching gear on the inverter and interconnection transformer pads and all aboveground electrical wiring would be removed and recycled or disposed of.

All other aboveground site infrastructure, including fences, awnings, and the concrete pads that supported the inverters, and related equipment, would be removed. All materials would be recycled to the greatest extent possible in appropriate recycling facilities. Debris would be removed from the area.

2.5.2 Soil Reclamation

The sites would be restored to approximate pre-Project conditions, including removal of specified improvements, removal of buried infrastructure, restoration of compacted soil, and revegetation and mulching, according to BLM-approved reclamation measures.

2.5.3 Reclamation of Disturbed Areas

After closure, measures would be taken to stabilize disturbed areas once equipment and structures are decommissioned and removed. These measures would be outlined fully in the Decommissioning Plan (refer to Appendix L in each POD [Arica Solar LLC, unpubl. report; Victory Pass I LLC, unpubl. Report]). Disturbed soil would be stabilized using standard erosion control BMPs (e.g., use of mulch, fiber rolls, silt fences, reseeding as applicable) until final reclamation measures may be implemented. Only a small portion of each Project site contains structures that are in direct contact with the ground and thus would create surface disturbance during removal; these include access roads, the O&M facility, and associated parking areas. Removal of the solar arrays would create minimal ground disturbance due to the small footprint of their pile foundation design. Final reclamation measures would be implemented as soon as practicable after facility closure.

2.6 Applicant Proposed Measures

Sections 2.6.1 through 2.6.12 provide a list of Applicant-Proposed Measures (APMs) specific for the Projects. The Applicants commit to complying with these measures to avoid or substantially lessen

potentially significant impacts to the extent feasible during construction and operation. Therefore, the APMs are considered part of the project description.

The impact analysis in this EIR assumes implementation of all the APMs. However, where other impacts are identified that are not addressed by these APMs, or where the APMs are not adequate to reduce impacts to less than significant levels, the EIR recommends additional mitigation measures. All mitigation measures and APMs will be incorporated into CDFW's Mitigation Monitoring and Reporting Program developed for the Projects, and the Applicants will implement all monitoring and reporting obligations for the APMs as detailed in this EIR.

2.6.1 Aesthetics

APM AES-1 Surface Treatment of Project Structures and Buildings. The Applicants shall treat surfaces of all permanent, large Project structures and buildings (O&M building, inverters, electrical enclosures, gen-tie poles, conductors, tanks, pipes, and walls) visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; (b) their colors and finishes do not create excessive glare from surface brightness; and (c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following consultation with the BLM Visual Resources specialist, and other representatives as deemed necessary, the Applicants shall submit for the CDFW's and BLM's review, a specific Surface Treatment Plan that will satisfy these requirements. The consultation would be in-field at the agencies' election, or as a desktop review if preferred by the agencies. The treatment plan shall include:

- A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be fielded tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces;
- B. A list of each major Project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and pantone number; or according to a universal designation system;
- C. One set of color brochures or color chips showing each proposed color and finish;
- D. A specific schedule for completion of the treatment; and
- E. A procedure to ensure proper treatment maintenance for the life of the Project. The Applicants shall not specify to the vendors the treatment of any buildings or structures treated during manufacture or perform the final treatment on any buildings or structures treated in the field, until the Applicants receives notification of approval of the treatment plan by the BLM. Subsequent modifications to the treatment plan are prohibited without the BLM's approval for components under their respective authorities; however, the Applicants may consider the agencies' failure to respond to a request for review within 60 days an acceptance of the proposal.

APM AES-2 Project Design. The Applicants will use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction

of visibility; repetition of form, line, color, and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals will be based on the following factors:

- *Vegetation Manipulation*: Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.
- *Structures*: Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of structures to the extent practical. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural landforms and vegetation. Reduce the line contrast created by straight edges.
- *Linear Alignments*: Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts. Hug vegetation lines.
- *Reclamation and Restoration*: Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Where feasible, replace soil, brush, rocks, and natural debris over disturbed area. Newly introduced plant species should be of a form, color, and texture that blends with the landscape.

APM AES-3 Use of minimum necessary nighttime lighting for security purposes, designed to eliminate glare or spillover to areas outside of the project site.

APM AES-4 **Night Lighting Management.** To the extent feasible, consistent with safety and security considerations, the Applicants shall design and install all permanent exterior lighting and all temporary construction lighting such that: (a) lamps and reflectors are not visible from beyond the Projects' sites, including any off-site security buffer areas; (b) lighting does not cause excessive reflected glare; (c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; (d) illumination of the Project and its immediate area is minimized and (e) it complies with local policies and ordinances.

The Applicants shall also consult with the NPS Night Sky Program Manager in the development of the night lighting and comply with stricter standards for light intensity. All permanent light sources shall be below 3,500 Kelvin color temperature (warm white) and shall have cutoff angles not to exceed 45 degrees of nadir. The use of LED lighting with a Correlated Color Temperature (CCT) above 2,700 would introduce blue light into the environment that would have negative impacts on the night skies and wildlife of that area. If LED light bulbs are used, they will have a CCT of 2,700 or less. A CCT above 2,700 would increase blue light into the environment that would impact wildlife and visitors and increase light pollution. All lights, temporary and permanent, are to be fully shielded such that the emission of light above the horizontal will be prevented. Prior to construction, the Applicants shall submit to CDFW, BLM and NPS JTNP for review a Night Lighting Management Plan that includes the following:

- A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

- B. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- C. Light fixtures that are visible from beyond the Project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the Project boundary, except where necessary for security;
- D. All lighting shall be of minimum necessary brightness consistent with operational safety and security;
- E. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied;
- F. Specification that LPS or amber LED lighting will be emphasized, and that white lighting (metal halide) would: (a) only be used when necessitated by specific work tasks; (b) not be used for dusk-to-dawn lighting; and (c) would be less than 3500 Kelvin color temperature;
- G. Specification and map of all lamp locations, orientations, and intensities, including security, roadway, and task lighting;
- H. Specification of each light fixture and each light shield;
- I. Total estimated outdoor lighting footprint expressed as lumens or lumens per acre;
- J. Specifications on the use of portable truck-mounted lighting;
- K. Specification of motion sensors and other controls to be used, especially for security lighting;
- L. Surface treatment specification that will be employed to minimize glare and skyglow;
- M. Documentation that the necessary coordination with the NPS Night Sky Program Manager has occurred; and
- N. Exterior lighting would be required to comply with current Title 24 regulations from the State of California and would be coordinated with the California Department of Transportation (Caltrans) to comply with exterior lighting regulations along I-10.

2.6.2 Air Quality

APM AIR-1 Fugitive Dust Control Plan. The Applicants shall prepare and implement a Fugitive Dust Control Plan to address fugitive dust emissions during project construction, operation, maintenance, and future decommissioning. The plan shall include measures to minimize fugitive dust emissions from development of laydown and staging areas, site grading, vegetation management, and installation of all project facilities through post-construction cleanup. The Applicants shall take every reasonable precaution to prevent all airborne fugitive dust plumes from leaving the Project sites and to prevent visible particulate matter from being deposited upon public roadways. The Applicants shall submit the plan to South Coast Air Quality Management District for review and approval no less than 60 days prior to the start of construction. The Applicants shall incorporate the plan into all contracts and contract specifications for construction work. The Fugitive Dust Control Plan shall identify a Dust Control Supervisor that shall have the authority to expeditiously employ sufficient dust mitigation measures. The Dust Control Supervisor

shall be on the site or available on site within 30 minutes during working hours and shall have the authority to implement enhanced (contingency) measures if dust plumes are visible beyond the property line, which indicates that existing mitigation measures are not resulting in effective mitigation.

The following measures would be included within the plan:

- During construction, all unpaved roads, disturbed areas (e.g., areas of scraping, excavation, backfilling, grading, and compacting), and loose materials generated during construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent or watered two times daily or as frequently as necessary to minimize fugitive dust generation. Non-water-based soil stabilizers shall be as efficient as or more efficient for fugitive dust control than California Air Resources Board-approved soil stabilizers and shall not increase any other environmental impacts, including loss of vegetation, adverse odors, or emissions of ozone precursor reactive organic gases or volatile organic compounds.
- For long-term site operations, the Applicants shall establish a Site Operations Dust Control Plan, which includes all applicable fugitive dust control measures identified for operations activities. The Site Operations Dust Control Plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads, shall restrict vehicular access to established unpaved travel paths within the project boundaries, and shall include the long-term inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized.
- The main access roads through the site shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction. Delivery, laydown, and staging areas for construction or operations and maintenance supplies shall be paved or treated prior to taking initial deliveries.
- Grading and earthwork activities, including vegetation removal, cut and fill movement, and soil compacting, shall be phased across the site to minimize the amount of exposed or disturbed area on any single day.
- No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
- Visible speed limit signs shall be posted at the construction site entrances.
- All construction equipment vehicle tires shall be cleaned free of dirt prior to entering paved roadways to prevent track-out from extending 25 feet or more in cumulative length from the point of origin from an active operation. Actions, including but not limited to sweeping sealed roads, use of stabilized construction/facility entrances, and, if needed, using one or more entrance/exit vehicle tire wash apparatuses, shall be taken to prevent project-related track-out.
- All unpaved exits from the construction site shall be graveled or treated to prevent track-out onto public roadways.

- All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads to access the construction site or staging areas shall be swept as needed when dirt or runoff resulting from the construction activities is visible on the paved public roadway.

APM AIR-2 Control On-Site Off-Road Equipment Emissions. The Applicants, when entering into construction contracts or when procuring off-road equipment or vehicles for on-site construction or operations and maintenance (O&M) activities, shall ensure that only new model year equipment or vehicles are obtained. The following measures would be included with contract or procurement specifications:

- All construction diesel engines not registered under California Air Resources Board's Statewide Portable Equipment Registration Program, with a rating of 50 hp or higher shall meet the Tier 4 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, Section 2423(b)(1), unless a good faith effort demonstrates that such engine is not available for a particular item of equipment. If a Tier 4 engine is not available for any off-road equipment larger than 50 hp, a Tier 3 engine shall be used or that equipment shall be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 3 levels unless certified by the engine manufacturers that the use of such devices is not practical for specific engine types.
- All diesel-fueled engines used in the construction of the facility shall have clearly visible tags showing that the engine meets the standards of this measure.
- All equipment and trucks used in the construction or O&M of the facility shall be properly maintained and the engines tuned to the engine manufacturer's specifications.
- All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

APM AIR-3 Construction Activity Management Plan. Prior to the start of construction, Applicants shall review their construction schedule, updated construction fleet, and construction contractors' commitments and prepare and implement a construction activity or phasing plan if feasible that requires construction contractors to schedule the overlapping activities of on-road motor vehicles and off-road equipment to reduce excessive daily emissions. The activity management plan shall reflect the ultimate design of the solar facility and gen-tie line development timing and shall reflect the anticipated make-up of the construction equipment fleet and workforce. The plan would need to reflect dust control practices and off-road equipment engine standards.

2.6.3 Biological Resources

APM BIO-1 Pre-construction biological clearance surveys will be performed at all activity areas to minimize impacts on special-status plants or wildlife species.

- APM BIO-2** Every effort will be made to minimize vegetation removal and permanent loss at activity sites. If necessary, native vegetation will be flagged for protection. A Project revegetation plan will be prepared and implemented for areas of native habitat temporarily affected during construction.
- APM BIO-3** Construction crews will avoid affecting wetlands, streambeds, and banks of any streams to the extent feasible.
- APM BIO-4** Construction and operations crews will be directed to use best management practices where applicable, such as for prevention of soil erosion and sedimentation of streams and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction and maintenance operations.
- APM BIO-5** Biological monitors will be assigned to the Project at key times during construction and locations. The monitors will be responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, or unique resources will be avoided to the fullest extent possible. Where appropriate, monitors will flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife or special-status species. These restricted areas will be monitored to ensure their protection during construction.
- APM BIO-6** A Worker Environmental Education Program (WEEP) will be prepared, and all construction crews and contractors will be required to participate in WEEP training prior to starting work on the Project. The WEEP training will include a review of the special-status species and other sensitive resources that exist in the Project area, as well as the locations of the sensitive biological resources, their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all personnel trained will be maintained.
- APM BIO-7** Projects will conduct Project-wide nesting bird surveys. No tree or shrub shall be removed within the nesting season (1 February–31 August) and, if removed ~~outside the nesting season~~, would be removed only in a manner consistent with the California Fish and Game Code. If removal of any tree or shrub is not feasible in a manner consistent with the California Fish and Game Code, the Projects will maintain a buffer adequate to avoid otherwise prohibited take, possession, or destruction of any bird, nest, or egg.
- APM BIO-8** All transmission and sub-transmission towers and poles will be designed to be raptor-safe in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012).
- APM BIO-9** New light sources will be minimized and lighting will be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.
- APM BIO-10** Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
- APM BIO-11** Vehicles will not exceed a speed limit of 15 mph in the rights-of-way or on unpaved roads within sensitive land-cover types.
- APM BIO-12** No vehicles or equipment shall be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to drainages or wetlands shall be checked and maintained daily to prevent leaks of materials.

- APM BIO-13** All trash, food items, and human-generated debris shall be properly contained and/or removed from the site.
- APM BIO-14** The development of new access and right-of-way roads for reconductoring activities will be minimized and clearing vegetation and blading for temporary vehicle access will be avoided to the extent practicable.
- APM BIO-15** Development will maintain existing hydrologic patterns with respect to runoff supporting seasonal wetlands.
- APM BIO-16** The Applicants will prepare and implement an operational Habitat Management Plan for the main Project site that contains all the required operational components of the Bird and Bat Conservation Strategy, Vegetation Management Plan, and other wildlife management plans and actions required by the Applicant Proposed Measures and mitigation measures during construction, operations and maintenance, and decommissioning.
- APM BIO-17** Dust suppression will occur during all construction activities as needed.
- APM BIO-18** No firearms will be allowed on the project site, unless otherwise approved for security personnel.
- APM BIO-19** To prevent harassment or mortality of special-status animals, or destruction of their habitats by dogs or cats, no pets will be permitted on project sites.
- APM BIO-20** All food-related trash items, including wrappers, cans, bottles, and food scraps, will be disposed of and removed from the site each day. Food items may attract coyotes and domestic dogs, consequently exposing special-status animals to increased risk of predation. No deliberate feeding of wildlife will be allowed.
- APM BIO-21** Use of chemicals, fuels, lubricants, or biocides will comply with all local, state, and federal regulations. This is necessary to minimize the possibility of contamination of habitat or primary or secondary poisoning of badgers and other predators utilizing adjacent habitats, and the depletion of American badger prey. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, the use should be restricted to interiors of buildings and zinc phosphide should be used because of the lower risk of poisoning burrowing mammals.
- APM BIO-22** Before starting construction, a representative responsible for communications with the California Department of Fish and Wildlife and U.S. Fish and Wildlife shall be appointed as the contact for any employee or contractor who inadvertently kills or injures a special-status species or finds a dead, injured, or entrapped individual. The representative will be identified during the employee education program. The name, business address, and contact information shall be provided to the wildlife agencies, and they shall be notified in writing if a substitute Designated Representative is selected or identified at any time.
- APM BIO-23** Any contractor or employee that inadvertently kills or injures a special-status animal or finds one either dead, injured, or entrapped will report the incident to the representative immediately. The representative will contact the California Department of Fish and Wildlife (CDFW) by telephone or email and the U.S. Fish and Wildlife Service (USFWS) by telephone by the end of the day, or at the beginning of the next working day if the agency

office is closed. In addition, formal notification will be provided in writing within 3 working days of the incident or finding. Notification will include the date, time, location, and circumstances of the incident. Any threatened or endangered species found dead or injured will be turned over immediately to USFWS, CDFW, or its designee for care, analysis, or disposition.

APM BIO-24 Site disturbance, grading, and construction activities after dusk, other than panel cleaning, will be minimized. If such activity is necessary, one or more on-site monitors shall be required to ensure special-status species active at night are avoided.

APM BIO-25 **Bird and Bat Protection.** The following measures shall be undertaken during construction and operations and maintenance (O&M) to avoid or minimize impacts to birds and bats.

Nesting Bird Management Plan. Pre-construction surveys for active nests shall be conducted by one or more qualified biologists at the direction of the Project Lead Biologist. The biologists' qualifications shall be subject to review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management (BLM). Nest surveys shall be conducted for all Project activities throughout the nesting season, identified here as beginning January 1 for raptors and hummingbirds, beginning February 1 for other species, and continuing in both instances through August 15. Nest surveys shall be completed at each work site no more than 7 days prior to initiation of site preparation or construction activities. Nest surveys shall cover all work sites, including the solar facility and gen-tie and surrounding buffer areas of 1,200 feet for raptors and 250 feet for other species, if nesting habitat occurs in the buffer. If adjacent properties are not accessible to the field biologists, the off-site nest surveys may be conducted with binoculars.

At each active nest, the qualified biologist shall establish and mark a buffer area surrounding the nest where construction activities that could disrupt nesting behavior shall be excluded. The Nesting Bird Management Plan may identify species-specific buffer distances or variable distances, depending on activity levels (e.g., driving past the nest to access work sites may be less disruptive than foundation construction). Alternately, buffer distances shall be 500 feet for raptor nests and 250 feet for other species, except as authorized in a particular instance by the qualified biologist. The extent of nest protection shall be based on proposed construction activities, species, human activities already underway when the nest is initiated (e.g., a house finch nest built in the eaves of an occupied structure would warrant less avoidance or protection than a loggerhead shrike nest build in native shrubland), topography, vegetation cover, and other factors. The avoidance and protection measures shall remain in effect until the nest is no longer active. Projects will maintain a buffer adequate to avoid otherwise prohibited take, possession, or destruction of any bird, nest, or egg.

Bird and Bat Conservation Strategy (BBCS). The Applicants shall prepare and implement a BBCS to avoid or minimize take of migratory birds that may nest on the site or may be vulnerable to collision with Project components. The BBCS shall identify potential hazards to birds during construction and O&M phases of the Project and specify measures to recognize, minimize, or avoid those hazards. The BBCS shall articulate the Applicants' commitment to reduce risk to birds and bats. Over the course of construction and O&M, progress and challenges that are encountered may necessitate review or revision of the

BBCS, on mutual agreement among the Applicants and the lead agencies and resource agencies. The initial goals of the BBCS are as follows:

- Assess potential risk to birds and bats based on the proposed activities
- Specify the adaptive management process that will be used to address potential adverse effects on avian and bat species
- Describe baseline conditions for bird species present within the Project site, including results of site-specific surveys
- Specify conservation measures that will be employed to avoid, minimize, and/or mitigate potential adverse effects to birds and bats
- Describe the incidental bird and bat monitoring and reporting that will take place during construction, if not described in the Nesting Bird Management Plan.
- Provide details for following systematic post-construction bird and bat monitoring and reporting

Operations and Maintenance. The BBCS shall specify monitoring and conservation measures to be implemented by the Applicants to document bird mortality that may result from bird injury or mortality, including downed birds on the site that are unable to take flight, or collision with Project components, including solar panel and gen-tie line collisions. The BBCS shall include the following:

- A statement of the Applicants' understanding of the importance of bird and bat safety and management's commitment to remain in compliance with relevant laws
- Documentation of conservation measures to be implemented through design and operations to minimize bird and bat fatalities at the solar facilities and gen-tie line
- Consistent, practical, and up-to-date direction to O&M staff on how to avoid, reduce, and monitor bird and bat fatalities
- ~~Description of the incidental bird and bat mortality and injury monitoring and reporting that will take place during construction~~
- Description of the post-construction avian and bat mortality monitoring and reporting of the deaths and injuries of birds and bats from collisions with facility features such as, but not limited to, transmission lines, tower structures (e.g., meteorological towers), and the solar field. The study design shall be approved by BLM and CDFW
- Specifics regarding the process for using the monitoring data to inform an adaptive management program that would avoid and minimize Project-related avian and bat impacts
- Specifics regarding the conservation measures that would be implemented if found necessary through the adaptive management program and the criteria to determine whether conservation measures are necessary. Such measures could potentially include efforts to make panels more visible to birds (e.g., white borders around panel edges or the use of noise deterrents)
- Post-construction mortality monitoring and reporting shall be required for a minimum of 3 years, including the following project components: photovoltaic solar panel arrays (a minimum of 40% survey coverage per year), perimeter fencing (100% survey coverage per year), and the gen-tie line (a minimum of 50% survey coverage per

year). If 2 years of monitoring demonstrates bird and bat fatality data are consistent and reliable across years to effectively predict the bird and bat fatalities, then with agreement from U.S. Fish and Wildlife Service (USFWS), BLM, and CDFW, the third year of monitoring will not be conducted and the costs of 1 year of O&M monitoring will be used as funds for conservation measures as mitigation, with BLM, USFWS, and CDFW review and approval, for the predicted impacts on migratory birds in their full life-cycle at their breeding grounds, migratory pathways, or wintering territories

- Identification of fatality thresholds that, if surpassed, would trigger adaptive management measures such as changes to Project O&M

2.6.4 Cultural Resources

APM CUL-1 Retain a Qualified Archaeologist. Prior to the start of construction, a Project Cultural Resources Specialist (CRS) whose training and background conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, Part 61, shall be retained to supervise monitoring of construction excavations and to prepare a Cultural Resources Monitoring Plan for the approved Projects. The CRS's qualifications shall be appropriate to the needs of the Projects, specifically an archaeologist with demonstrated prior experience in the Southern California desert and previous experience working with Southern California Tribal Nations. A copy of the CRS's qualifications shall be provided to the California Department of Fish and Wildlife and the Bureau of Land Management for review and approval.

APM CUL-2 Develop and Implement Cultural Resources Environmental Awareness Training. Prior to issuance of a Notice to Proceed by the Bureau of Land Management (BLM) and for the duration of ground disturbance (as defined in APM CUL-4), the Applicants shall provide Worker Environmental Awareness Program (WEAP) training to all workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the Cultural Resources Specialist (CRS), may be conducted by any member of the archaeological team, and may be presented in the form of a video. Tribal representatives will be given the opportunity to participate in the WEAP training. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed if ground disturbance resumes. Training shall include the following:

- a discussion of applicable laws and penalties under the law
- samples or visuals of artifacts that might be found in the project vicinity
- a brief review of the cultural sensitivity of the Projects and the surrounding area
- a discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed
- a discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits
- instruction that only the CRS, alternate CRS, and supervisory cultural resource field staff have the authority to halt ground disturbance in the area of a discovery to an

extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS

- instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or supervisory cultural resource field staff, and that redirection of work would be determined by the construction supervisor and the CRS
- an informational brochure that identifies reporting procedures in the event of a discovery
- an acknowledgement form signed by each worker indicating that they have received the training
- a sticker that shall be placed on hard hats indicating that environmental training has been completed

This is a mandatory training, and all construction personnel must attend prior to beginning work on the Project sites. A copy of the sign-in sheet shall be kept ensuring compliance with this measure. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the BLM.

APM CUL-3

Cultural Resources Monitoring and Treatment Plan. Prior to start of construction, the Cultural Resources Specialist (CRS) shall develop a Cultural Resource Monitoring and Treatment Plan (CRMTP) that addresses the details of all activities and provides procedures that must be followed to reduce the potential impacts to undiscovered buried archaeological resources associated with the proposed Projects.

The CRMTP shall describe a program for avoiding and monitoring undiscovered National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) eligible cultural resources that can be avoided during Project construction. The CRMTP may require that protective fencing or other markers, at the discretion of the Bureau of Land Management (BLM), be erected and maintained to protect these resources from inadvertent adverse effects during construction. The CRMTP shall also include maps and narrative discussion of areas considered to be of high sensitivity for discovery of buried archaeological resources, if any. The CRMTP shall detail provisions for monitoring construction activities in these high-sensitivity areas. It shall also detail the methods, consultation procedures, and timelines for addressing all post-review discoveries.

The CRMTP shall identify person(s) expected to perform any monitoring tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team. It shall also specify monitoring reporting and what forms/documentation needs to be completed daily during monitoring.

The CRS shall manage all monitoring, mitigation, curation, and reporting activities under the CRMTP. The CRS shall have a BLM California cultural resource use permit and all supervisory cultural resource field staff (principal investigators and field directors or crew chiefs) shall be listed on that permit and otherwise meet the requirements outlined in BLM Manual 8150. The Applicants shall ensure that the CRS makes recommendations regarding the eligibility for listing in the NRHP and CRHR of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

The CRMTP shall address the authority to halt ground disturbance during construction. If a cultural resource over 50 years of age is found (or if younger, determined exceptionally

significant by BLM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting shall continue during the Projects' ground-disturbing activities elsewhere. Additional procedures regarding halting ground disturbance to address a post-review discovery or unanticipated effects shall be described in the CRMTP.

The CRMTP shall include, but not be limited to, the following elements, and shall be consistent with all other mitigation measures contained in this document:

- Preparation and implementation of a data recovery plan to be used to guide the data recovery and disposition of the tribal cultural resources (as defined under the California Environmental Quality Act) that cannot be avoided, and any other tribal cultural resources that may be encountered during construction. The data recovery plan shall include, minimally, a regional cultural setting, appropriate regional research questions, field and laboratory methods for the data recovery effort, and analysis and reporting requirements. The data recovery plan shall include treatment measures that focus on recovering information related to tribal values as they are conveyed through archaeological data. The treatment measures shall be developed through consultation among the California Department of Fish and Wildlife (CDFW), the Native American Heritage Commission-listed traditionally culturally affiliated tribes, and BLM as the landowner. Treatment measures may include detailed resource documentation, preparation of interpretative or educational materials, reburial of artifacts that convey tribal values, or other measures identified in coordination with the tribes and, as needed, authorized by BLM.

Following implementation of data recovery and other treatment protocols, a report documenting the methods and results of the data recovery and treatment program shall be prepared by a Secretary of the Interior-qualified archaeologist and shall be submitted to CDFW for review and approval.

Materials that are archaeological resources under the Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act (NAGPRA) materials, and historic properties under the NHPA are subject to the processes and procedures set forth in the applicable laws and regulations. In accordance with Title 43 Code of Federal Regulations Section 7.33, the BLM land manager may determine that certain materials (excluding those regulated by NAGPRA) are not or are no longer of archaeological interest and therefore not considered archaeological resources. For materials determined not to be archaeological resources under Title 43 Code of Federal Regulations Section 7.33, the BLM land manager may determine appropriate conservation measures, including, but not limited to, avoidance, leaving materials in situ or relocation to the nearest discovery locale as practicable, reburial, curation, or any other measure as the BLM land manager deems appropriate under applicable laws, regulations, and BLM policies related to such activity.

APM CUL-4 **Archaeological Monitoring.** A qualified archaeological monitor that meets the Secretary of the Interior's Professional Qualifications Standards (as defined in Title 36 Code of Federal Regulations Part 61), shall be present for initial grading activities in undisturbed soil. The archaeological monitor shall complete daily monitoring forms. The

archaeological monitor will have the authority to increase or decrease the monitoring effort should the monitoring results indicate that a change is warranted.

APM CUL-5 Unanticipated Discovery. In the event that previously unknown cultural resources (sites, features, or artifacts) are exposed during grading or other construction activities, all construction work occurring within 50 feet of the find shall immediately stop until a qualified archaeologist can evaluate the significance of the find and determine (in consultation with the California Department of Fish and Wildlife and the Bureau of Land Management) whether or not additional study is warranted, consistent with the rules and stipulations detailed in the Cultural Resource Monitoring and Treatment Plan (APM CUL-3). Depending upon the significance of the find, the archaeologist may record the find and allow work to continue. If the discovery proves significant under the California Environmental Quality Act, specific resource documentation or recovery shall be implemented, including preparation of an archaeological treatment plan, testing, or data recovery. During the assessment and recovery time, construction work may proceed in other areas.

APM CUL-6 Treatment of Human Remains. In accordance with state law (California Health and Safety Code Section 7050.5; California Public Resources Code, Section 5097.98), if human remains are found, all ground-disturbing activities shall halt within 165 feet (50 meters) of the discovery. The Bureau of Land Management and County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the discovery or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined whether the remains are subject to his or her authority. The County Coroner must make this determination within 2 working days of notification of the discovery (pursuant to California Health and Safety Code Section 7050.5[b]). If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are, or are believed to be Native American, the Coroner must notify the Native American Heritage Commission by telephone within 24 hours, which must in turn immediately notify those persons it believes to be the most likely descendant (MLD) of the deceased Native American. The MLD shall complete its inspection and make recommendations within 48 hours of being granted access to the site. The MLD may recommend means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods.

APM CUL-7 Monitoring Report. Within 6 months of finishing construction of the Projects, a Cultural Resources Monitoring Report shall be prepared and provided to the Bureau of Land Management and the California Department of Fish and Wildlife. The report shall include evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting(s) and evidence that any artifacts have been treated in accordance with procedures stipulated in the Cultural Resources Monitoring Plan.

APM CUL-8 DTC/CAMA Feature Recording. To address cumulative impacts to the Desert Training Center California Arizona Maneuvers Area (DTC/CAMA), the projects owner shall retain cultural resources specialists who are qualified to obtain a Cultural Resources Use Permit and Fieldwork Authorization from the Bureau of Land Management (BLM) to record a DTC/CAMA feature within the Projects APE. The specific feature and type of recordation required will be determined in consultation with the BLM.

APM CUL-9 **Prehistoric Trails.** To address cumulative and indirect visual impacts to the Prehistoric Trails Network Cultural Landscape/Historic District (PTNCL) prior to ground disturbance, the Applicants shall either draft a summary report of the region or contribute direct funding to non-profit groups approved by the Bureau of Land Management (BLM) to implement actions to preserve pre-construction evidence of PTNCL sites for future generations. The amount of direct funding would be determined under consultation with the BLM taking into consideration the indirect impacts to the resource.

The summary report would be drafted by a cultural resources specialist with prior experience working with prehistoric resources in the Blythe and/or Desert Center vicinity. These specialists shall review and synthesize the information contained in DPR forms and previously prepared reports regarding prehistoric trails and associated artifacts and features in the Chuckwalla Valley. Ethnographic documentation and reports describing local landscapes will also be reviewed to provide interpretive context. The results shall be summarized in a report and district DPR form, if appropriate, for the Desert Center vicinity. The report and DPR forms shall be submitted to BLM for review prior to completion of the proposed Projects. Within 30 days after BLM review and approval, the report and DPR forms shall be submitted to the California Historical Resources Information System Eastern Information Center.

2.6.5 Geology and Soils

APM GS-1 **Desert Pavement Avoidance.** Prior to final Project design, the Applicants shall retain a Bureau of Land Management (BLM) approved geologist, geomorphologist, or biologist, if not already completed during the CEQA review, to identify areas of desert pavement in areas of proposed ground disturbance, in the southwest portion of the Victory Pass Project site. A map shall be prepared delineating these areas of desert pavement. Based on the map, the final Project design shall be completed such that desert pavement is avoided to the maximum extent possible and/or practical. These areas of desert pavement shall also be avoided during grading and construction to the maximum extent possible and/or practical. A geologist, geomorphologist, or biologist shall monitor grading and construction near the areas of desert pavement to ensure that areas of desert pavement are not disturbed to the extent feasible

APM GS-2 An on-site septic system and leach field will meet all specifications of the applicable governmental jurisdictions.

APM GS-3 **Paleontological Resource Monitoring and Mitigation Plan.** Prior to the start of any Project-related construction activities, the Applicants shall retain a Bureau of Land Management (BLM) approved paleontologist (Project Paleontologist) to prepare and implement a Project-specific Paleontological Resource Monitoring and Mitigation Plan (PRMMP) to be approved by BLM. The Project Paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work and field monitoring. Information to be contained in the PRMMP, at a minimum and in addition to other information required by industry, Society of Vertebrate Paleontology, and BLM paleontology standards, are as follows:

- Description of the Project sites and planned earthwork and excavation.
- Description of the level and intensity of monitoring required in various areas of the Projects where construction activities require earthwork and excavation.

- Directions for sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates.
- Identification of personnel with authority and responsibility to temporarily halt or divert earthmoving equipment to allow for recovery of large specimens.

The PRMMP shall be submitted to BLM for review 60 days prior to start of Project construction.

APM GS-4

Pre-construction Resource Survey and Collection. Prior to the initiation of any ground-disturbing activities, including geotechnical work, grubbing, or grading, all scientifically significant specimens will be collected from the surface of the Projects' sites by the Project Paleontologist and other qualified personnel. This includes the specimens noted but not collected during prior surveys by Aspen (2020), as well as any previously undiscovered localities that may have been exposed by erosion in the interim. Additional areas, as identified by Aspen (2020), to be surveyed prior to construction shall include:

- The southwest quarter of section 13, in proposed disturbance areas, to verify whether it has a dune area that produces abundant vertebrate fossils.
- Reconnaissance surveys of the east half of sections 23 and 26, in proposed disturbance areas, should be completed to see whether the fossils in this area are as dense as the surveyed areas just west them. If they are as dense, the remainder of the sections 24 and 26 in the Project disturbance areas should be surveyed.

The Project Paleontologist will work with the Bureau of Land Management (BLM) to develop project-specific significance definitions, sampling protocols, and procedures for screening the sites. After completion of the geotechnical investigation the Project Paleontologist will use the findings to determine whether there are paleosols of multiple ages or whether there is a single paleosol and conduct a testing program designed to test each paleosol for microvertebrate fossils prior to construction. If microvertebrates are present, this information should be incorporated into the Paleontological Resource Monitoring and Mitigation Plan as monitoring activities are different from those for larger fossils.

Collection activities shall be conducted in accordance with BLM guidelines and the Paleontological Preservation Act of 2009 and carried out by BLM-approved paleontological staff. Any paleontological fieldwork occurring on lands administered by BLM will require a Paleontological Resources Use Permit issued by the BLM state office. All specimens collected shall be curated with a BLM-approved repository.

APM GS-5

Worker Environmental Awareness Program (WEAP). Prior to the start of Project-related construction activities, a WEAP shall be developed by the Project Paleontologist. The WEAP shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities. The WEAP may be combined with other environmental training programs for the Project.

APM GS-6

Paleontological Construction Measures and Monitoring. The Paleontological Resource Monitoring and Mitigation Plan shall identify monitoring frequency and intensity of all areas the Projects' sites. Areas identified as having High paleontological resource potential (PYFC Class 4) or higher, by Aspen (2020) or during the Pre-construction

Resource Survey required in APM GS-3 shall be monitored full time by a Bureau of Land Management approved paleontological monitor during ground-disturbing activities. The Project Paleontologist will have the authority to reduce monitoring in specific Project areas or for the remainder of the site once he/she determines the probability of encountering any additional fossils in those areas has dropped below an acceptable level.

APM GS-7 Paleontological Resources Monitoring Report. The Applicants shall ensure preparation of a paleontological resources monitoring report by the Project Paleontologist. The report shall be prepared following completion of ground-disturbing or earthmoving construction activities. The contents of the report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; proof of accession of fossil materials into the pre-approved museum or other repository, and a statement by the project Paleontologist that Project impacts to paleontological resources have been mitigated. In addition, all appropriate fossil location information shall be submitted to the Western Science Center, the San Bernardino County Museum, and the Los Angeles County Museum of Natural History, at a minimum, for incorporation into their Regional Locality Inventories.

2.6.6 Hazards and Hazardous Materials

APM HAZ-1 Hazardous Materials Management Plan. A Hazardous Materials Management Plan will be prepared, and all construction crews, contractors, and operations crews will be briefed on the plan prior to starting work on the Project. All fuels, fluids, components with hazardous materials/wastes will be handled in accordance with applicable regulations. All such materials will be kept in segregated storage with secondary containment as necessary. Projects will maintain all records of storage and inspection and will provide for proper off-site disposal.

APM HAZ-2 Environmental Inspection and Compliance Monitoring Program and Plan. An Environmental Inspection and Compliance Monitoring program and plan for construction and operation will be developed and implemented to ensure that hazardous materials are properly stored, and potentially hazardous waste is properly disposed. A Project Environmental Manager will be designated to oversee the program and plan. All contractors and employees will be educated about hazardous materials storage, waste sorting, appropriate recycling storage areas, and reduction of landfill waste.

APM HAZ-3 UXO Identification, Training, and Reporting Plan. Where ground disturbance work is involved, contractor(s) shall be Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response trained, in accordance with Title 29 Code of Federal Regulations 1910.120, and hold a current certification. The Applicants shall prepare an Unexploded Ordnance (UXO) Identification, Training, and Reporting Plan to properly train all site workers in the recognition, avoidance, and reporting of military debris and ordnance that will meet all applicable requirements. The Applicants shall submit the plan to the California Department of Fish and Wildlife and U.S. Bureau of Land Management for review 60 days prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of the training program outline and materials and the qualifications of the trainers

- Notification and avoidance requirements when potential UXO or munitions debris are noted by site workers
- Identification of available trained experts and appropriate agencies that will respond to notification of discovery of any munitions debris or ordnance (unexploded or not)
- Work plan to recover and remove discovered ordnance and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near-surface, or buried ordnance in all proposed land disturbance areas

APM HAZ-4 Health, Safety, and Noise Plan. A Health, Safety, and Noise Plan shall be prepared, and all construction crews and contractors shall be briefed on the plan prior to starting work on the Project. The plan shall address health and safety issues associated with normal and unusual (emergency) conditions and shall include a respiratory protection program. The plan shall include, but not be limited to, the following information and guidance:

- Environmental health and safety protocol (including, but not limited to, hazards of valley fever, including the symptoms, proper work procedures, when and how to use personal protective equipment, and informing supervisors of suspected symptoms of work-related valley fever)
- An emergency response plan
- Worker Education and Awareness Program training, which would include environmental, cultural, health, and safety training
- Noise/ear protection protocol
- First aid training
- Fire protection and extinguisher maintenance, guidance, and documentation

Disposal of hazardous materials and waste guidance in accordance with local, state, and federal regulations.

APM HAZ-5 Identify Pesticide/Herbicide Contamination [For Alternative 3]. Prior to Project construction, a soil investigation shall be conducted and prepared by a qualified environmental consultant to evaluate the potential presence of residual pesticide or herbicide contaminants in the soils along the portion of Alternative 3: Access Road Option 1 that passes through the agricultural land within areas proposed for disturbance. Soil samples shall be collected and analyzed for pesticides and/or herbicides in proposed construction disturbance areas to verify the presence of pesticide or herbicide contamination. Any soils found to contain residual contaminants in exceedance of regulatory action levels that are determined by the consultant to represent a potential hazard to construction workers or future workers and visitors shall be handled and disposed of in accordance with applicable laws and regulations.

2.6.7 Hydrology and Water Quality

APM HWQ-1 Drainage Erosion and Sedimentation Control Plan (DESCP). Prior to site mobilization, the Applicants shall submit a Drainage Erosion and Sedimentation Control Plan (DESCP) to the California Department of Fish and Wildlife (CDFW) and the U.S. Bureau of Land Management (BLM) for managing stormwater during Project construction and operations. The DESCPC must ensure proper protection of water quality and soil resources,

address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. The plan must also cover all linear Project features such as the proposed gen-tie line. The DESC shall contain, at minimum, the elements presented below that outline site management activities and erosion and sediment-control Best Management Practices (BMPs) to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.

- A. *Vicinity Map* – A map(s), at a minimum scale 1 inch to 500 feet, shall be provided indicating the location of all Project elements with depictions of all significant geographic features including swales, storm drains, drainage concentration points, and sensitive areas.
- B. *Site Delineation* – All areas subject to soil disturbance for the proposed Project shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures and drainage facilities.
- C. *Clearing and Grading Plans* – The DESC shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and pro-posed topography shall be illustrated by tying in proposed contours with existing topography.
- D. *Clearing and Grading Narrative* – The DESC shall include a table with the estimated quantities of material excavated or filled for the site and all Project elements, whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.
- E. *Erosion Control* – The plan shall address exposed soil treatments to be used during construction and operation including specifically identifying all chemical-based dust palliatives, soil bonding, and weighting agents appropriate for use that would not cause adverse effects to vegetation. BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use.
- F. *Best Management Practices Plan* – The DESC shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, Project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control stormwater runoff and sediment transport.
- G. *Best Management Practices Narrative* – The DESC shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each Project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information would be available.

The DESCP shall be prepared, stamped, and sealed by a professional engineer or erosion control specialist. The DESCP shall include copies of recommendations, conditions, and provisions from CDFW and/or BLM.

APM HWQ-2a Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin (PVMGB). If water for the Projects is to be obtained from on-site or off-site wells drilled by the Applicants, the Applicants shall develop a Colorado River Water Supply Plan (Plan) to monitor groundwater extractions and prevent, replace, or mitigate Project impacts that deplete the PVMGB groundwater safe yield (i.e., budget balance). The amount of PVMGB depletion requiring mitigation shall be equal to the amount of withdrawals from below the Colorado River accounting surface. If the Project results in consumption of any water from within or below the Colorado River accounting surface, the Plan shall identify measures to replace water on an acre-foot to acre-foot basis, towards the purpose of ensuring that no allocated water from the Colorado River is consumed without entitlement to that water.

The Plan shall describe groundwater monitoring activities and quarterly data reports to be closely reviewed for depth to groundwater information, and proximity of the depth of Project related groundwater pumping to the Colorado River accounting surface. The Plan shall further describe that if Project-related groundwater pumping draws water from below the accounting surface the following shall occur:

- A. Based on groundwater monitoring data, the quantity of groundwater pumped from below the accounting surface shall be recorded, and
- B. The Applicants shall implement water conservation/offset activities to replace Colorado River water on an acre-foot by acre-foot basis.

To effectively implement item (B) above, the Plan shall include the following information:

- Identification of water conservation/offset activities to replace the quantity of water diverted from the Colorado River, including identification of any replacement water source(s) if deemed necessary, in consultation with regional water purveyors, regional water agencies, and the Colorado River Board;
- Identification of any required permits or approvals and compliance of conservation/offset activities with CEQA and NEPA;
- An estimated schedule of completion for each identified activity;
- Performance measures that would be used to evaluate the amount of water replaced by each identified activity; and
- Monitoring and reporting protocol to ensure that water conservation/offset activities are effectively implemented and achieve the intended purpose of replacing Colorado River water diversions.

The Plan shall be submitted to the U.S. Bureau of Reclamation for review and approval prior to the initiation of construction and is required to be implemented at any time during the life of the Project that groundwater withdrawals reach the accounting surface, based on the results of the Groundwater Monitoring, Reporting, and Mitigation Plan (APM HWQ-2b). No pumping of groundwater below the accounting surface shall occur without compensatory mitigation according to the approved plan. A copy of the Plan shall also be submitted to the Metropolitan Water District for review and comment.

APM HWQ-2b Groundwater Monitoring, Reporting, and Mitigation Plan. Before the Projects' use groundwater pumped from any well drilled by the Applicants (on site or off site) that extracts water from the Chuckwalla Valley Groundwater Basin (CVGB), the Applicants shall retain a U.S. Bureau of Land Management (BLM) approved qualified hydrogeologist to develop a Groundwater Monitoring, Reporting, and Mitigation Plan (GMRMP), in coordination with the California Department of Fish and Wildlife (CDFW) and BLM, to ensure that groundwater wells surrounding the Projects' sites and Projects' supply well(s) are not adversely affected by project activities. The Applicants shall submit the GMRMP to the CDFW for review and BLM for review and approval. Additionally, although no Groundwater Sustainability Agencies (GSAs) has been established for the Riverside County portions of the CVGB, in the event that such agencies have been established when the GMRMP is developed, the Applicants also shall submit the plan to the GSAs. The Applicants shall implement the approved GMRMP throughout any Project phase that pumps groundwater for consumptive use.

The GMRMP shall provide detailed methodology for monitoring on-site and off-site groundwater levels and comparisons for levels within the basin, including identification of the closest private wells to the Projects' sites. Monitoring shall be performed during pre-construction, construction, and operation of the Projects, to establish pre-construction and Projects-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Projects' pumping well(s) and near potentially impacted existing wells. The GMRMP shall include a schedule for submittal of quarterly data reports by the Applicants to the GMRMP designated agencies and the GSA (if established), for the duration of the construction period. These quarterly data reports shall be prepared and submitted for review and shall include water level monitoring data and effect on the nearest off-site private wells. The designated agencies shall determine whether groundwater wells surrounding the Projects sites and Projects supply well(s) are adversely affected by Project activities in a way that requires additional mitigation and, if so, shall determine what remedial measures are needed. Examples of additional mitigation, if approved by the designated agencies, could include:

- cessation or reduction of pumping ~~from~~ at the Projects' wellsites until groundwater levels return to levels that allow nearby wells to resume pre-Project pumping levels;
- acquisition/sourcing of additional water for the Projects from local agricultural wells, from Riverside County Service Area (CSA) 51, which provides water service to the Desert Center area, or from the Metropolitan Water District, among other sources;
- compensation for whatever additional equipment is necessary to lower nearby pumps to levels that can adequately continue pumping;
- compensation to repair or replace wells found to be damaged or inoperable due to lowered groundwater levels; or
- compensation for increased energy cost due to Projects-related well drawdown.

After the completion of construction, the Applicants and the BLM shall jointly evaluate the effectiveness of the GMRMP and determine if monitoring and reporting frequencies or procedures should be revised or eliminated.

APM HWQ-3 Project Drainage Plan. The Applicants shall provide the California Department of Fish and Wildlife (CDFW) and the U.S. Bureau of Land Management (BLM) with a drainage plan for review by CDFW and review and approval by BLM prior to construction, which includes the following information:

- A. Hydrologic assessment of flood discharges affecting each parcel.
- B. A detailed on-site hydraulic analysis utilizing FLO-2D or similar two-dimensional hydraulic model which models pre- and post-development flood conditions for the 10- and 100-year storm events. The post-development model must include all proposed Project features, contours, and drainage improvements. Graphical output must include depth and velocity mapping as well as mapping which graphically shows the changes in both parameters between the pre- and post-development conditions.
- C. The Drainage Plan shall show the location of all watercourses, drainage concentration points, and drainage ditches as those features enter, traverse, and exit the site. The Drainage Plan shall include pre-development and post-development peak flow rate estimates, as well as hydraulic calculations to determine flood conditions, floodplain limits, flood depths, and velocities. The Drainage Plan shall show the relationship of drainage and flood features to the features of the proposed Project, including buildings, fences, substations, access roads, culverts, linear features, and panel supports. The Drainage Plan shall demonstrate adequate design to protect from flooding, erosion, and scour, and to do so without adversely affecting adjacent property, inducing erosion, or concentrating or diverting flows.
- D. The Drainage Plan shall show how drainage would be conveyed through the site without adversely affecting other property, either through increased flood hazard or increased potential for scour and erosion. No flow obstructing fences (e.g., block wall) shall be constructed perpendicular to existing drainage patterns. Proposed fencing shall allow runoff to traverse the Project sites unencumbered.
- E. The Drainage Plan shall include an assessment of existing diversion berms and channels around parcel perimeters, the magnitude and frequency of flood events that would be diverted by these existing features, and the probable integrity of these features to withstand flows. The Drainage Plan shall demonstrate how on-site drainage features would be affected by Project grading and shall include an assessment of stormwater flows approaching proposed perimeter fences and whether or not those flows would be adjacent to existing berms. The Drainage Plan shall include design recommendations to avoid diversion of flows by perimeter fences, such as creation of fence openings large enough to allow the passage of debris-laden flows without the potential for diversions to other property.
- F. The Drainage Plan shall include detailed design of flood retention features necessary to avoid any increase in downstream flood peak flow rates.
- G. The Drainage Plan shall include a narrative of the measures necessary to protect the Project sites and Project features from flooding, erosion, and sedimentation, including proposed measures to prevent Project-induced erosion and flooding of adjacent property.

APM HWQ-4 Flood Protection. Proposed substations, operations and maintenance buildings, energy storage systems, and all other Project buildings shall either be located outside of primary

drainages and the 100-year floodplain, or if located within such areas, designed such that flood flows would not impede or redirect flood flows, resulting in increased flooding of off-site properties.

2.6.8 Noise

APM N-1 Construction Restrictions. Heavy equipment operation and noisy construction work relating to any features of the Projects within 0.25 miles of a sensitive receptor shall be restricted to the times delineated below, unless a special permit has been issued by the County of Riverside:

- June through September: 6 a.m. to 6 p.m.
- October through May: 7 a.m. to 6 p.m.

Haul truck engines and other engines powering fixed or mobile construction equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

The construction contractor shall locate equipment staging in areas to create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Projects during Project construction. Where feasible, the construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receptors nearest the Projects. No music or electronically reinforced speech from construction workers shall be audible at noise-sensitive properties.

APM N-2 Public Notification Process. At least 15 days prior to the start of ground disturbance, the Applicants shall notify all residents within 500 feet of Ragsdale Road, if selected as the approved access road, and the access driveway, by mail or by other effective means, of the commencement of construction. At the same time, the Applicants shall establish a telephone number for use by the public to report any undesirable noise conditions associated with construction and/or operation of the Projects. If the telephone is not staffed 24 hours a day, the Applicants shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the Projects during construction where it is visible to passersby. This telephone number shall be maintained until the Project has been operational for at least 1 year.

APM N-3 Noise Complaint Process. Throughout construction and operation of the Projects, the Applicants shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints. The Applicants or authorized agent shall do the following:

1. Use a Noise Complaint Resolution Form, or other documentation procedure acceptable to the County of Riverside (County), to record and report the Applicants' response to resolving each noise complaint.
2. Attempt to contact the person(s) making the noise complaint within 24 hours.
3. Conduct an investigation to determine the source of noise in the complaint.
4. If the noise is Projects-related, take all feasible measures to reduce the source of the noise.

5. Submit a report to the County documenting the complaint and actions taken. The report shall include a complaint summary, including the final results of noise reduction efforts, and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

2.6.9 Traffic and Transportation

APM TRA-1 Construction Traffic Commute and Control Plan. Prior to the start of construction, the Project Applicants shall submit a Construction Traffic Commute and Control Plan for review and approval by the California Department of Transportation (Caltrans) and Riverside County, as applicable, for affected roads and intersections that would be directly affected by the construction activities and/or would require permits and approvals. The Construction Traffic Commute and Control Plan shall include, but not be limited to:

- Methods to achieve up to 50% (as feasible) reduction in workers arriving and departing outside of the peak hours (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.), including but not limited to plans to encourage or provide ridesharing opportunities for construction workers or staggering the arrival/departure for workers to be outside of peak hours during peak construction when significant impacts to affected intersections are anticipated.
- A proposal to utilize multiple freeway exits to access the Project sites (Desert Center exit and the Corn Springs exit).
- If multiple construction projects in the immediate area occur at the same time, if the worker commutes occurring outside of peak hours cannot be met, or if conditions, such as substantial delays and off-ramp queues that spill back to the mainline, at the intersection of Interstate (I) 10 and State Route (SR) 177 warrant, include plans for working with other solar project developers in the immediate area to install a temporary signal or use manual intersection control (morning peak hour only) during the construction period at the I-10 westbound ramp at SR-177. Geometry changes shall be considered and potentially implemented in addition to signalization at the I-10 westbound ramp and SR-177. These geometry changes would include a 50-foot westbound right turn pocket and a southbound 50-foot right turn pocket. If manual intersection control is used in the morning peak hour, the southbound right turn pocket would likely not be needed because delays and queues along Ragsdale Road would not result in undesirable conditions.
- While not required to reduce impacts, methods to reduce vehicle miles traveled by construction employees and construction-related truck trips would be included, where feasible, such as encouraging hiring of local construction workers.
- The locations and use of flaggers, warning signs, barricades, delineators, cones, arrow boards, etc., established according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual.
- The locations of any road or traffic lane segments that would need to be temporarily closed or disrupted due to construction activities.

- The locations where guard poles, netting, or similar means to protect transportation facilities for any construction or conductor installation work requiring the crossing of a local street or highway are proposed.
- Provisions for ensuring detours or safe movement of vehicles, pedestrians, and bicycles through all affected facilities.
- A defined method to maintain close coordination, prior to and during construction, with adjacent solar project developers, Caltrans, and Riverside County to minimize cumulative impacts of multiple simultaneous construction projects affecting shared portions of the circulation system. Coordination with adjacent development projects to spread work shifts into multiple hours (instead of peak hour) or the installation of additional temporary traffic signals or manual traffic control officers during peak hours to mitigate the temporary impacts.

APM TRA-2 Employee Carpool Incentive Program. During the construction phase of the Projects, the Applicants shall offer employees incentives to carpool to the Project sites.

APM TRA-3 Public Outreach Campaign. During the construction phase of the Projects, the Applicants shall implement an outreach campaign (signage, direct mail, website, recorded telephone update line, newspaper notices, etc.) to notify the public of potential delays during times when truck escorts are proposed.

APM TRA-4 Repair Roadways and Transportation Facilities Damaged by Construction Activities. If roadways, sidewalks, medians, curbs, shoulders, or other such transportation features are damaged by Project construction activities, as determined by the affected public agency, such damage shall be repaired and restored to their pre-Project condition. Prior to construction, the Project Applicants shall confer with the California Department of Transportation (Caltrans) and Riverside County, as applicable, regarding the roads within 500 feet in each direction of Project access points (where heavy vehicles will leave public roads to reach the Project sites). At least 30 days prior to construction, or as requested by Caltrans or Riverside County, the Project Applicants shall photograph or video record all affected roadway segments and shall provide Caltrans and Riverside County with a copy of these images, if requested.

At the end of major construction, the Project Applicants shall coordinate with each affected jurisdiction to confirm what repairs are required. Any damage demonstrable to the Projects is to be repaired to the pre-construction condition within 60 days from the end of all construction, or on a schedule mutually agreed to by the Project Applicants and the affected jurisdiction. If multiple projects are using the transportation features, the Project Applicants will pay its fair share of the required repairs. The Project Applicants shall provide Caltrans and Riverside County (as applicable) proof when any necessary repairs have been completed.

2.6.10 Tribal Cultural Resources

APM TCR-1 Cultural Sensitivity Training. Prior to the commencement of grading or other activities that disturb previously undisturbed earth or soils, interested tribes shall be invited to prepare the content of a cultural sensitivity training module that will be included in the worker environmental awareness program (WEAP) training for all construction personnel

and project biologists. Training will include a brief description of tribal history and cultural affiliation of the Projects' location and the surrounding area and the resources that could potentially be identified during earthmoving activities. The first presentation of this training may be videotaped or otherwise recorded for use in future trainings. If interested tribes are unable to prepare a cultural sensitivity training module suitable for inclusion in the WEAP training prior to the commencement of earthmoving activities, the Applicants are not obligated to delay such activities.

APM TCR-2 Tribal Monitoring. Prior to any grading or other activities that disturb previously undisturbed earth or soils within the Project area, the Applicants shall hire as many tribal monitors as may reasonably be necessary to facilitate observation of all such activities by one monitor (i.e., if one tribal monitor designated by tribal representatives from tribes that request monitors to observe all such ground disturbing activities cannot observe all of the activities on a given day because they will happen simultaneously in different areas of the Project, then more than one monitor will be needed for that day). These monitors shall be known as the Tribal Observers for this Project, and shall have the authority to identify resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, has determined are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 (i.e., which CDFW has identified as tribal cultural resources).

APM TCR-3 Long-Term Preservation Plan. Consultation under Assembly Bill 52 is ongoing and may yet reveal new resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, may determine are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 and recommendations of the tribes. Such tribal cultural resources (TCRs) so identified, even if not located within the footprint of the Projects, may nevertheless be impacted indirectly as a result of Project operations and decommissioning. To address these potential indirect impacts, the Applicants will develop a Long-Term Preservation Plan (LTPP) in consultation with consulting tribes, prior to the Projects' commencement of operations. The LTPP will require post-construction monitoring/condition assessments for the CDFW-identified TCRs on a quarterly basis for the first year of Project operations and will specify procedures for addressing unanticipated effects to TCRs covered under the LTPP. The LTPP shall identify the responsible entity for care, maintenance, and guidance in the event the TCR resources are vandalized or damaged by the Applicants or their agents or employees. The LTPP shall include reporting to the Bureau of Land Management.

APM TCR-4 Identification of Human Remains. For human remains discovered on Bureau of Land Management (BLM) administered land, the plan for securing the discovery site and subsequent actions shall be included in the Monitoring and Treatment Plan required under APM CUL-3. In the event of a discovery, BLM must be contacted immediately. California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. If the discovery is determined to be subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 and Title 43 Code of Federal Regulations Part 10), the plan will describe the necessary process for notification of tribes and subsequent steps as required by law and regulations (i.e., development and implementation of a NAGPRA Plan of Action, which would be separate from the Monitoring and Treatment Plan required under APM CUL-3 and its contents and consultation process directed by NAGPRA).

For human remains discovered on state or private lands, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code (PRC), Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission (NAHC) shall be contacted within the period specified by law. The NAHC shall identify the Most Likely Descendant, who shall then make recommendations to and engage in consultation with the property owner concerning the treatment of the remains as provided in PRC Section 5097.98. The landowner may reach an agreement with the Most Likely Descendant for treating and disposing of human remains pursuant to California Environmental Quality Act Guidelines Section 15064.5(d). Human remains from other ethnic/cultural groups with recognized historical associations to the Project area shall also be subject to consultation between appropriate representatives from that group and the California Department of Fish and Wildlife.

2.6.11 Utilities and Service Systems

APM USS-1 Waste Recycling Plan (WRP). Prior to issuance of a notice to proceed, the Project Applicants shall submit a WRP to the California Department of Fish and Wildlife and the Bureau of Land Management. At a minimum, the WRP must identify the materials (e.g., solar panels, cardboard, concrete, asphalt, wood) that will be generated by construction and development; the projected amounts of each; the applicable state and local laws and regulations governing waste disposal and recycling (e.g., Department of Toxic Substances Control regulations regarding photovoltaic modules); the measures/methods that will be taken to recycle, reuse, and/or reduce the amount of materials; the facilities and/or haulers that will be utilized; and the targeted Projects-specific recycling or reduction rate. During construction, the Project sites shall each have, at a minimum, two bins: one for waste disposal and the other for the recycling of Construction and Demolition (C&D) materials. Additional bins are encouraged to be used for further source separation of C&D recyclable materials and shall be provided if required by applicable state and local laws. The Project Applicants shall maintain accurate records (receipts or other types of verification) for recycling of C&D recyclable materials and solid waste disposal; arrangements for such receipts can be made through the franchise hauler. These receipts will be retained to demonstrate compliance with the approved WRP if requested by the agencies and must clearly identify the amount of waste disposal and C&D materials recycled.

2.6.12 Wildfire

APM FIRE-1 County Fire Department Technical Policy (T) 15-002 Compliance. The Applicants shall ensure that circulation and access for fire protection purposes within the site and at the entrance are provided, with roads not less than 20 feet consistent with County Fire Department Technical Policy TP 15-002. Compliance with the requirement shall be documented in the construction documents.

APM FIRE-2 Water Tank Installation - Riverside County Fire Department Compliance. The Applicants shall install water tanks if required by Riverside County Fire Department (RCFD). The required volume of water for fire use shall be based on the County Fire Marshall's

requirement following review of the Project plans. RCFD-approved number of water tanks and volume shall be included in the construction documents.

APM FIRE-3 Maintenance Truck Equipment. The Applicants shall ensure all maintenance trucks are equipped with a fire extinguisher or other fire-fighting equipment in accordance with state and federal regulations. Compliance with this measure shall be documented in monitoring logs provided to California Department of Fish and Wildlife and Bureau of Land Management.

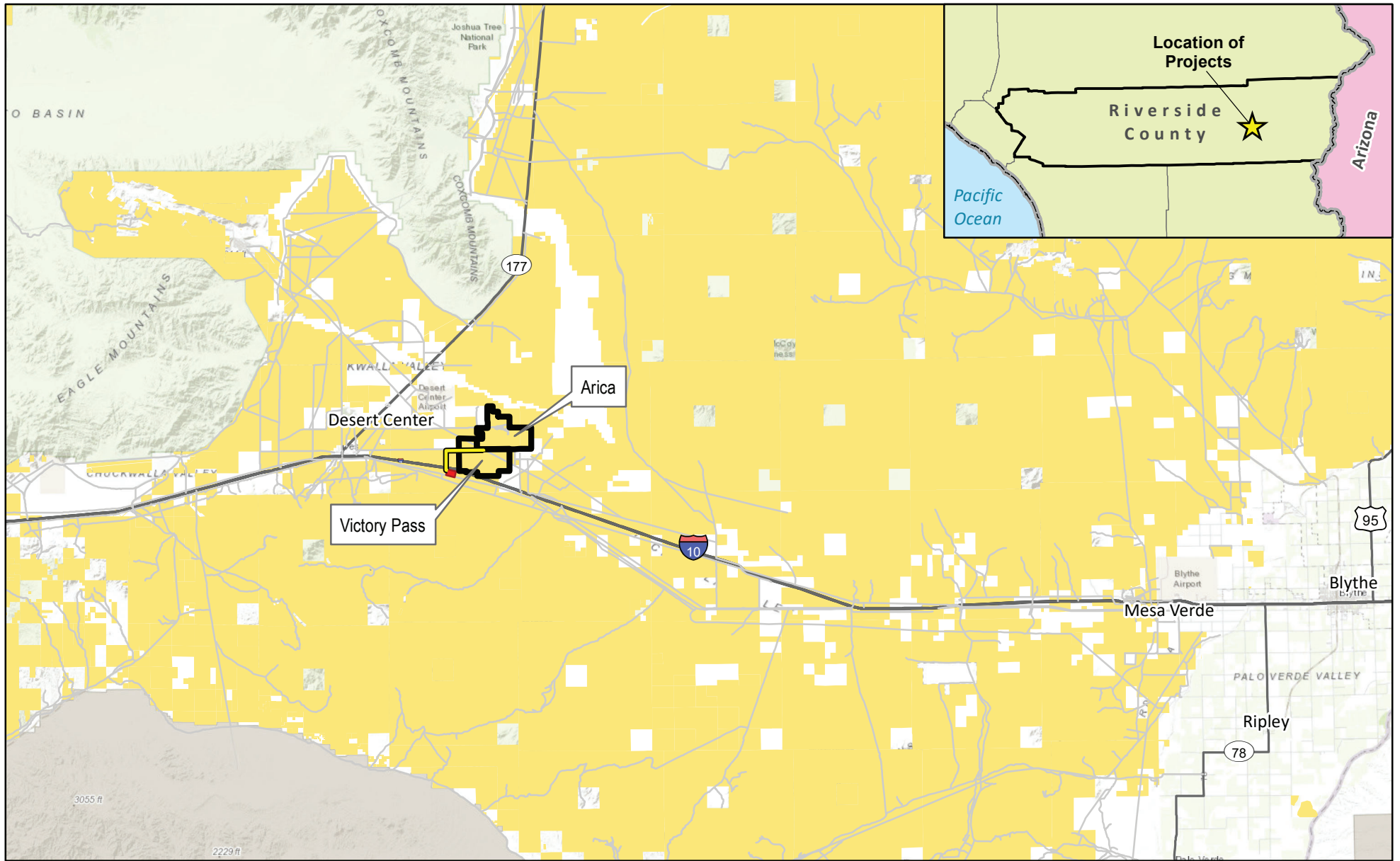
APM FIRE-4 Occupational Safety and Health Administration and California Code of Regulations Compliance. The Applicants shall ensure that welding and all construction hot work abides by the appropriate Occupational Safety and Health Administration and California Code of Regulations standards (8 CCR 4846). Compliance with this measure shall be documented in monitoring logs provided to California Department of Fish and Wildlife and Bureau of Land Management.

APM FIRE-5 Fire Management and Prevention Plan. The Applicants shall prepare and implement a Fire Management and Prevention Plan to ensure the safety of workers and the public during construction, operation and maintenance, and future decommissioning activities for the Projects. The owner must provide the Fire Management and Prevention Plan to the Bureau of Land Management (BLM) for review and approval and to the Riverside County Fire Department (RCFD) for review and comment before construction. The Fire Management and Prevention Plan shall include, but not be limited to, the following elements:

- Procedures for minimizing potential ignition, including, but not limited to, vegetation clearing, parking requirements/restrictions, idling restrictions, smoking restrictions, proper use of gas-powered equipment, and hot work restrictions.
- Work restrictions during Red Flag Warnings and High to Extreme Fire Danger days.
- All internal combustion engines used at the Projects' sites shall be equipped with spark arrestors. Spark arrestors shall be in good working order.
- Once initial two-track roads have been cut and initial fencing completed, light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.
- Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees.
- Equipment parking areas and small stationary engine sites shall be cleared of all flammable materials.
- Smoking shall be prohibited in all vegetated areas and within 50 feet of combustible materials storage and shall be limited to paved areas or areas cleared of all vegetation.
- Each construction site (if construction occurs simultaneously at various locations) shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.
- The Applicants shall coordinate with BLM and RCFD to create a training component for emergency first responders to prepare for specialized emergency incidents that may occur at the Projects' sites.

- All construction workers, plant personnel, and maintenance workers visiting the plant and/or transmission lines to perform maintenance activities shall receive training on fire prevention procedures, the proper use of fire-fighting equipment, and procedures to be followed in the event of a fire. Training records shall be maintained and be available for review by BLM and RCFD. Fire prevention procedures shall be included in the Project's Worker Environmental Awareness Program (Mitigation Measure BIO-2).
- Vegetation near all solar panel arrays, ancillary equipment, and access roads shall be controlled through periodic cutting and spraying of weeds, in accordance with the Weed Management Plan.
- BLM and RCFD shall be consulted during plan preparation and fire safety measures recommended by these agencies included in the plan.
- The plan shall list fire prevention procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations.
- All on-site employees shall participate in annual fire prevention and response training exercises with BLM and RCFD.
- The plan shall list all applicable wildland fire management plans and policies established by state and local agencies and demonstrate how the Project will comply with these requirements.
- The Applicants shall designate an emergency services coordinator from among the full-time on-site employees who shall perform routine patrols of the site during the fire season equipped with a portable fire extinguisher and communications equipment. The Applicants shall notify BLM and RCFD of the name and contact information of the current emergency services coordinator in the event of any change.
- Remote monitoring of all major electrical equipment (transformers and inverters) will screen for unusual operating conditions. Higher than nominal temperatures, for example, can be compared with other operational factors to indicate the potential for overheating which under certain conditions could precipitate a fire. Units could then be shut down or generation curtailed remotely until corrective actions are taken.
- Fires ignited on site shall be immediately reported to BLM and RCFD.
- The engineering, procurement, and construction contract(s) for the project shall provide reference to or clearly state the requirements of this measure.

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Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020

- BLM Right-of-Way Grant Application Area
- Proposed Shared Gen-tie Line
- Red Bluff Substation
- BLM Land

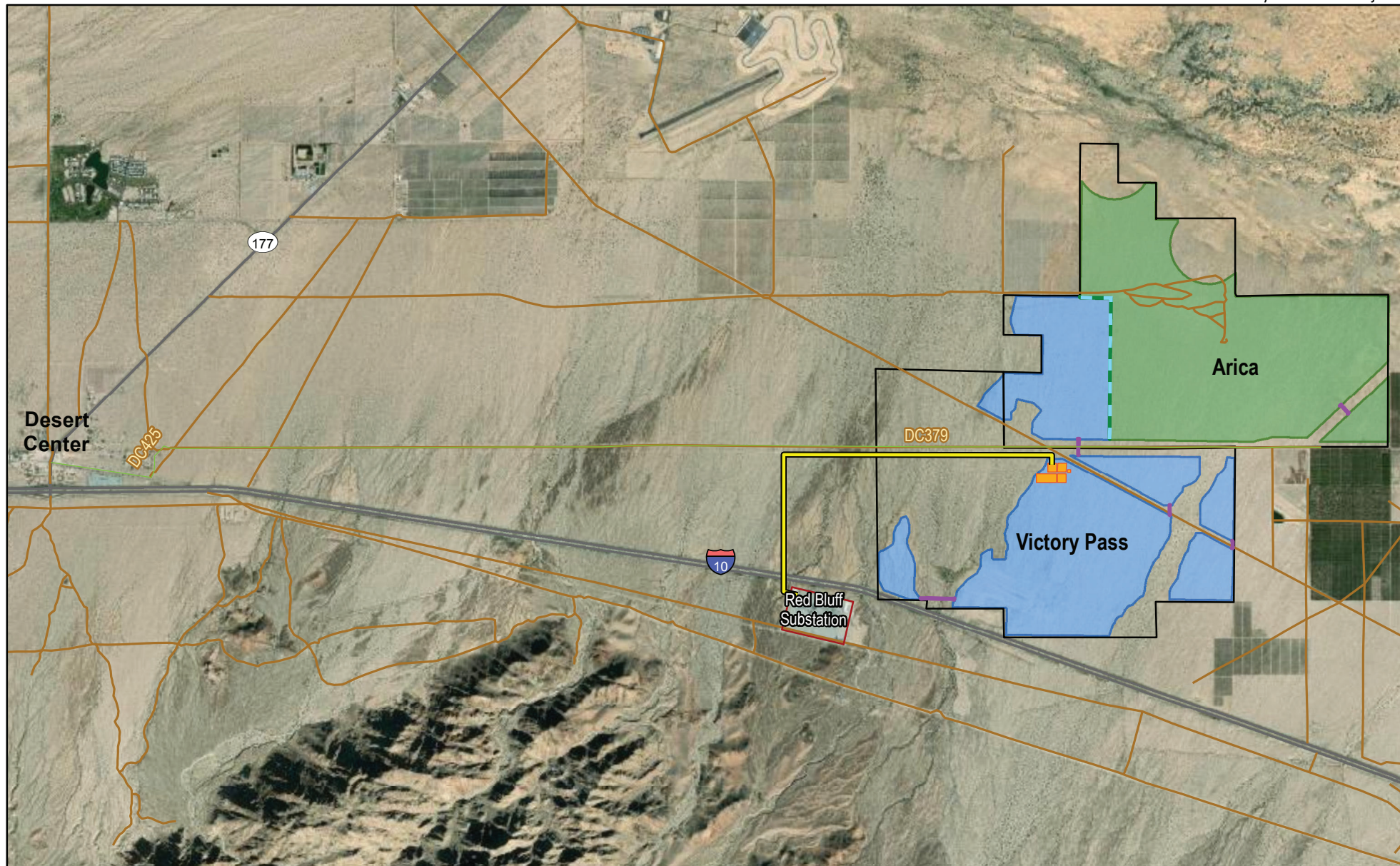


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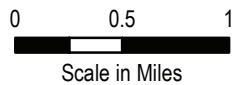
Figure 2-1

Project Vicinity

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Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020

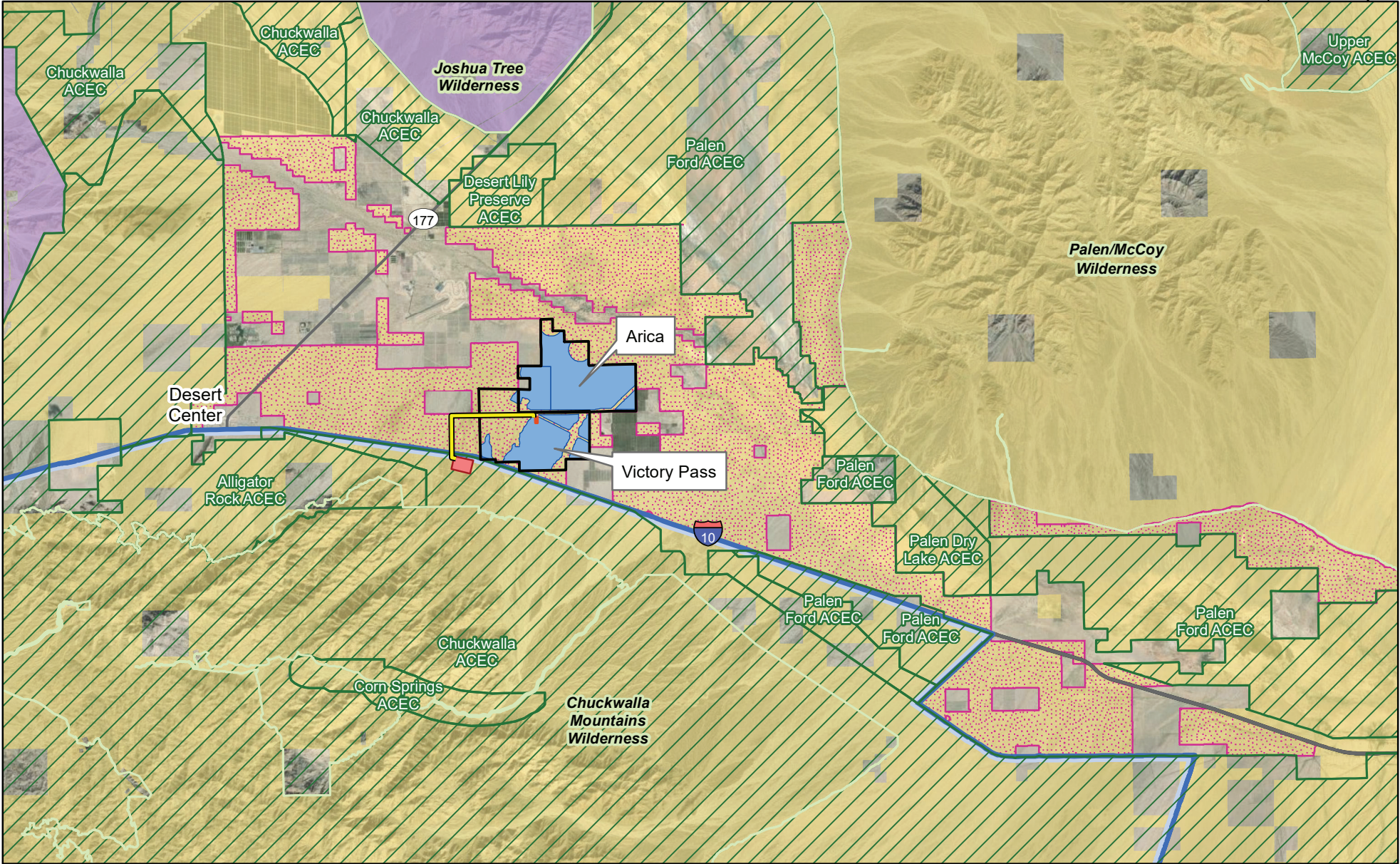


- BLM Right-of-Way Grant Application Area
- Arica Solar Project Facilities (Project Fenceline)
- Victory Pass Solar Project Facilities (Project Fenceline)
- Project Substations, Switchyard, O&M Building, and Battery Storage
- Shared Fenceline
- Proposed Access Road
- Project Roads
- Proposed Shared Gen-tie Line
- Off-Highway Vehicle (OHV) route

Figure 2-2

Proposed Projects

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Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020

- BLM Right-of-Way Grant Application Area
- Solar Project Facilities (Project Fencelines)
- Project Substation
- Proposed Shared Gen-tie Line
- Red Bluff Substation
- Area of Critical Environmental Concern
- National Park Service
- Chuckwalla Special Recreation Management Area (SRMA)
- Development Focus Areas (DRECP)
- Wilderness Area
- BLM Land

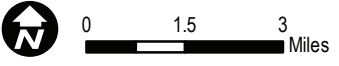
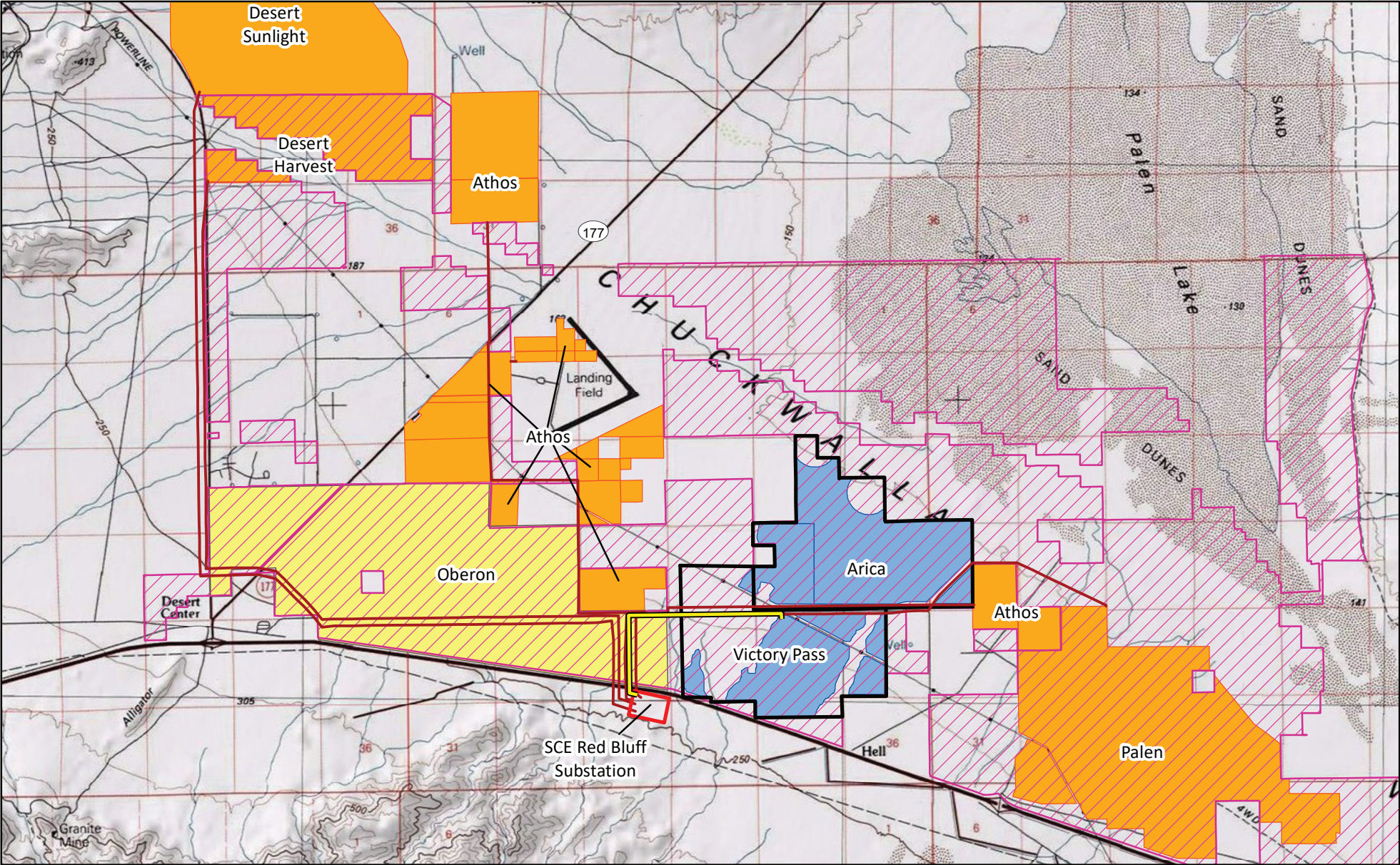


Figure 2-3

Proposed Projects and BLM Land Management

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Sources: Aspen, 2021; Clearway, 2020; IP, 2020/2019; EDF Renewables, 2018/2013; NextEra, 2011; SCE, 2013; Esri, 2020

- BLM Right-of-Way Grant Application Area
- Proposed Shared Gen-tie Line
- Solar Project Facilities (Project Fencelines)
- SCE Red Bluff Substation (Existing)
- Nearby Solar Projects Built or Under Construction
- Gen-tie Lines Built or Under Construction
- Nearby Proposed Solar Project
- Development Focus Area (DRECP)



Figure 2-4

Proposed Projects and Other Solar Projects

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3 Environmental Analysis

3.1 Introduction to Environmental Analysis

Chapter 3 evaluates the impacts that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits during construction and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes an analysis of the spectrum of environmental resource topics for both proposed Projects as the whole of the action (California Environmental Quality Act (CEQA) Guidelines Sections 15378 and 15143). Chapter 3 also discusses Applicant Proposed Measures (APMs) that have been incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible. Furthermore, this chapter also presents and applies criteria used for each environmental resource topic to determine whether an adverse impact is significant under CEQA. The biological resources section (Section 3.4) describes potentially feasible mitigation measures, if any, that could substantially lessen or avoid significant impacts on the environment.

3.1.1 Introduction to Impact Analysis

This section provides an analysis of potential impacts on resource areas that could result in “significant impacts” associated with the issuance of the Permits and CDFW’s broader proposed approval of the Projects as the whole of the action based on the scoping activities undertaken in advance of preparing this Environmental Impact Report (EIR). Specifically, the environmental issue areas identified for further discussion include the following:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire

Two environmental factors listed in the CEQA Environmental Checklist form were not included in the analysis.

- Agriculture and forestry resources are not included in the environmental impact analysis because the Projects are not located on lands used for agriculture, including grazing, and forestry. They are not included in the Department of Conservation’s California Important Farmland (DOC 2021) and not located on lands zoned for agriculture or as forest land. There would be no potential for significant impacts to agriculture and forestry resources; therefore, they are effects not found to be significant.
- Mineral resources were not included because there are no active mines on the land and the Bureau of Land Management (BLM) does not identify the area as one with high mineral potential (BLM 2015). High-potential mineral areas are lands with existing and/or historic mining activity and a reasonable probability of future mineral resource development. Similarly, the Project sites are not within BLM-designated energy (i.e., geothermal, petroleum) or rare earth element areas. The potential for mineral development in the future, after the use of the site for a solar project, will remain the same as under the existing setting and BLM could allow for future development of mining projects if a claim were requested. There would be no potential for significant impacts to mineral resources; therefore, they are effects not found to be significant.

Sections 3.2 through 3.19 discuss the environmental impacts that may result from the issuance of the Permits and implementation of both Projects as the whole of the action, presents APMs that are

considered part of the Projects and are considered in the evaluation of environmental impacts, and, where impacts may be significant or potentially significant according to the criteria identified, potentially feasible mitigation measures are identified to avoid or substantially lessen those impacts to the extent feasible. The following topics are also included in Sections 3.2 through 3.19.

Regulatory Framework

This section presents information on the laws, regulations, plans, and policies that relate to the issue area being discussed. Regulations originating from federal, state, and local levels are discussed. Because the Projects are entirely on federal land, state and local regulations are included only where appropriate. The information and data used to prepare the regulatory background were obtained from the same sources listed under Environmental Setting.

Environmental Setting

This section presents the existing environmental conditions at the site and in the surrounding area as appropriate that are relevant to the issues under evaluation (the “baseline”), in accordance with Section 15125 of the CEQA Guidelines. The baseline conditions reflect the conditions around the time of the issuance of the Notice of Preparation and are used for comparison to establish the type and extent of the potential environmental impacts. For purposes of these discussions, the term “Projects’ area” refers to the proposed solar photovoltaic facilities, proposed access road, and shared 230-kilovolt gen-tie line interconnecting to the Southern California Edison Red Bluff Substation, shown on Figure 2-2, Proposed Projects.

The information and data used to prepare the environmental setting were obtained from several sources, including the technical reports prepared for the Projects, which include specific surveys and studies conducted for the Projects; the California Desert Conservation Area Plan, as Amended; the Desert Center Area Plan; and the County of Riverside General Plan. In addition, information was obtained from various BLM planning documents, research publications prepared by various federal and state agencies, and private sources pertaining to key resource conditions found in the area.

Some scoping comments noted that a future environmental conditions scenario could be used to incorporate the likelihood of increased storm strength, more frequent high wind events, shifts in timing of wildlife migration, appearances of species not formally seen, heightened importance of existing habitat, accelerated heat-related degradation of PV panels and hazards associated with chemical leakage, and increased demand for groundwater for dust control. While CEQA does allow for future environmental conditions, these are generally used for transportation purposes where the future conditions can be easily modeled. While the future conditions in the Desert Center area specifically and the California desert more generally will change, in particular due to potential climate change scenarios, how these changes will manifest is unknown and beyond the scope of a project-specific analysis. For resources that fluctuate over time, such as those noted in the comment, the environmental setting may be described in terms of historical ranges that allow for flexibility.¹

Impact Analysis

This section presents an assessment of identified direct and indirect impacts and discloses the level of significance for each impact expected to result with issuance of the Permits and CDFW’s broader proposed approval of the whole of the action under CEQA. The CEQA Guidelines define direct impacts as those

¹ The CEQA Portal Topic Paper: Baseline and Environmental Setting discusses ways to incorporate the baseline and environmental setting and was reviewed for the Projects analysis (Stevens and Rivasplata 2016).

impacts that result from the project and occur at the same time and place. Indirect impacts are caused by the project but can occur later in time or be farther removed in distance and are still reasonably foreseeable and related to the operation of the project. A significant impact is defined under CEQA as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project (14 CCR 15382). A less-than-significant impact with mitigation applies where the incorporation of mitigation measures has reduced an effect from potentially significant to less than significant. A less-than-significant impact means that the project would not cause a potentially substantial adverse effect on the environment for that resource. No impact indicates that the impact does not apply to the project.

Methodology

This section describes the process of analyzing the effects of the Projects. In assessing impacts, this EIR presumes that existing regulations and other public agency requirements that have been incorporated into the Projects will be implemented. This includes Conservation Management Actions required by the BLM Management Plan for the California Desert Conservation Area.

Criteria for Determining Significance

This section describes the criteria used to determine which impacts should be considered potentially significant. Significance thresholds are based on criteria identified in Appendix G of the CEQA Guidelines (14 CCR 15000–15387). Other federal, state, or local standards are considered when defining significance thresholds.

Applicant Proposed Measures

This section lists APMs proposed by the Applicants as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to the extent feasible. The Applicants have committed to implement the APMs as part of the whole of action should CDFW approve the Projects under CEQA as proposed. This EIR considers the APMs in the environmental impact analysis for all resource categories.

Cumulative Impacts

This section describes effects that may be individually limited but cumulatively considerable when measured along with other approved, proposed, or reasonably foreseeable future projects. Section 3.1.2 provides a detailed discussion regarding the cumulative impact approach and scenario.

Mitigation Measures

This section identifies the actions to avoid or substantially lessen potentially significant impacts of the proposed Projects to the extent feasible. Existing regulations and other public agency requirements, APMs, best management practices, and procedures that apply to similar projects are considered in determining what additional Project-specific mitigation may be required to reduce or eliminate impacts.

3.1.2 Cumulative Impact Scenario

The Cumulative Impacts section describes effects that may be individually limited but cumulatively considerable when measured along with other approved, proposed, or reasonably foreseeable future projects. The following discussion explains the factors relied on to frame the cumulative impacts analysis in this EIR.

CEQA Requirements for Cumulative Impact Analysis

CEQA defines cumulative impacts as two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts (14 CCR 15355; see also California Public Resources Code, Section 21083[b]). A cumulative impact consists of an impact that is caused as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts (14 CCR 15130[a][1]).

CEQA Guidelines Section 15130 requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with those of past projects, other current projects, and probable future projects (14 CCR 15065[a][3]).

According to Section 15130(b) of the CEQA Guidelines, the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects that do not contribute to the cumulative impact.

For purposes of this EIR, the proposed Projects would cause a cumulatively considerable and therefore significant contribution to a cumulative impact if:

- The cumulative effects of other past, current, and probable future projects without the Projects are not significant and the Projects' incremental impact is substantial enough, when added to the cumulative effects, to result in a significant cumulative impact
- The cumulative effects of other past, current, and probable future projects without the Projects are already significant and the Projects' related incremental contribution to that condition would be cumulatively considerable and therefore significant. The standards used herein to determine whether the Projects' incremental contribution is cumulatively considerable include the existing baseline environmental conditions and whether the Projects would cause a substantial increase in impacts or otherwise exceed an established threshold of significance.

Methodology for Cumulative Impact Analysis

CEQA Guidelines Section 15130 provides that the following approaches can be used to adequately address cumulative impacts:

- List Method – A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency.
- Regional Growth Projections Method – A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

This EIR uses the list method.

Consistent with CEQA, the cumulative analysis uses a two-step approach. The first step determines whether the combined effects from the proposed Projects and other projects would be cumulatively significant. This was done by adding the proposed Projects' incremental impact to the anticipated impacts of other probable future projects and/or reasonably foreseeable development. Where the analysis determines that the combined effect of the projects and/or projected development would result in a

significant cumulative effect, the second step evaluates whether the proposed Projects' incremental contribution to the combined significant cumulative impact would be cumulatively considerable as required by CEQA Guidelines Section 15130(a).

CEQA Guidelines Section 15064(h)(4) states that the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable. Therefore, it is not necessarily true that, even where cumulative impacts are significant, any level of incremental contribution must be deemed cumulatively considerable by the lead agency. If a proposed project's individual impact is less than significant, however, its contribution to a significant cumulative impact could be deemed cumulatively considerable depending on the nature of the impact and the existing environmental setting. If, for example, a proposed project is located in an air basin determined to be in extreme or severe nonattainment for a particular criteria pollutant, a project's relatively small contribution of the same pollutant could be found to be cumulatively considerable. Thus, depending on the circumstances, an impact that is less than significant when considered individually may still be cumulatively considerable.

Cumulative Scenario

Geographic Scope

The geographic area affected by the Projects and their potential to contribute to cumulative impacts varies based on the environmental resource under consideration. Generally, the geographic area associated with the environmental effects of the Projects defines the boundaries of the area used for compiling the list of past, present, and reasonably foreseeable future related projects considered in the cumulative impact analysis. The geographic scope of each analysis is based on the topography surrounding the Projects' area and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct effects of a proposed project, but not beyond the scope of the direct and indirect effects of that proposed project. For example, the air quality analysis includes consideration of regional air emissions (e.g., reactive organic gases/nitrogen oxides and particulate matter) and therefore includes the entire air basin. Conversely, in the case of noise impacts, given the localized impact, a smaller area surrounding the immediate site is appropriate for consideration. The geographic areas included within this analysis for purposes of determining whether the Projects' contribution to a particular impact would be cumulatively considerable and therefore significant are:

- Aesthetics: The Interstate 10 corridor, the greater Chuckwalla Valley, and the Project-facing slopes and ridges of the surrounding mountains, including portions of Joshua Tree National Park
- Air Quality: Mojave Desert Air Basin
- Biological Resources: A large portion of eastern Riverside County that consists of similar habitat areas as found in the Projects' area
- Cultural Resources: Eastern Riverside County
- Energy: Eastern Riverside County
- Geology and Soils: A 1,000-foot buffer around the Projects for geologic resources and soils and the Palen Lake sand migration zone for sand transport
- Greenhouse Gas Emissions: Global
- Hazards and Hazardous Materials: The area extending 1 mile from the boundary of the Project sites
- Hydrology/Water Quality: The Chuckwalla Hydrologic Unit

- Land Use/Planning: Eastern Riverside County
- Noise: Areas extending 0.5 miles from the boundaries of the Project sites for noise and 200 feet from the boundaries for vibration
- Population/Housing: Populated areas within a 2-hour worker commute distance of the proposed Projects' area, which would extend out into the rest of Riverside County and into San Bernardino County
- Public Services: The service areas of each of the providers serving the proposed Projects
- Recreation: Eastern Riverside County
- Tribal Cultural Resources: Eastern Riverside County
- Transportation: Segments of Interstate 10 and State Route 77 that provide access to the Projects
- Utilities and Service Systems: The service areas of each of the providers serving the proposed Projects
- Wildfire: The general Desert Center area

Temporal Scope

This cumulative impact analysis considers other projects that have been recently completed, are currently under construction, or are reasonably foreseeable (e.g., for which an application has been submitted). Both short-term and long-term cumulative impacts of the proposed Projects, in conjunction with other cumulative projects in the area, are evaluated in this section of each resource area analysis.

The schedule and timing of the proposed Projects and other cumulative projects is relevant to the consideration of cumulative impacts. Each project in a region will have its own implementation schedule, which may or may not coincide or overlap with the construction schedule for the Projects. This is a consideration for short-term impacts. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the proposed Projects.

Cumulative Projects

Desert Center Area Plan. As part of the Riverside County General Plan Update (County of Riverside 2015), the County updated the Desert Center Area Plan. The Desert Center Area Plan reflects the limited development potential in this region. The Desert Center Area Plan designates most of the area Open Space-Rural, with some Agriculture, rural residential, and other low-density residential and commercial opportunities. The Desert Center Area Plan notes that future development on the private land should focus on infill and contiguous expansion of the existing communities at Desert Center and Lake Tamarisk but is likely to be limited (County of Riverside 2015). This information was taken into consideration by the authors when drafting the cumulative analysis as it indicates limited development on private land.

Tables 3.1-1 and 3.1-2 include the list of cumulative projects in the Desert Center and Blythe region. These projects are shown on Figure 3.1-1.

Table 3.1-1. Past and Present Projects or Programs in the Project Area

ID	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	West-Wide Section 368 Energy Corridors	Riverside County, parallel to I-10	BLM, DOE, USFS	Approved by BLM and USFS, additional review of Region 1 ongoing	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.
2	Blythe PV Project	Blythe	Clearway Energy	Operational	200	21 MW solar PV project located on 200 acres outside of Blythe.
3	McCoy Solar Project	Blythe	NextEra	Operational	8,100	An up to 750 MW solar PV project located primarily on BLM administered land about 13 miles north of Blythe. Includes a 16-mile gen-tie line. 250 MW began operation in June 2016 but it does not have a schedule for the remaining 500 MW.
4	Genesis Solar Energy Project	North of I-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra	Operational	1,950	250 MW solar trough project north of the Ford Dry Lake. Project includes 6-mile natural gas pipeline and a 5.5-mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then east on shared transmission poles to the Colorado River Substation.
5	Blythe Solar Power Project	Blythe	NextEra	Operational	4,100	A 485 MW solar PV project located 2 miles north of I-10 and 8 miles west of the City of Blythe on BLM land. A 230 kV gen-tie line connects the solar energy generating facility to the SCE Colorado River Substation.
6	Desert Sunlight Solar Project	6 miles north of Desert Center	NextEra	Operational	4,400	A 550 MW solar PV project located on BLM land. The project includes a 230 kV transmission line that extends south from the site to interconnect with the Red Bluff Substation
7	SCE Red Bluff Substation	Southeast of Desert Center	SCE	Operational	75	220/500 kV substation to interconnect renewable projects near Desert Center to the DPV transmission line.
8	Devers–Palo Verde No. 1 Transmission Line	Palo Verde, Arizona, to Devers Substation near Palm Springs	SCE	Operational	N/A	Existing 500 kV transmission line parallel to I-10 from Arizona to the SCE Devers Substation, near Palm Springs. DPV 1 loops into the SCE Colorado River Substation, which is located 10 miles southwest of Blythe.

Table 3.1-1. Past and Present Projects or Programs in the Project Area

ID	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
9	Devers-Colorado River Transmission Line	From Blythe to Devers Substation near Palm Springs	SCE	Operational	N/A	Existing 500 kV transmission line parallel to the I-10 from the SCE Colorado River Substation to the Devers Substation. Right-of-way requires 130 feet on federal, state, and private land.
10	Blythe Energy Project Transmission Line	From Blythe to Julian Hinds Substation	Blythe Energy LLC	Operational	N/A	Existing 230 kV transmission line.
11	SCE Colorado River Substation	Blythe	SCE	Operational	90	A 500/230 kV substation located southwest of Blythe. Includes 108-foot-high dead-end structures. Outdoor night lighting is designed to illuminate the switchrack when manually switched on.
12	Desert Renewable Energy Conservation Plan ¹	California Desert District	BLM	Existing	10 million	An amendment to the CDCA Plan for all BLM-administered public lands in the CDCA. Identifies lands for protection and conservation and lands for the development of solar, wind, and geothermal energy projects. The DRECP designates 148,000 acres of Development Focus Areas in Riverside County.
13	NRG Blythe II	Blythe	Clearway Energy	Operational	150	20 MW solar PV facility next to Clearway's 21 MW Blythe Project that came online in spring 2017.
14	Desert Harvest Solar Project	North of Desert Center	EDF-RE	Under construction	1,208	A 150 MW solar PV project located immediately south of the Desert Sunlight project. The gen-tie route would parallel the existing Desert Sunlight line to interconnect with the existing SCE Red Bluff Substation.
15	Palen Solar Project	East of Desert Center	EDF-RE	Under construction	3,400	A 500 MW PV project located 11 miles east of Desert Center on BLM land. Includes a 6-mile gen-tie line into the Red Bluff Substation.

Source: County of Riverside 2019; BLM 2021a.

Notes: I = Interstate; BLM = Bureau of Land Management; DOE = Department of Energy; USFS = U.S. Forest Service; PV = photovoltaic; MW = megawatt; kV = kilovolt; SCE = Southern California Edison; DPV = Devers-Palo Verde; CDCA = California Desert Conservation Area; DRECP = Desert Renewable Energy Conservation Plan; EDF-RE = EDF Renewable Energy

¹ The data shown on Figure 3.1-1 for the Development Focus Areas, ACECs, and NLCS was taken from the DRECP Final EIS.

Table 3.1-2. Probable Future Projects in the Project Area

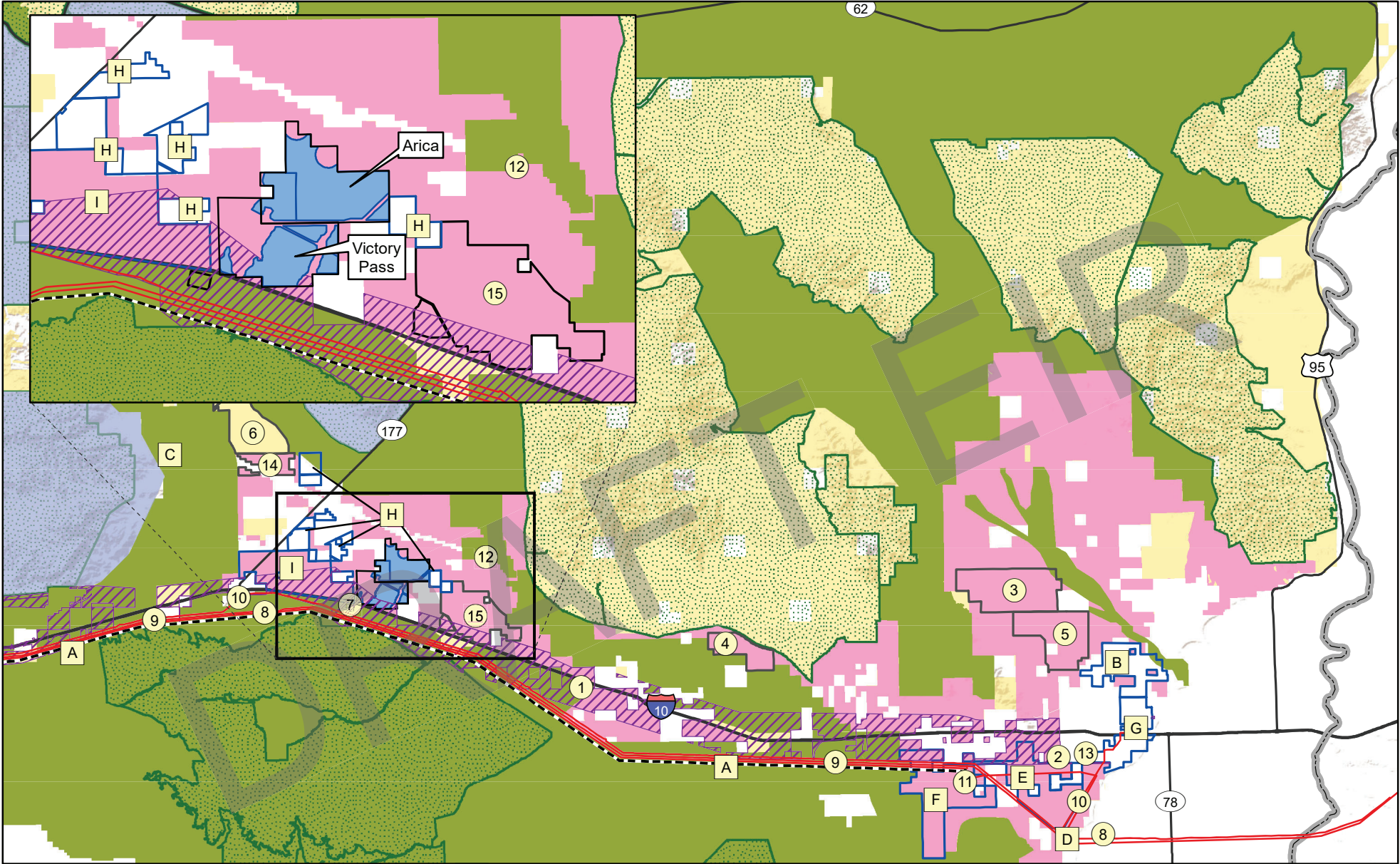
ID	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Desert Southwest Transmission Line	118 miles primarily parallel to the Devers– Palo Verde 500 kV line	Imperial Irrigation District	Final EIR/EIS prepared in 2005, approved by the BLM in 2006	N/A	Approximately 118-mile 500 kV transmission line from a new substation near the Blythe Energy Project to the existing Devers Substation located 10 miles north of Palm Springs, California.
B	Palo Verde Mesa Solar Project	East of Blythe in the near the Neighbors Boulevard	Renewable Resources Group	Approved by Riverside County in August 2017	3,250	A 465 MW PV solar plant on 50 parcels totaling 3,250 acres, primarily on agriculture land. Gen-tie line is approximately 11.8 miles to the Colorado River Substation.
C	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	FERC License issued June 2014. Project approved by BLM in August 2018	90	1,300 MW pumped storage project designed to store off-peak energy to use during peak hours. The off-peak energy would be used to pump water to an upper reservoir. The water is released to a lower reservoir through an underground electrical generating facility.
D	Ten West Link Transmission Line	From the Colorado River Substation in Blythe California to Tonopah Arizona	Abengoa Transmission & Infrastructure LLC and Starwood Energy Group Global Inc.	Approved by BLM in November 2019. Under review by the CPUC	N/A	The proposal is to build a 500 kV transmission line from Tonopah, Arizona, to Blythe, California. It would span 114 miles, with all but 17 miles of the line in the Arizona counties of Maricopa and La Paz and the remainder in Riverside County, California.
E	Desert Quartzite Solar	South of I-10, 8 miles southwest of Blythe	Desert Quartzite LLC (First Solar)	Approved by BLM in January 2020 and Riverside County in October 2019	3,770	A 450 MW solar PV facility with a project substation, access road, and transmission line, all located on BLM land.
F	Crimson Solar	South of I-10, 8 miles southwest of Blythe	Sonoran West Solar Holdings LLC (Recurrent Energy)	BLM Record of Decision published in May 2021. Approved by CDFW June 2021	2,500	An up to 350 MW solar PV project located on BLM land. The project would interconnect to the SCE Colorado River Substation.

Table 3.1-2. Probable Future Projects in the Project Area

ID	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
G	Blythe Mesa Solar Project	East of Blythe	Blythe Mesa Solar II LLC	<u>Under construction</u> <u>Approved by Riverside in May 2015. Gen-tie approved by BLM in August 2015, updated right-of-way approved in August 2020</u>	3,600	Up to 485 MW solar PV project located outside Blythe on private land. The gen-tie line would cross BLM land to reach the SCE Colorado River Substation.
H	Athos Solar Project	In Desert Center	Soft Bank Energy	Under construction	3,400	A solar PV project located on private land in unincorporated Riverside County. Portions of the gen-tie line would cross public land to reach the SCE Red Bluff Substation.
I	Oberon Solar Project	East of Desert Center	IP Land Holdings LLC	Under environmental review	3,000 – 4,000	A 500 MW solar PV project located on BLM land. Project includes battery storage and a gen-tie line into the SCE Red Bluff Substation.
J	<u>Easley Solar & Green Hydrogen Project</u>	<u>Northeast of Desert Center</u>	<u>IP Land Holdings LLC</u>	<u>Entering review by BLM. SF-299 filed (CACA 57822)</u>	<u>9,825</u>	<u>This project on BLM land adjacent and north-northeast of the Arica site would generate and store up to 650 MW of solar PV energy. The project would include a green hydrogen electrolyzer to convert water into hydrogen gas and oxygen. The application area is for 9,825 acres but the developer anticipates 7,500 acres are available for development.</u>

Source: County of Riverside 2019; BLM, 2021a, 2021b, 2021c.

Notes: kV = kilovolt; EIR = Environmental Impact Report; EIS = Environmental Impact Statement; MW = megawatts; PV = photovoltaic; FERC = Federal Energy Regulatory Commission; BLM = Bureau of Land Management; WAPA = Western Area Power Administration; I = Interstate; CDFW = California Department of Fish and Wildlife; SCE = Southern California Edison; CPUC = California Public Utilities Commission.



Sources: Aspen, 2021; Clearway, 2020; IP, 2020/2019; EDF Renewables, 2018/2013; NextEra, 2011; San Bernardino County, 2020/2018; CPUC, 2019; BLM, 2020; Esri, 2020

Existing Projects* **Foreseeable Projects***

②

*Refer to tables 3.1-1 and 3.1-2 for information on Existing and Foreseeable Projects.

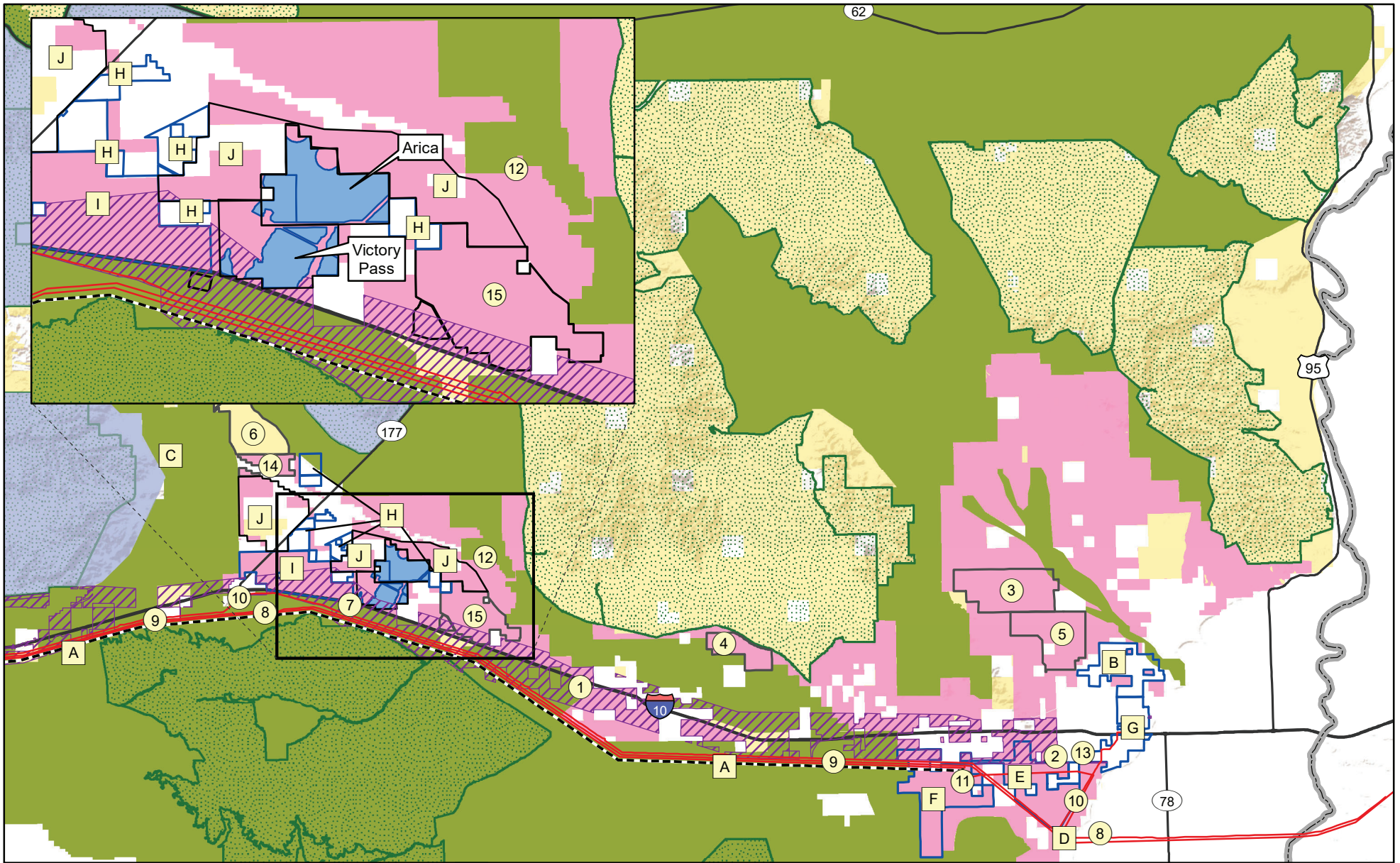
BLM Right-of-Way Grant Application Area
 Proposed Solar Project Facilities (Project Fencelines)
 Section 368 Energy Corridors
 Bureau of Land Management Land

Joshua Tree National Park
 Wilderness
 BLM Conservation (ACEC and NLCS)
 DRECP Development Focus



Figure 3.1-1A
Cumulative Projects

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Sources: Aspen, 2021; Clearway, 2020; IP, 2020/2019; EDF Renewables, 2018/2013; NextEra, 2011; San Bernardino County, 2020/2018; CPUC, 2019; BLM, 2020; Esri, 2020



Existing Projects* **Foreseeable Projects***



*Refer to tables 3.1-1 and 3.1-2 for information on Existing and Foreseeable Projects.

- BLM Right-of-Way Grant Application
- Proposed Solar Project Facilities (Project Fencelines)
- Section 368 Energy Corridors
- Bureau of Land Management Land

- Joshua Tree National Park
- Wilderness
- BLM Conservation (ACEC and NLCS)
- DRECP Development Focus

Figure 3.1-1B

Cumulative Projects

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3.2 Aesthetics

This section evaluates the environmental impacts to aesthetics that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on aesthetics for both of the proposed Projects as the whole of the action. The section includes a description of the regulatory framework, environmental setting, and aesthetic impacts associated with the Projects. In addition, Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible are also included in this section. Figures 1A through 7B referenced in this section are presented in sequence in Appendix C.

The scoping effort conducted for the proposed Projects revealed concerns related to visual resources. Concerns, including those raised by the National Park Service (NPS), included impacts to the natural night skies, cumulative change of character to nearby wilderness including Buzzard Springs, potential glare effects, and the importance of consultation with the National Park Service (NPS) and Bureau of Land Management (BLM) regarding visual effects to the area.

Aesthetics, as addressed in the California Environmental Quality Act (CEQA), refers to visual considerations in the physical environment. Specifically, such considerations include the elements of the landscape that contribute to the aesthetic and/or scenic character and quality of the environment. These elements can be either natural or human-made. Landforms, water, and vegetation patterns are among the natural landscape features that define an area's visual character and quality, whereas buildings, roads, and other structures reflect human modifications to the landscape. These natural and built landscape features are considered visual or aesthetic resources that contribute to the public's experience and appreciation of the environment.

Concepts and Terminology. There are several locational or area terms used throughout this section. **Regional landscape** generally refers to the arid desert of southeastern California within which the Chuckwalla Valley and surrounding mountains are located. This is the largest geographic area referenced in this section. The term **viewshed** is discussed in greater detail in Section 3.2.2, Environmental Setting, but generally refers to all areas from which some component of the Projects may be seen. This generally means the central and northern portions of the Chuckwalla Valley and the surrounding Projects-facing mountain slopes and ridges.

The terms **Projects' area** or **area** are imprecise references to the land area from which the Projects would typically be viewed. This would generally consist of the broader central portion of the Chuckwalla Valley where the Projects would be located. The term **immediate Projects' area** refers to the area(s) in close proximity or adjacent to the facilities.

The terms **Project sites** or **sites** refer to the collective location of the various land parcels and routes where the facilities would be situated. These terms are interchangeable and equal.

The terms **solar facilities**, **solar arrays**, or **array field(s)** are used to refer to the collective locations of solar panels and associated facilities (but not the generation tie [gen-tie] line). These terms are interchangeable and equal.

In terms of visual assessment, the concepts of visual quality, viewer concern, viewer exposure, and overall visual sensitivity are explored for selected representative viewpoints in Section 3.2.2.

Visual Quality is a measure of the overall impression or appeal of an area as determined by particular landscape characteristics such as landforms, rockforms, water features, vegetation patterns, and existing built features. The physical appearance and cultural context of a landscape gives it an identity and sense of place. The elements of form, line, color, and texture are integral to the understanding of the landscape character attributes of variety, vividness, coherence, uniqueness, harmony, and pattern. These attributes contribute to the visual quality classifications of indistinctive or lacking in scenic features (Low), common or average (Moderate), and distinctive with valued scenic attributes (High). Visual quality is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them.

Viewer Concern addresses the level of interest or concern of viewers regarding an area's visual resources (rated from Low to High) and is closely associated with viewers' expectations for the area. Viewer concern reflects the importance placed on a given landscape based on the human perceptions of the intrinsic beauty of the existing landforms, rockforms, water features, vegetation patterns, and even cultural features. When viewing the same landscape, people may have different responses to that landscape and any proposed visual changes based upon their values, familiarity, concern, or expectations for that landscape and its scenic quality. Because each person's attachment to, and value for, a particular landscape is unique, visual changes to that landscape inherently affect viewers differently. However, generalizations can be made about a viewer's sensitivity to scenic quality and visual changes. Recreationists, hikers, tourists, and people driving for pleasure are expected to have high concern for scenery, visual quality, and landscape character. People who are commuting daily through the same landscape generally have a moderate concern for scenery, while people engaged in work generally have a lower concern for scenic quality or changes to existing landscape character.

Viewer Exposure describes the degree to which viewers are exposed to views of the landscape (rated from Low to High). Viewer exposure considers landscape visibility (the ability to see the landscape), distance zones (proximity of viewers to the subject landscape), number of viewers (Low to High), and the duration of view (Brief to Extended). Landscape visibility can be a function of several interconnected considerations including proximity to viewing point, degree of discernible detail, seasonal variations (snow, fog, and haze can obscure landscapes), time of day, and/or presence or absence of screening features such as landforms, vegetation, and/or built structures. Even though a landscape may have highly scenic qualities, it may be remote, receiving relatively few visitors, and thus have a lower degree of viewer exposure. Conversely, a subject landscape or project may be situated in relatively close proximity to a major road or highway used by a substantial number of motorists and yet still result in relatively low viewer exposure if the rate of travel speed is high and viewing times are brief, or if the landscape is partially screened by vegetation, terrain variation, or other features. Often, it is the subject area's proximity to viewers, or distance zone, that is of particular importance in determining viewer exposure. Landscapes are generally subdivided into three or four distance zones based on relative visibility from travel routes or observation points. Distance zones typically include Foreground, Middleground, and Background. The actual number of zones and distance assigned to each zone is dependent on the existing terrain characteristics and public policy and is often determined on a project-by-project basis.

3.2.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Federal Land Policy and Management Act

Section 102(a) of the Federal Land Policy and Management Act of 1976 (BLM 1976) states that “the public lands are to be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values.” Section 103(c) identifies “scenic values” as one of the resources for which public land should be managed. Section 201(a) states, “the Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including scenic values).” Section 505(a) requires that “each ROW [right-of-way] shall contain terms and conditions which will . . . minimize damage to the scenic and esthetic values.”

National Park Service Night Sky Program

Nighttime views and environments are among the critical park features the NPS protects (NPS 2021). Under the Night Sky Program, NPS staff monitor dark night skies and develop exterior lighting guidelines to determine what light is appropriate for a location’s historic character, energy, cost, maintenance efficiency, light pollution, and wildlife. Portions of Joshua Tree National Park (JTNP) are located within the Projects’ viewshed, and JTNP has been designated an International Dark Sky Park by the International Dark-Sky Association.

Bureau of Land Management Visual Resource Management System

The Bureau of Land Management (BLM) uses the Visual Resource Management (VRM) System to inventory and manage scenic values on lands under its jurisdiction. Guidelines for applying the system are described in the BLM Manual Section 8400 et seq (BLM 1984). VRM classes are assigned through Resource Management Plans. The assignment of VRM classes is based on the management decisions made in the Resource Management Plans. The 2016 Desert Renewable Energy Conservation Plan Land Use Plan Amendment assigned a VRM Class IV to the Development Focus Area that contains the Projects. The VRM Class IV management objective is the least restrictive classification and provides for management activities (projects) that require major modifications of the existing character of the landscape. The level of change allowed may be high and may dominate the view and be the major focus of viewer attention.

California Desert Conservation Area Plan and Northern and Eastern Colorado Desert Coordination Management Plan

The Recreation Element of the California Desert Conservation Area Plan specifies that VRM objectives and the contrast rating procedure be used to manage visual resources (BLM 1980). VRM objectives provide the visual management standards for future projects and for rehabilitation of existing projects. Activities within the landscape are designed or evaluated using contrast ratings (BLM 1986). It should be noted that the contrast ratings merely assess consistency with the applicable VRM management objective and do not determine impact significance, as is required under CEQA.

State Laws, Regulations, and Policies

California Scenic Highway System

The California Department of Transportation administers the state Scenic Highway Program to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways (California Streets and Highways Code, Section 260 et seq.). The state Scenic Highway Program includes a list of officially designated highways and highways that are eligible for designation (Caltrans 2021). If a highway is listed as eligible for official designation, it is part of the Scenic Highway Program, and care must be taken to preserve its eligibility status.

Neither Interstate (I) 10 nor State Route (SR) 177 in the immediate Projects' area are either Officially Designated or Eligible state scenic highways. SR-74, heading south out of Palm Desert (approximately 60 miles west of the Projects) (Caltrans 2021) is the nearest Officially Designated state scenic highway and is located beyond the Projects' viewshed. SR-62, from Morongo Valley to the Arizona border (approximately 25 miles north of the Projects) (Caltrans 2021) is the nearest Eligible state scenic highway and is also located beyond the Projects' viewshed. Therefore, the Projects are not located within the viewshed of either an Officially Designated or Eligible state scenic highway.

Local Laws, Regulations, and Policies

The Projects are located entirely on BLM-administered public land. While it is not subject to County of Riverside (County) land use plans and ordinances, local plans were reviewed for informational purposes.

County of Riverside General Plan Land Use Element (LU)

The following policies of the County's General Plan Land Use Element are applicable to aesthetics/visual resources and the Projects (County of Riverside 2020a):

- Policy LU 4.1: Require that new developments be located and designed to visually enhance, not degrade the character of the surrounding area through consideration of the following concepts:
 - a) Compliance with the design standards of the appropriate area plan land use category.
 - b) Require that structures be constructed in accordance with the requirements of Riverside County's zoning, building, and other pertinent codes and regulations.
 - c) Preserve natural features such as unique natural terrain, arroyos, canyons, and other drainage ways, and native vegetation, wherever possible, particularly where they provide continuity with more extensive regional systems.
- Policy LU 7.1: Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts.
- Policy LU 9.1: Provide for permanent preservation of open space lands that contain important natural resources, cultural resources, hazards, water features, watercourses including arroyos and canyons, and scenic and recreational values.
- Policy LU 9.2: Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and federal and state regulations such as CEQA, NEPA, and Clean Air Act, and the Clean Water Act.
- Policy LU 14.1: Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.

- Policy LU 14.3: Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County scenic highway corridors are compatible with the surrounding scenic setting or environment.
- Policy LU 14.4: Maintain an appropriate setback from the edge of the right-of-way for new development adjacent to Designated and Eligible State and County Scenic Highways based on local surrounding development, topography, and other conditions.
- Policy LU 14.5: Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.
- Policy LU 21.1: Require that grading be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.
- Policy LU 21.3: Ensure that development does not adversely impact the open space and rural character of the surrounding area.
- Policy LU 26.1: Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.
- Policy LU 26.3: Ensure that development does not adversely impact the open space and rural character of the surrounding areas.

County of Riverside General Plan Circulation Element (C)

The following policies of the County General Plan Circulation Element are applicable to aesthetics/visual resources and the Projects (County of Riverside 2020b):

- Policy C 19.1: Preserve scenic routes that have exceptional or unique visual features in accordance with Caltrans' [California Department of Transportation] Scenic Highway Plan.
- Policy C 25.2: Locate new and relocated utilities underground when possible and feasible. All remaining utilities shall be located or screened in a manner that minimizes their visibility by the public.

In addition to the policies listed above, I-10 is identified on Figure C-8, Scenic Highways, of the Circulation Element as a County-eligible scenic highway.

County of Riverside General Plan Multipurpose Open Space Element (OS)

The following policies of the County General Plan Multipurpose Open Space Element are applicable to the Projects (County of Riverside 2015a):

- Policy OS 21.1: Identify and conserve the skylines, view corridors, and outstanding scenic vistas within Riverside County.
- Policy OS 22.1: Design developments within designated scenic highway corridors to balance the objectives of maintaining scenic resources with accommodating compatible land uses.
- Policy OS 22.4: Impose conditions on development within scenic highway corridors requiring dedication of scenic easements consistent with the Scenic Highways Plan, when it is necessary to preserve unique or special visual features.

County of Riverside General Plan Desert Center Area Plan (DCAP)

The following policies of the Desert Center Area Plan are applicable to the Projects (County of Riverside 2015b):

- Policy DCAP 4.1: When outdoor lighting is used, require the use of fixtures that would minimize effects on the nighttime sky and wildlife habitat areas, except as necessary for security reasons.
- Policy DCAP 8.1: Protect the scenic highways within the Desert Center Area Plan from change that would diminish the aesthetic value of adjacent properties through adherence to the policies found in the Scenic Corridors sections of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.

3.2.2 Environmental Setting

Approach to Data Collection

Development of the aesthetics setting incorporated both a regional perspective and site-specific, detailed landscape assessments that included field observations and review of photographs. The setting was evaluated from various public roads and vantage points to develop an overall assessment of the existing landscape character, visual quality, and viewing conditions. Then, at representative viewpoints, or Key Observation Points (KOPs), the existing landscape was characterized for visual quality, viewer concern, and viewer exposure. KOP selection was accomplished in consultation with BLM and was informed by a review of the overall Projects' viewshed as discussed later in this section and illustrated in Figure 1A in Appendix C.

KOPs are representative, stationary viewing locations selected for the purpose of analyzing and describing existing visual resources and for preparing visual simulations and conducting impact assessments. KOPs are generally selected to be representative of the most critical public viewing locations from which a project would be seen. Six KOPs were selected to characterize the local setting and are shown on the KOP map presented as Figure 1B in Appendix C. Each of the factors considered in the evaluation of the existing landscape at each KOP is discussed in the introduction to this section and the individual KOP analyses are presented later in this section.

Regional Landscape

The Projects' landscape is part of the Great Basin section of the Basin and Range physiographic province, a vast desert area of the western United States extending from eastern Oregon to western Texas, characterized by periodic north-south trending, highly eroded mountain ranges that rise sharply from, and are separated by, broad, flat desert valleys. The topography of the basin is relatively flat with occasional desert washes. The Projects' region marks the transition zone between the high elevation Mojave Desert to the north and the arid, lower elevation Sonoran Desert to the south and east. The Projects are located in Chuckwalla Valley in eastern Riverside County. The Chuckwalla Valley is a broad, flat desert plain that includes scattered dry lakes and rolling sand dunes and is bordered by several rugged mountain ranges including the Eagle Mountains to the west and north, the Coxcomb and Granite Mountains to the north, the Palen Mountains to the northeast, and the Chuckwalla Mountains to the south. The rugged ridges, angular forms, and bluish hue of the surrounding mountains provide a contrast of visual interest to the flat, light-colored, horizontal landform of the Chuckwalla Valley floor where the Projects are sited.

Views within Chuckwalla Valley tend to be expansive in scope and capture a landscape that appears relatively visually intact, though several dispersed energy facilities are visible (refer to Figure 2-4 in Chapter 2, Description of the Proposed Projects, of this Environmental Impact Report [EIR]) as are other

developments including clustered residential development (Lake Tamarisk Desert Resort) and limited agricultural operations (palm farm). However, these land uses are not visually prominent and tend to recede into the larger desert plain landscape.

Viewshed and Potentially Affected Viewers

The viewshed or area of potential visual effect (the area within which the Projects could potentially be seen) is extensive and encompasses much of Chuckwalla Valley and the sites-facing slopes and ridgelines of the surrounding mountains including areas within the JTNP. Figure 1A illustrates the visibility of the Arica and Victory Pass projects according to a “line-of-site” terrain model that does not account for possible vegetation or structural screening.

A notable feature of the flat desert landscape is the potential for large projects to be seen over great distances. This is due to the expansive areas of flat topography and absence of intervening landscape features. However, due to the relatively low profile of the solar panels and the flat topographic character of Chuckwalla Valley, the majority of viewers would be located at elevations similar to that of the Projects, and the views would typically be limited to those of the edges of the solar fields. More precisely, the typical viewing distance zone that most viewers would experience within the area is Foreground/Middleground (under 5 miles) due to the relatively close proximity of I-10 and other viewpoints to the facilities. The exception would be for the more elevated views available from portions of the JTNP and other surrounding mountain ranges. Elevated (or superior) views from these locations would have the potential to see “into” the array fields from the higher elevations.

There are a number of visually sensitive land uses and protected areas within the expansive Projects’ viewshed including Desert Lily Preserve Area of Critical Environmental Concern (ACEC),¹ Palen-McCoy Wilderness to the northeast, Corn Springs ACEC and Chuckwalla Mountains Wilderness to the south, Alligator Rock ACEC and Desert Center to the southwest, Lake Tamarisk Desert Resort to the west, and the JTNP wilderness to the north and west. These uses/areas are shown on Figure 1A.

Potentially affected viewers within the area include residential viewers in Lake Tamarisk Desert Resort and dispersed rural residences; recreational visitors to ACECs, wilderness areas, and open public lands; and travelers along the main transportation corridors (I-10 and SR-177). All three viewing groups are considered to have generally high visual sensitivity with high expectations for maintaining the existing landscape conditions. The introduction of new solar facilities within the relatively open and long views available to these groups would typically be perceived as an adverse visual change.

Projects’ Setting and KOP Assessments

The proposed sites are situated north of I-10 and east of SR-177, approximately 6.5 miles east of the intersection of I-10 and SR-177 in Desert Center. The area surrounding the sites is sparsely populated, and the sites are presently undeveloped, consisting mainly of desert scrub (largely scattered creosote bushes), lakebed, and dune landscapes that are predominantly intact on the broad Chuckwalla Valley floor (ranging in elevation from 489 feet to 691 feet above mean sea level). There are several desert washes that pass through or adjacent to the sites, indicated primarily by desert dry wash woodlands and other associated vegetation.

¹ The Desert Renewable Energy Conservation Plan Land Use Plan Amendment Management Plan notes that the Desert Lily Preserve ACEC is also designated by Congress as the Desert Lily Preserve under the California Desert Protection Act of 1994.

From a valued scenery standpoint, areas with the most variety and most harmonious composition have the greatest scenic value. The relatively flat desert landscape surrounding the Projects has a low level of variety and distinctiveness, exhibiting limited variation in form, line, color palette, and texture that is common to the region. Although the distant mountain ranges that surround the Chuckwalla Valley provide backdrops of visual interest, the Projects' landscape is generally lacking in visual variety and scenic quality and is substantially influenced by development in the area including three transmission lines, Southern California Edison (SCE) Red Bluff Substation, and I-10 to the south; the Desert Sunlight gen-tie line with its Corten tubular steel poles to the west and south; the Lake Tamarisk Desert Resort and SR-177 to the west; the Desert Sunlight and Desert Harvest solar projects to the northwest; the Palen and Genesis solar projects to the east; scattered residences and built structures, off-highway vehicle routes, and access roads throughout the area (refer to Figure 2-4 in Chapter 2 and Figure 3.1-1 in Section 3.1 of this EIR). Overall, the existing scenic quality of the Project sites appears common to the region and as such, the Project sites are considered to exhibit low scenic quality.

As noted above, six representative KOPs were established to assess the various factors that are considered in the evaluation of a landscape's existing aesthetic or visual resources. These KOPs, shown on Figure 1B, are representative of the most critical locations from which the Projects would be seen and were located based on their usefulness in evaluating existing landscapes and potential impacts on various viewing populations. KOP selection was accomplished in consultation with BLM and was informed by review of the overall Projects' viewshed. While the Projects would be visible from sites-facing slopes and ridgeline of the surrounding mountain terrain that includes wilderness, much of the mountainous areas would not be within the viewshed as shown in Figure 1A or would be viewed in the same viewshed as other solar projects. In addition, wilderness and sites-facing slopes and ridgelines within the Projects' viewshed tend to be remote (over 5 miles from the Projects), have limited access, and have relatively little visitation, which was a factor in BLM's KOP selection. For these reasons, a KOP was not located on sites-facing slopes and ridgelines of the surrounding mountains.

At each KOP, the existing landscape was characterized and photographed. The field of view (i.e., what portion of the Projects would be seen) for each KOP is included on Figure 1C in Appendix C. The Existing View photographs for each KOP are also provided in Appendix C. The following paragraphs describe the landscape setting viewed from each of the six KOPs.

KOP 1 – Eastbound I-10. This viewpoint is representative of views of the Projects from I-10, which is a County Eligible Scenic Corridor. Figure 2A in Appendix C presents the existing view to the east–northeast from KOP 1, which is located approximately 3.5 miles east of the Desert Center/SR-177 overpass. The view presented in Figure 2A captures the central portion of Chuckwalla Valley and the area north of I-10 and east of SR-177, backdropped by the rugged, angular forms of the Granite and Palen Mountains, features that contribute visual interest to the views from I-10. Landform colors range from light tan to lavender and bluish hues at distance. Landform textures appear smooth to granular and coarse. Vegetation appears as patchy clumps to irregular and continuous forms at distance. Vegetation colors include tans and pale to golden yellow for grasses with muted greens, tans, and some reddish hues for shrubs. The most prominent structures in this view beyond the linear, diagonal form of I-10 are the noticeable vertical, dark rust-colored, tubular Corten steel poles of the Desert Sunlight and Desert Harvest gen-tie transmission lines that parallel and then converge on I-10 to span the freeway to the SCE Red Bluff Substation on the south side of I-10. The landscape of the Projects is rather nondescript and generally lacking in visual variety. The overall visual quality is Low to Moderate and common to the greater Chuckwalla Valley, though the adjacent scenery (surrounding mountains) enhances the broader landscape scenic quality.

While motorists on I-10 heading east would enjoy scenic desert views across the western Chuckwalla Valley, upon approach to the Projects' area, motorist views and sensitivity would be somewhat tempered by the viewing context, which includes built structures at Desert Center, the existing Desert Sunlight and Desert Harvest solar facilities to the north of I-10, the gen-tie transmission lines adjacent to the north side of I-10, the adjacent utility poles on the south side of I-10 along with the SCE Red Bluff Substation, and the Palen solar facilities (under construction) to the east. The resulting viewer concern would be Moderate to High. Viewer exposure would be High given the High visibility of the Project sites in the Foreground/Midground viewing distance zone, High volumes of travelers on I-10, and Moderate to Extended duration of view of the sites. For viewers in the vicinity of KOP 1, combining the equally weighted Low to Moderate visual quality, Moderate to High viewer concern, and High viewer exposure results in an overall rating of Moderate to High for overall visual sensitivity of the visual setting and viewing characteristics.

KOP 2 – Eastbound I-10 – Adjacent. This viewpoint is representative of the views from I-10 (a County Eligible Scenic Corridor) along the portion of I-10 that is adjacent to the southernmost (Victory Pass) portion of the Projects. Figure 3A in Appendix C presents the existing view to the northeast from KOP 2, which is located approximately 6 miles east of the Desert Center/SR-177 overpass. The view presented in Figure 3A captures the central portion of Chuckwalla Valley and the Projects' area north of I-10 and east of SR-177, backdropped by the rugged, angular forms of the Palen Mountains and more distant Granite Mountains (left side of image), features that contribute visual interest to the views from I-10. Landform colors range from light tan to lavender and bluish hues at distance. Landform textures appear smooth to granular and coarse. Vegetation appears as patchy clumps to irregular and more continuous forms at distance. Vegetation colors include tans and pale to golden yellow for grasses with muted greens, tans, and some reddish hues for shrubs. A wood-pole utility line is barely discernible along the valley floor in the center of the image. The landscape is rather nondescript and generally lacking in visual variety. The overall visual quality is Low to Moderate and common to the greater Chuckwalla Valley, though the adjacent scenery (surrounding mountains) enhances the broader landscape scenic quality.

While motorists on I-10 heading east would enjoy scenic desert views across the western Chuckwalla Valley, upon approach to the Projects' area, motorist views and sensitivity would be somewhat tempered by the viewing context, which includes the built structures at Desert Center, the existing Desert Sunlight and Desert Harvest solar facilities to the north of I-10, the gen-tie transmission lines adjacent to the north side of I-10, the adjacent utility poles on the south side of I-10 along with the SCE Red Bluff Substation, and the Palen solar facilities (under construction) 1.5 miles to the east of the Projects. The resulting viewer concern would be Moderate to High. Viewer exposure would be High given the High visibility of the sites in the Foreground viewing distance zone, High volumes of travelers on I-10, and Moderate to Extended duration of view of the Projects' sites. For viewers in the vicinity of KOP 2, combining the equally weighted Low to Moderate visual quality, Moderate to High viewer concern, and High viewer exposure results in an overall rating of Moderate to High for overall visual sensitivity of the visual setting and viewing characteristics.

KOP 3 – Westbound I-10. This viewpoint is representative of the views from westbound I-10 (a County Eligible Scenic Corridor). Figure 4A in Appendix C presents the existing view to the northwest from KOP 3, which is located approximately 0.6 miles west of the Corn Springs Road overpass. The view presented in Figure 4A encompasses portions of northern and central Chuckwalla Valley bounded by the rugged and angular forms of the Coxcomb Mountains to the east (right side of image) and the northern extent (and more distant) Eagle Mountains to the west (left). The Projects would be located along the valley floor in the center of the image (north of I-10 and east of SR-177). Landform colors range from light tan to lavender and bluish hues at distance. Landform textures appear smooth to granular and coarse. Vegetation appears as patchy clumps to irregular and more continuous at distance. Vegetation colors

include tans and pale to golden yellow for grasses with muted greens, tans, and some reddish hues for shrubs. A wood-pole utility line is barely discernible along the valley floor in the center of the image. The landscape is rather nondescript and generally lacking in visual variety. The overall visual quality is Low to Moderate and common to the greater Chuckwalla Valley, though the adjacent scenery (surrounding mountain ranges) contributes visual interest to the views from I-10 and enhance the broader landscape scenic quality.

While motorists on I-10 heading west would enjoy scenic desert views across the western Chuckwalla Valley, upon approach to the Projects' area, motorist views and sensitivity would be somewhat tempered by the viewing context, which includes the discordant features of the Genesis (existing) and Palen (under construction) solar projects to the east; electric transmission lines, utility poles, and the SCE Red Bluff Substation on the south side of I-10; dilapidated structures at Desert Center; and the existing Desert Sunlight and Desert Harvest solar facilities and associated gen-tie transmission lines to the north of I-10. The resulting viewer concern would be Moderate to High. Viewer exposure would be High given the High visibility of the Projects' sites in the Foreground/Midground viewing distance zone, High volumes of travelers on I-10, and Moderate to Extended duration of view of the sites. For viewers in the vicinity of KOP 3, combining the equally weighted Low to Moderate visual quality, Moderate to High viewer concern, and High viewer exposure results in an overall rating of Moderate to High for overall visual sensitivity of the visual setting and viewing characteristics.

KOP 4 – Corn Springs Road. This viewpoint is representative of views from Corn Springs Road, which is a primary access to the Chuckwalla Mountains Wilderness. Figure 5A in Appendix C presents the existing view to the north from KOP 4, on Corn Springs Road, approximately 1.85 miles south of Chuckwalla Valley Road. The view presented in Figure 5A captures a central portion of Chuckwalla Valley backdropped by the rugged, angular forms of the Coxcomb Mountains to the north–northwest (center of the image) and the northernmost extent of the Eagle Mountains to the northwest (left side of image), which are features that contribute visual interest to the view from Corn Springs Road. Landform colors range from light tan to lavender and bluish hues at distance. Landform textures appear smooth to granular and coarse. Vegetation appears as patchy clumps to irregular and continuous forms at distance. Vegetation colors include tans and pale to golden yellow for grasses with muted greens, tans, and some reddish hues for shrubs. The most prominent structures in this view are the high-voltage electric transmission line towers (Devers–Palo Verde 1 and 2) that parallel I-10 to the south (approximately 0.6 miles). The landscape visible from this location is rather nondescript and generally lacking in visual variety, though the panoramic views incorporating adjacent scenery (surrounding mountains) experience a higher scenic quality of the broader landscape. The overall visual quality is Low to Moderate and common to the greater Chuckwalla Valley.

Travelers on Corn Springs Road heading north would enjoy panoramic views across the central Chuckwalla Valley. However, travelers' sensitivity would be somewhat tempered by the viewing context for the area, which includes the prominent transmission line facilities and communication towers in the utility corridor that intersect the sight lines from KOP 4, the Palen Solar Project under construction to the east of the Projects, and the existing Desert Sunlight and Desert Harvest solar projects to the northwest. The resulting viewer concern would be Moderate to High. Viewer exposure would be Moderate given the Moderate to High visibility of the Project sites (which would be partially screened by the existing utility facilities and intervening terrain and vegetation), the Foreground/Midground viewing distance, Low number of travelers on Corn Springs Road (which substantially affects the Viewer Exposure rating), and Extended duration of view (due to relatively slow speed of travel). For viewers in the vicinity of KOP 4, combining the equally weighted Low to Moderate visual quality, Moderate to High

viewer concern, and Moderate viewer exposure results in an overall rating of Moderate for overall visual sensitivity of the visual setting and viewing characteristics.

KOP 5 – Desert Lily Preserve. This viewpoint is representative of views from the Desert Lily Preserve. Desert Lily Preserve ACEC was established as a viewing area for the flora within its boundaries, including the desert lily. It allows primitive, low-impact recreational opportunities. More information regarding the Desert Lily Preserve ACEC, including its annual visitor use, is provided in Section 3.15, Recreation, of this EIR. Figure 6A in Appendix C presents the existing view to the south from KOP 5, at the east gate of the preserve, approximately 0.9 mile east of SR-177 and approximately 3.8 miles north of the northernmost Arica Project boundary. Both the east and west gates to the Desert Lily Preserve are accessed via an unpaved dirt road off of SR-177. The access road is marked with a BLM access sign on SR-177. The view presented in Figure 6A captures a central portion of Chuckwalla Valley backdropped by the rugged, angular forms of the Chuckwalla Mountains to the south, which are features that contribute visual interest to the view from KOP 5. Landform colors range from light tan to lavender and bluish hues at distance. Landform textures appear smooth to granular and coarse. Vegetation appears as patchy clumps to irregular and continuous forms at distance. Vegetation colors include tans and pale yellow for grasses with muted greens, tans, grays, and some reddish hues for shrubs. There are no prominent built structures in this view. The landscape visible from this location is indistinct given the 3.8-mile viewing distance to the Projects and appears similar to other portions of the valley floor. However, the natural features (valley floor and surrounding mountain ranges) form a coherent pattern with moderate visual integrity and overall Moderate visual quality.

Visitors to the preserve have enjoyed panoramic views across the central Chuckwalla Valley that, from this location, have exhibited a relatively natural, undeveloped appearance. This expectation is likely to change with the introduction of the Palen Solar Project (east of the Projects) now under construction, and the Athos Solar Project, approved and beginning construction. However, viewer concern would still be Moderate to High. Viewer exposure would be Moderate given the Moderate to High visibility of the Projects (which would be partially screened by intervening vegetation), the Foreground/Midground viewing distance, Low number of viewers, and Extended duration of view. Overall visual sensitivity is classified as Moderate given the Moderate visual quality, Moderate to High viewer concern, and Moderate viewer exposure. For viewers in the vicinity of KOP 5, combining the equally weighted Moderate visual quality, Moderate to High viewer concern, and Moderate viewer exposure results in an overall rating of Moderate for overall visual sensitivity of the visual setting and viewing characteristics.

KOP 6 – Lake Tamarisk Desert Resort. This viewpoint is representative of views from the Lake Tamarisk Desert Resort. Figure 7A in Appendix C presents the existing view to the east from KOP 6, on the eastern perimeter of the resort, approximately 1 mile east of SR-177 and approximately 5.7 miles west–northwest of the Projects. The view presented in Figure 7A captures a central portion of Chuckwalla Valley with the jagged, angular form of the Palen Mountains providing a background feature of visual interest. Landform colors range from light tan to lavender and bluish hues at distance. Landform textures appear smooth to granular and coarse. Vegetation appears as patchy clumps to irregular and continuous forms at distance. Vegetation colors include tans and pale yellow for grasses with muted greens, tans, grays, and some reddish hues for shrubs. A few built structures are visible adjacent to SR-177 to the east, but are partially obscured by vegetation. Distant utility poles are barely discernible along the valley floor in the right portion of the image. However, the Projects' landscape is effectively screened from view by intervening vegetation, and the natural features (valley floor and surrounding mountain ranges) form a coherent pattern with moderate visual integrity and overall Moderate visual quality.

Visitors to, and residents of, the Lake Tamarisk Desert Resort enjoy panoramic views across the central Chuckwalla Valley that, from this location, exhibits a relatively natural, undeveloped appearance. Viewer concern is rated High in that residents and visitors would consider any increase in industrial character, structure prominence, or view blockage of higher value landscape features (valley floor, background sky, or mountains) and adverse visual change. Viewer exposure would be Moderate given the Low visibility of the Projects (which would be substantially screened by intervening vegetation), the Middleground viewing distance, Moderate number of viewers, and Extended duration of view. For viewers in the vicinity of KOP 6, combining the equally weighted Moderate visual quality, High viewer concern, and Moderate viewer exposure results in an overall rating of Moderate to High for overall visual sensitivity of the visual setting and viewing characteristics.

3.2.3 Impact Analysis

The most visible aspects of the Projects would be the fields of solar arrays (approximately 2,665 acres combined), the two to three Projects' substations, shared switchyard, O&M building, and the 3.2-mile shared, overhead 230-kilovolt gen-tie transmission line interconnecting the switchyard to the SCE Red Bluff Substation located adjacent to, and south of, I-10. Other, less visible features include on-site solar field access roads, perimeter road and fence, medium voltage collection system, an operations and maintenance (O&M) building, and the battery storage components. Also, the presence of construction and future decommissioning personnel, equipment, and vehicles would constitute temporary construction and future decommissioning features that would be visible.

Methodology

This analysis relies on visual simulations to illustrate anticipated visual contrast associated with implementation of the Projects. Specifically, overall visual change is determined at each KOP based on an assessment and equal weighting of project-induced visual contrast, project dominance, and view blockage (or view impairment) through the use of a visual simulation of the Projects. Project-induced visual change could result from aboveground facilities, vegetation removal, landform modification, component size or scale relative to existing landscape characteristics, and the placement of the Projects' components relative to developed features. The experience of visual change can also be affected by the degree of available screening by vegetation, landforms, and/or structures; distance from the observers; atmospheric conditions; and angle of view. Each of the key factors contributing to visual change is discussed below.

Visual Contrast describes the degree to which a project's visual characteristics or elements (consisting of form, line, color, and texture) differ from the same visual elements established in the existing landscape. The degree of contrast can range from Low to High. The presence of forms, lines, colors, and textures in the landscape similar to those of a project's indicates a landscape more capable of accepting those project characteristics than a landscape where those elements are absent.

Project Dominance is a measure of a project's apparent size relative to other visible landscape features and the total field of view. A project's dominance is affected by its relative location in the field of view and the distance between the viewer and the project. The level of dominance can range from Subordinate to Dominant and, in effect, is a measure of the degree to which a project demands the attention of the casual observer.

View Blockage or Impairment describes the extent to which any previously visible landscape features are blocked from view as a result of a project's scale and/or position. Blockage of higher-quality landscape features by lower-quality project features causes adverse visual impacts. This is particularly

true with respect to scenic view obstruction, which refers to the degree to which a project would block or intrude upon scenic view corridors, particularly those identified in public policies (e.g., I-10, a County Eligible Scenic Highway). The degree of view blockage can range from None to High. In addition to visual contrast, view blockage or impairment are important concepts and factors for the consideration of impacts to scenic vistas and views to scenic resources within a state scenic highway.

Criteria for Determining Significance

As contained in the CEQA Environmental Checklist Form in Appendix G of the State CEQA Guidelines, impacts to aesthetics are considered significant if the Projects would:

- Have a substantial adverse effect on a scenic vista (see Impact A-1).
- Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway (see Impact A-2).
- In non-urbanized area, substantially degrade the existing visual character or quality of views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point); in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality (see Impact A-3).
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area (see Impact A-4).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to aesthetics, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM AIR-1 **Fugitive Dust Control Plan.** *Refer to full text in Section 3.3, Air Quality.*

APM AES-1 **Surface Treatment of Project Structures and Buildings.** The Applicants shall treat surfaces of all permanent, large Project structures and buildings (O&M building, inverters, electrical enclosures, gen-tie poles, conductors, tanks, pipes, and walls) visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; (b) their colors and finishes do not create excessive glare from surface brightness; and (c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following consultation with the BLM Visual Resources specialist, and other representatives as deemed necessary, the Applicants shall submit for the CDFW's and BLM's review, a specific Surface Treatment Plan that will satisfy these requirements. The consultation would be in-field at the agencies' election, or as a desktop review if preferred by the agencies. The treatment plan shall include:

- A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be fielded tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces;

- B. A list of each major Project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and pantone number; or according to a universal designation system;
- C. One set of color brochures or color chips showing each proposed color and finish;
- D. A specific schedule for completion of the treatment; and
- E. A procedure to ensure proper treatment maintenance for the life of the Project. The Applicants shall not specify to the vendors the treatment of any buildings or structures treated during manufacture or perform the final treatment on any buildings or structures treated in the field, until the Applicants receives notification of approval of the treatment plan by the BLM. Subsequent modifications to the treatment plan are prohibited without the BLM's approval for components under their respective authorities; however, the Applicants may consider the agencies' failure to respond to a request for review within 60 days an acceptance of the proposal.

APM AES-2 Project Design. The Applicants will use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color, and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals will be based on the following factors:

- *Vegetation Manipulation:* Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.
- *Structures:* Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of structures to the extent practical. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural landforms and vegetation. Reduce the line contrast created by straight edges.
- *Linear Alignments:* Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts. Hug vegetation lines.
- *Reclamation and Restoration:* Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Where feasible, replace soil, brush, rocks, and natural debris over disturbed area. Newly introduced plant species should be of a form, color, and texture that blends with the landscape.

APM AES-3 Use of minimum necessary nighttime lighting for security purposes, designed to eliminate glare or spillover to areas outside of the project site.

APM AES-4 Night Lighting Management. To the extent feasible, consistent with safety and security considerations, the Applicants shall design and install all permanent exterior lighting and all temporary construction lighting such that: (a) lamps and reflectors are not visible from beyond the Projects' sites, including any off-site security buffer areas; (b) lighting does not

cause excessive reflected glare; (c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; (d) illumination of the Project and its immediate area is minimized and (e) it complies with local policies and ordinances.

The Applicants shall also consult with the NPS Night Sky Program Manager in the development of the night lighting and comply with stricter standards for light intensity. All permanent light sources shall be below 3,500 Kelvin color temperature (warm white) and shall have cutoff angles not to exceed 45 degrees of nadir. The use of LED lighting with a Correlated Color Temperature (CCT) above 2,700 would introduce blue light into the environment that would have negative impacts on the night skies and wildlife of that area. If LED light bulbs are used, they will have a CCT of 2,700 or less. A CCT above 2,700 would increase blue light into the environment that would impact wildlife and visors and increase light pollution. All lights, temporary and permanent, are to be fully shielded such that the emission of light above the horizontal will be prevented. Prior to construction, the Applicants shall submit to CDFW, BLM and NPS JTNP for review a Night Lighting Management Plan that includes the following:

- A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;
- B. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- C. Light fixtures that are visible from beyond the Project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the Project boundary, except where necessary for security;
- D. All lighting shall be of minimum necessary brightness consistent with operational safety and security;
- E. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied;
- F. Specification that LPS or amber LED lighting will be emphasized, and that white lighting (metal halide) would: (a) only be used when necessitated by specific work tasks; (b) not be used for dusk-to-dawn lighting; and (c) would be less than 3500 Kelvin color temperature;
- G. Specification and map of all lamp locations, orientations, and intensities, including security, roadway, and task lighting;
- H. Specification of each light fixture and each light shield;
- I. Total estimated outdoor lighting footprint expressed as lumens or lumens per acre;
- J. Specifications on the use of portable truck-mounted lighting;
- K. Specification of motion sensors and other controls to be used, especially for security lighting;
- L. Surface treatment specification that will be employed to minimize glare and skyglow;
- M. Documentation that the necessary coordination with the NPS Night Sky Program Manager has occurred; and

- N. Exterior lighting would be required to comply with current Title 24 regulations from the State of California and would be coordinated with the California Department of Transportation (Caltrans) to comply with exterior lighting regulations along I-10.

Environmental Impacts

This section includes an examination of the Projects' aesthetic impacts per the four CEQA criteria identified above.

Impact A-1. Would the project have a substantial adverse effect on a scenic vista?

LESS THAN SIGNIFICANT. A scenic vista is generally considered a specific viewpoint or viewing location (often an elevated overlook) that provides expansive views of a highly valued landscape for the benefit of the general public. Scenic vistas are frequently officially designated by public agencies and are often indicated by signage and accessible.

Although there are expansive views of the Projects' area and surrounding landscape from the I-10 and SR-177 travel corridors and other local roads, nearby residences, and other recreational destinations (e.g., Desert Lily Preserve ACEC and Alligator Rock ACEC), there are no Riverside County–designated or community recognized scenic vistas in the Projects' area. Furthermore, although there are no scenic vistas within the Desert Lily Preserve, the distant views of the Projects from the preserve are addressed in the discussion of KOP 5 under Impact A-3 below. Also, views of the Project sites from Alligator Rock ACEC would be substantially screened by intervening terrain.

While KOPs were not located on sites-facing slopes and ridgelines of the surrounding mountain terrain, The Projects' viewshed illustrates that the Projects may be visible from these areas. As discussed in Section 3.2.2, sites-facing slopes and ridgelines are somewhat remote and generally receive low use throughout the year. Fields of solar arrays would be the most visible aspect of the Projects as experienced from distant vantage points in the viewshed; however, perceptible contrasts on the valley floor would not block available views of the landscape (the contrasts would be located miles away) and would not dominate views (the Projects would spatially occupy a small area of the visible landscape). Furthermore, the Projects would be experienced within the context of existing solar facilities in the surrounding area that have altered the visible landscape. Therefore, the Projects would have a less-than-significant impact on remote views from sites-facing slopes and ridgelines within the viewshed.

As demonstrated in visual simulations prepared for the Projects, implementation of the Projects would not result in adverse view blockage or substantial impairment of scenic resources in the landscape from the most critical viewpoints in the surrounding area. Refer to Appendix C. Therefore, the Projects' impacts would be less than significant. Accordingly, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts on a scenic vista.

Impact A-2. Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

NO IMPACT. There are no state-designated scenic highways in the Projects' area. The nearest state scenic highways to the Projects, SR-74 south of Palm Desert, and SR-62 from Morongo Valley to the Arizona border, are located 60 miles west and 25 miles north, respectively, of the Projects. Due to distance and intervening terrain, these state routes are outside of the Projects' viewshed. Therefore, the Projects are not located within the viewshed of either an Officially Designated or Eligible state scenic highway and implementation of the Projects would not result in an impact under this criterion. Accordingly, as part of

CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in no impact to scenic resources within a state scenic highway.

Impacts to views from I-10, which is a County Eligible scenic highway, are addressed in the discussion of Impact A-3 for KOPs 1 through 3.

Impact A-3. In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings?

Most the Projects' impacts fall into the Impact A-3 category. Degradation of visual character or quality results from the introduction of noticeable visual contrast, which relates to spatial characteristics, visual scale, form, line, color, and texture. Degradation also results from the Projects' dominance and the blockage of views to higher value landscape features (e.g., mountains and ridgelines). The impacts associated with construction and O&M are described in the following paragraphs. Decommissioning impacts would be the same as those described under Construction and are, therefore, not addressed further.

Construction

LESS THAN SIGNIFICANT. During the 18-month period of the Projects' construction, short-term direct and indirect impacts could result from the visible presence of equipment, materials, vehicles, and workforce at the sites of the proposed solar facilities and along the gen-tie right-of-way; from visible contrast associated with vegetation removal; from visible fugitive dust; from construction nighttime lighting (on an occasional basis); and from increased vehicle traffic on roadways beyond the immediate Projects' area (indirect effect).

The aesthetic effects caused by the temporary presence of equipment, materials, and workforce would occur throughout the sites (solar facilities) and along the gen-tie line alignment. Construction would involve the use of cranes and heavy equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction activities would include site clearing and grading, assembly of solar arrays, erection of transmission structures, conductor stringing and pulling, and site cleanup and restoration. These activities would be visible from I-10, SR-177, Desert Center, the Lake Tamarisk Desert Resort residential area, the few rural residences in the area, and the surrounding wilderness areas. Throughout the construction period, visual change associated with undeveloped desert lands to active construction site to solar facility would cause visual contrast, which would constitute adverse effects when viewed by the public. However, because the construction activities would be temporary in nature, they would not result in a substantial long-term visual effect. Long-term visual change is discussed below under Operations and Maintenance.

Areas of ground surface disturbance and vegetation removal (characterized by high color, line, and texture contrasts) could remain visible from various vantage points for an extended period after the conclusion of construction activities. Revegetation in the desert region is difficult and generally of limited success. The vast majority of the areas of ground disturbance would be occupied by permanent facilities, and because most Foreground/Midground views of the disturbed areas would be made from similar elevations (at grade), much of the contrast associated with unnatural vegetative patterns and/or lines would be screened from view by intervening vegetation, the new facilities, and distance. Refer to visual simulations prepared for KOPs 1, 2, 3, 4, 5, and 6 in Appendix C. However, this longer-term visual contrast could appear prominent from some viewing locations and cause Moderate to High levels of visual change that could result in a significant impact under CEQA if not successfully mitigated. Mitigation Measure (MM) BIO-5 would require revegetation of the temporarily disturbed areas and would reduce this effect to less than significant. Therefore, as part of CDFW's broader proposed

approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts with implementation of MM BIO-5.

Grading activities for the construction of the solar facilities and access roads, and vehicle travel on unpaved surfaces have the potential to generate short-term dust clouds, which can cause Moderate levels of visual contrast and Moderate overall visual change, as well as be visually distracting. This occurrence could result in a significant impact under CEQA if not controlled properly. However, APM AIR-1, Fugitive Dust Control Plan, is incorporated into the Projects and would reduce dust clouds and stabilize unpaved roads, disturbed areas, and loose materials, reducing this impact to less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

In addition to the direct aesthetics effects, construction of the Projects would also result in the indirect visual effect of increased vehicle traffic. Although there would be an increase in vehicle trips on regional roads (I-10 and SR-177) associated with construction-related vehicles, it is not expected that in the context of existing non-Projects-related traffic, the increased traffic would be noticed by the casual observer, particularly in the major travel corridors (I-10 and SR-177) outside of the immediate construction area. To the extent that a casual observer or local resident perceives any increase in traffic, the duration of the effects would be short-term. Therefore, the resulting visual effect would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Operations and Maintenance

SIGNIFICANT AND UNAVOIDABLE. As described in Section 3.2.2 and depicted in Figure 1B (Appendix C), six representative KOPs were selected from the identified sensitive viewpoints and corridors to assess the Projects' O&M impacts on the existing visual character and scenic quality of the landscape. The O&M effects would typically be direct effects. Therefore, they are addressed as such for each KOP listed below unless otherwise noted.

KOP 1 – Eastbound I-10

Figure 2A presents the existing view from KOP 1 on eastbound I-10. As shown in the KOP 1 visual simulation (Figure 2B; Appendix C), the 2- to 5.5-mile distant solar arrays would present as a visually noticeable, but not predominant solar facility, introduced into a predominantly natural-appearing, rural desert landscape. Portions of the low-profile solar arrays would be visible as a linear, horizontal, medium- to dark-gray areal mass on the valley floor partially screened from I-10 views by intervening vegetation and existing wood-pole utility lines and the steel-pole gen-tie lines of the Desert Sunlight and Desert Harvest solar projects farther to the northwest. Approximately 0.4 miles of the southernmost portion of the Victory Pass Project extends beyond the frame of view to the right in Figure 2B. The associated gen-tie line would approach closer to KOP 1, but the narrow, barely discernible vertical steel poles would present as vertical features similar to the wood-pole and Corten steel-pole utility and gen-tie lines already present. In the context of the existing landscape, the horizontal and vertical forms of the solar and gen-tie facilities within the Foreground/Midleground would exhibit Moderate visual contrast, primarily arising from the at-grade and edge-on view of the horizontal forms, color contrast of the arrays, and the vertical forms of the closest gen-tie poles. As a result, the Projects would constitute a Foreground/Midleground, visually Subordinate to Co-dominant feature in the landscape. Due to their color and horizontal forms, the Projects would attract the attention of the casual observer, and view blockage of the valley floor and vegetation would be Low to Moderate. Combining the equally weighted Moderate visual contrast, Subordinate to Co-dominant project dominance, and Low to Moderate view

blockage results in a Moderate rating for overall visual change, which in the context of the existing landscape's Moderate to High visual sensitivity, would result in a less-than-significant impact. However, incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design) are recommended as they would reduce the visual contrast associated with visually discordant structural features and anticipated contrasts as experienced at KOP 1.

KOP 2 – Eastbound I-10 – Adjacent

Figure 3A presents the existing view from KOP 2 on eastbound I-10, immediately adjacent to the Victory Pass Project site. As shown in the KOP 2 visual simulation presented in Figure 3B (Appendix C), the Projects would result in the introduction of visually prominent facilities into a predominantly natural-appearing, rural desert landscape. The solar arrays would be visible as a horizontal, continuous linear, medium- to dark-gray, feature along the valley floor partially screened from I-10 views by roadside-adjacent vegetation. Approximately 0.7 miles of the Victory Pass Project and 1.4 miles of the Arica Project extend beyond the frame of view to the left in Figure 3B. Approximately 0.3 miles of the Victory Pass Project extend beyond the frame of view to the right in Figure 3B. In the context of the existing landscape, the solar facilities within the Foreground would exhibit High visual contrast primarily arising from the horizontal geometric form, dark color, and developed and repetitive character of the arrays. As a result, the Projects would constitute a visually Co-dominant feature in the Foreground of the landscape. The Projects would attract the attention of the casual observer, and view blockage of higher value landscape features (e.g., valley floor and vegetation) would be Moderate to High. Combining the equally weighted High visual contrast, Co-dominant project dominance, and Moderate to High view blockage results in a Moderate to High rating for overall visual change, which in the context of the existing landscape's Moderate to High visual sensitivity, results in a significant impact under this criterion. Incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design) would reduce the visual contrast associated with visually discordant structural features and contrasting character of the Projects' buildings, structures, and linear elements; however, these measures would not be sufficient to reduce the impact associated with solar arrays and other perimeter elements as experienced from KOP 2 to a level that would be less than significant. The resulting visual change would remain significant and unavoidable.

KOP 3 – Westbound I-10

Figure 4A presents the existing view from KOP 3 on westbound I-10. As shown in the KOP 3 visual simulation presented in Figure 4B (Appendix C), the approximately 1.3- to 2-mile distant solar arrays would present as a visually noticeable, but not predominant industrial facility, introduced into a predominantly natural-appearing, rural desert landscape. Portions of the low-profile solar arrays would be visible as a linear, horizontal, medium- to dark-gray areal mass on the valley floor partially screened from I-10 views by intervening vegetation. Most of the Victory Pass Project (approximately 1.5 miles) and a small portion (0.4 miles) of the Arica Project extend beyond the frame of view to the left in Figure 4B. Approximately 0.8 miles of the Arica Project extend beyond the frame of view to the right in Figure 4B. The associated gen-tie line steel poles would be barely discernible and would present as intermittent vertical features. One of the substations would also be noticeable as shown at the far-left edge of the image.

In the context of the existing landscape, the industrial forms of the solar and gen-tie facilities within the Foreground to Middleground would exhibit Moderate visual contrast, primarily arising from the at-grade and edge-on view of the horizontal forms and dark color of the arrays and the vertical forms of the closer gen-tie poles. As a result, the Projects would constitute a Foreground/Middleground, visually Subordinate to Co-dominant feature in the landscape. The Projects would attract the attention of the

casual observer, and view blockage of higher value landscape features (e.g., valley floor and vegetation) would be Moderate. Combining the equally weighted Moderate visual contrast, Subordinate to Co-dominant project dominance, and Moderate view blockage results in a Moderate rating for overall visual change, which in the context of the existing landscape's Moderate to High visual sensitivity, results in a less-than-significant impact. However, with incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design), the visual contrast associated with visually discordant structural features and contrasting character of the Projects' components would be reduced as viewed from KOP 3.

KOP 4 – Corn Springs Road

Figure 5A presents the existing view from KOP 4 on northbound Corn Springs Road. As shown in the KOP 4 visual simulation presented in Figure 5B (Appendix C), the approximately 3.1- to 6-mile distant solar arrays would present as a visually noticeable, but not predominant developed facility, introduced into a predominantly natural-appearing, rural desert landscape. Portions of the low-profile solar arrays would be visible as a prominent linear, horizontal, medium to dark-gray areal mass on the valley floor partially screened from Corn Spring Road views by intervening vegetation and the existing high-voltage electric transmission line corridor (just south of I-10). Approximately 0.7 miles of the Victory Pass Project would extend beyond the frame of view to the left in Figure 5B. Approximately 0.4 miles of the Arica Project would extend beyond the frame of view to the right in Figure 5B. The associated gen-tie line (intermittent, vertical steel poles) and substations would be barely discernible. In the context of the existing landscape, the rectangular forms of the solar arrays within the Foreground/Midground would exhibit Moderate to High visual contrast, primarily arising from the at-grade and edge-on view of the well-defined horizontal form and dark color of the arrays. As a result, the Projects would constitute a Foreground/Midground, visually Subordinate to Co-dominant feature in the landscape. The Projects would attract the attention of the casual observer, and view blockage of higher value landscape features (e.g., valley floor and vegetation) would be Low to Moderate. Combining the equally weighted Moderate to High visual contrast, Subordinate to Co-dominant project dominance, and Low to Moderate view blockage results in a Moderate rating for overall visual change, which in the context of the existing landscape's Moderate visual sensitivity, results in a less-than-significant impact. However, with incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design), the anticipated visual contrast associated with visually discordant structural features and contrasting character of the Projects' buildings, structures, and linear elements would be reduced.

KOP 5 – Desert Lily Preserve

Figure 6A presents the existing view from KOP 5 at the east gate of the Desert Lily Preserve. As shown in the KOP 5 visual simulation presented in Figure 6B (Appendix C), the approximately 3.8- to 5.5-mile distant solar arrays would appear as a visually noticeable, but not predominant facility, introduced into a predominantly natural-appearing, rural desert landscape. The low-profile solar arrays would be visible as a continuous, prominent linear, horizontal, medium- to dark-gray areal mass on the valley floor partially screened from views at KOP 5 by intervening vegetation. The associated gen-tie line (intermittent, vertical steel poles) and substations would be barely discernible. In the context of the existing landscape, the form, line, and color of the solar arrays within the Foreground/Midground would exhibit Moderate visual contrast, primarily arising from the at-grade and edge-on view of the well-defined horizontal form and dark color of the arrays. As a result, the Projects would constitute a Foreground/Midground, visually co-dominant feature in the landscape. Furthermore, the Projects would attract the attention of the casual observer, and view blockage of higher-value landscape features (e.g., valley floor and vegetation) would be Moderate. Combining the equally weighted Moderate visual

contrast, Co-dominant project dominance, and Moderate view blockage results in a Moderate rating for overall visual change, which in the context of the existing landscape's Moderate visual sensitivity, results in a less-than-significant impact. However, with incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design), the anticipated visual contrast associated with visually discordant structural features and contrasting character of the Projects' buildings, structures, and linear elements would be reduced.

KOP 6 – Lake Tamarisk Desert Resort

Figure 7A presents the existing view from KOP 6 at the eastern perimeter of the resort. As shown in the KOP 6 visual simulation presented in Figure 7B (Appendix C), the approximately 4.9- to 8.3-mile distant, low-profile solar arrays would be effectively screened from view by the intervening vegetation. The associated gen-tie line would be barely distinguishable as intermittent, vertical features as shown along the horizon in the right side of the image, and the substations would be barely discernible. In the context of the existing landscape, the gen-tie facilities in the distant Middleground would exhibit Low visual contrast, primarily arising from the faint skylining (extending above the horizon) of the steel pole structures (refer to Figure 7B). As a result, the Projects would constitute a distant Middleground, visually Subordinate feature in the landscape.

At KOP 6, the Projects would not attract the attention of the casual observer, and view blockage of higher value landscape features (e.g., valley floor and sky) would be Low. Combining the equally weighted Low visual contrast, Subordinate project dominance, and Low view blockage results in a Low rating for overall visual change, which in the context of the existing landscape's Moderate to High visual sensitivity, results in a less-than-significant impact. However, APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design) would be incorporated into the Projects and would reduce the visual contrast associated with visually discordant structural features and contrasting character of the Projects' buildings, structures, and linear elements would be reduced.

Summary

As demonstrated above, the Projects' O&M impact would be less than significant with incorporation of relevant APMs, *except* for the stretch of I-10 that is in the immediate vicinity of the Victory Pass Project adjacent and to the north of I-10; refer to KOP 2. The impact in that location would be significant even with incorporation of relevant APMs. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Victory Pass Incidental Take Permit specifically would result in a significant and unavoidable visual resource impact for KOP 2, along the I-10 stretch adjacent to the Victory Pass Solar Project. No other potentially feasible mitigation measures would avoid or substantially lessen this significant effect.

Impact A-4. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Visible Night Lighting

LESS THAN SIGNIFICANT. The Projects would be in an area with few existing structures, and the use of uncontrolled or excessive lighting would be noticeable to nearby motorists on I-10 and SR-177 and residents of Desert Center and Lake Tamarisk. Nighttime lighting would also affect the nighttime experience for dispersed recreational users in the surrounding wilderness. During construction of the Projects, restricted nighttime task lighting may be required. However, lighting would be limited to that necessary to provide safe working conditions. Operations of the Projects would require on-site nighttime lighting for safety and security. As described in Section 2.2.3, Solar Facilities, motion-sensitive,

directional security lights would be installed to provide adequate illumination around the substation areas, each inverter cluster, at gates, and along perimeter fencing. In addition, and in accordance with APM AES-3, all lighting would be of the minimum necessary lighting for purposes and shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. Given the relatively sparse development in the surrounding area and the general lack of stationary nighttime lighting, the introduction of nighttime task lighting would constitute a potentially significant impact. Thus, APM AES-4 (Night Lighting Management) would be incorporated.

As described in APM AES-4, to reduce potential off-site lighting impacts, lighting at the solar facilities would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded, and lights would be directed on site so that light or glare would be minimized. Low-pressure sodium lamps would be specified. Switched lighting would be provided for areas where continuous lighting would not be required for normal operation, safety, or security. The incorporation of these measures would minimize the amount of lighting potentially visible to viewers of the site at night. Additionally, incorporation of APM AES-1 would require that structural surfaces be non-specular and non-reflective, which would also reduce reflected glare from surfaces due to night lighting.

However, adverse effects of solar facilities lighting are not necessarily limited to views of the site itself. Excessive lighting can also cause an adverse effect to viewers of the night sky via sky glow, which diminishes the visibility of the nighttime sky and stars. Prevention of off-site light spillage for ground observers does not necessarily prevent back-reflected light (i.e., light reflected off the ground and/or structures from down-directed lamps) from diminishing the visibility of the night sky. Normally, the contribution of project-related lighting is negligible when in an environment with abundant light sources; however, the Projects' area is highly valued in terms of the quality of its nighttime skies. This is attributable to the scarce and scattered nature of existing light sources in the surrounding area and the prevalence of federally administered land in the region, which limits opportunities for development. While the level of use in the surrounding wilderness is low, the high visibility of the nighttime sky and stars is an important component of the wilderness experience for many backcountry users and is highly valued by residents of the area.

JTNP, which is approximately 4.4 miles to the north of the Projects, is known throughout the NPS for its significant Dark Sky resource. To serve a substantial public interest in Dark Sky observation, JTNP offers a variety of Night Sky Programs. In the immediate area, Dark Sky visitors access the east end of the Pinto Basin at an access gate at the north end of Chuckwalla Valley. Although some dark sky viewing locations in the Pinto Basin are screened from direct line-of-site by intervening terrain, there are portions of the Pinto Basin, particularly in the northeast of the basin, with slightly higher elevations that do have direct line-of-sight to the Project sites. Because any light source in the desert contributes to ambient light pollution, and all light sources are adversely cumulative in terms of the impact on human dark adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to ensure that additional night sky light pollution does not occur from implementation of the Projects or alternatives.

It is estimated that the contribution of the Projects' lighting to sky glow would be minor. Light sources in the Chuckwalla Valley currently include motorists on I-10 and local roads; streetlamps, residences, and other commercial/service land uses in the communities of Desert Center and Lake Tamarisk; lighting associated with the former Desert Center Airport (now a private, special-use airport); and widely scattered homesteads on private land in the region. Despite the presence of these existing light sources, the area remains highly valued for the quality of its night sky. Because permanent lighting would not be required for the arrays of photovoltaic (PV) panels, operational lighting would be confined to a small portion of the sites that contain O&M facilities and the switchyard and is unlikely to be totally out of character with other existing lighting

sources scattered throughout the Chuckwalla Valley. Furthermore, APM AES-4 includes standards that light intensity must be the minimum necessary to ensure worker safety and facility security, that direct lighting not illuminate the nighttime sky, and that night lighting does not adversely affect the dark sky viewing program at JTNP because it requires review of the Night Lighting Management Plan prepared under APM AES-4 by the NPS Night Sky Program Manager. This review would ensure that the Projects meet the stricter night lighting specifications of the NPS Night Sky Viewing Program, and that lighting exposure levels (based on a lumen analysis) do not exceed the action threshold for NPS lands or adversely affect JTNP's Night Sky Viewing Program. Because the impacts associated with nighttime lighting would be limited in nature and reduced by APM AES-4, the night lighting impact is considered less than significant under the CEQA A-4 criterion. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant visual night lighting impacts.

Daytime Glare

LESS THAN SIGNIFICANT. Daytime glare from the Projects' facilities could potentially adversely affect travelers on I-10 and SR-177, a low number of residents at Desert Center and Lake Tamarisk, and users of nearby designated wilderness and ACECs. However, it is expected that such glare impacts would be substantially less than that associated with other solar technologies because PV panels are less reflective, and it is anticipated that the resulting visual impact would be less than significant under the CEQA AES-3 impact criterion.

The Projects would use darkly colored matte PV solar panels featuring an anti-reflective coating. PV solar panels are designed to be highly absorptive of light that strikes the panel surfaces, generating electricity rather than reflecting light. The solar panels are also designed to track the sun to maximize panel exposure to the sun, which would direct most reflected light back toward the sun in a skyward direction. PV panels have a lower index of refraction/reflectivity than common sources of glare in residential environments. The glare and reflectance levels from a given PV system are lower than the glare and reflectance levels of steel, snow, standard glass, plexiglass, and smooth water (Shields 2010). The glare and reflectance levels of panels are further reduced with the application of anti-reflective coatings. PV suppliers typically use stippled glass for panels as the "texturing" of the glass allows more light energy to be channeled/transmitted through the glass while weakening the reflected light. With the application of anti-reflective coatings and use of modern glass technology, the Projects' PV panels would display overall low reflectivity.

The PV solar panels would be angled perpendicular to the general east–west direction of the sun and are designed to track the position of the sun throughout the day to maximize panel exposure if a tracking system is used. Alternatively, the panels could be installed on a fixed-tilt system and would face to the south. The greatest potential for light reflection to reach viewer locations would occur with a tracking system when the panels would be angled toward the horizon at sunrise and sunset. During these periods, the solar panels would be tilted approximately 10° below a horizontal plane in the direction of the sun. Unabsorbed incoming light would reflect at approximately 20° above the opposite horizon.

The solar power facilities would be in a broad flat valley. Potential viewers of the facilities, including motorists on I-10, would be less than 20° above the facilities. Motorists would not be exposed to the glare at sunrise or sunset due to the low viewing angle. Motorists may perceive an increase in color contrast in the early morning hours when the darkly colored PV panels could appear as lightly colored or white (Sullivan and Abplanalp 2013). This color contrast would be brief (a few minutes in the morning and evening hours), but would not shine light directly at motorists on I-10 nor cause a nuisance to motorists. No residents are close enough to the Projects to experience glare from the Projects' facilities.

Any glare that results from Projects' facilities (not panels) and the high-voltage gen-tie line would be reduced by incorporation of APM AES-1. This would require that the gen-tie facilities be finished with non-specular and non-reflective material and that the insulators be non-reflective and non-refractive. Building and structure paints and finishes would be selected to blend with the landscape. These measures would prevent glare or reduce glare from structural (not panel) surfaces to minimal levels that would not be noticeable or distracting to potential viewers. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant daytime glare impacts.

Cumulative Impacts

Geographic Scope. Impacts resulting from construction, operation, and future decommissioning of the Projects would result in a cumulative effect on visual resources with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for aesthetics consists of the I-10 corridor, the greater Chuckwalla Valley, and the slopes and ridges of the surrounding mountains facing the Projects, including portions of the JTNP, and is based primarily on the natural boundaries of the affected resource where direct effects would occur (i.e., shared viewsheds). The geographic scope also considers the indirect effect of the perceived industrialization of the I-10 corridor, which is associated with the proliferation of energy facilities across the landscape. Therefore, for the purposes of this analysis, the area of direct effect generally extends from the eastern portion of the JTNP southeast to the easternmost boundary of the Palen Solar Project (under construction), just east of the Projects. The area of indirect effect extends along I-10 from the intersection with Eagle Mountain Road, approximately 3 miles west of Desert Center, to Ford Dry Lake Road overpass, which is approximately 12 miles east of the Palen Solar Project and approximately 3 miles south of the existing Genesis Solar Energy Project. Also visible from this location are the existing Devers–Palo Verde No. 1 and Devers–Colorado River transmission lines, the existing Blythe Energy Project Transmission Line, and the probable future Desert Southwest Transmission Line, all paralleling the south side of I-10.

Existing and probable future actions making up the cumulative scenario for aesthetics are listed below and in Tables 3.1-1 and 3.1.2, in Section 3.1.2, Cumulative Impact Scenario, and shown on Figure 3.1-1.

Past and Present Projects in the Projects' Area

- West-wide Section 368 Energy Corridors
- Genesis Solar Energy Project
- Desert Sunlight Solar Project
- SCE Red Bluff Substation
- Devers–Palo Verde No. 1 Transmission Line
- Devers–Colorado River Transmission Line
- Blythe Energy Project Transmission Line
- Desert Renewable Energy Conservation Plan
- Desert Harvest Solar Project
- Palen Solar Project

Probable Future Projects in the Projects' Area

- Desert Southwest Transmission Line
- Eagle Mountain Pumped Storage Project
- Athos Solar Project
- Oberon Solar Project
- Easley Solar & Green Hydrogen Project

The above-listed actions include 10 local, existing (past and present) energy projects and 54 local, probable future energy projects. These projects would all be within the field of view of at least portions

of the proposed Projects and are expected to result in cumulative visual impacts for travelers along I-10 and SR-177, as well as residents and dispersed recreational users in the surrounding areas.

Cumulative Impacts. Although numerous existing modifications are visible along the I-10 corridor and in the Desert Center area of the Chuckwalla Valley (transmission lines; substations; pipelines; solar projects; 4-wheel drive tracks; widely scattered commercial buildings, dilapidated structures, and roadside signs; and a few agricultural operations), the grand scale of the open desert panoramas impart an overall general impression of a relatively unimpaired, isolated desert landscape. The cumulative scenario includes many large solar projects and transmission lines whose scale and pervasiveness would have adverse cumulative effects. If all the projects were implemented, they would substantially degrade the visual character and general scenic appeal of the existing landscape, resulting in the conversion of a relatively undeveloped desert landscape into a more industrialized appearance.

In some viewing cases, the visibility and apparent scale of the projects are (for existing), or would be (for proposed), diminished somewhat by favorable topographic relationships and vegetative screening. For other viewing opportunities, some projects appear (existing) or would appear (proposed) reduced in visual prominence due to their viewing distances and low angle of view. In other cases, projects blend (existing) or would blend (proposed) in with the vegetation or horizon line of the valley floor, and the rugged mountains would remain the dominant visual features in the landscape.

From various elevated locations within the JTNP, the proposed Projects would be visible along with one or more of the cumulative projects. For example, from the Buzzard Springs area and adjacent wilderness, the Projects would be visible along with the existing Desert Sunlight and Desert Harvest solar projects, as well as the Palen Solar Project under construction immediately east of the Projects and the probable future Athos Solar, ~~and Oberon s~~Solar, and Easley Solar & Green Hydrogen projects. Similarly, the proposed Projects, along with multiple cumulative projects, would be visible from portions of the Eagle and Coxcomb mountains in the JTNP, the Palen-McCoy Wilderness to the east, the Sheephole Valley Wilderness to the north, and the Chuckwalla Mountains Wilderness to the south. However, it should be noted that these cumulative impacts would be experienced at greater viewing distances ranging from 7 to 25 miles.

The proposed Projects, in combination with the 154 local existing and probable energy projects, would contribute to significant cumulative visual impacts when viewed by sensitive viewing populations along I-10 and SR-177, from nearby residences, from portions of the JTNP, and in the surrounding mountains and wilderness. The Projects' contribution to the impacts would be from the introduction of substantial visual contrast associated with discordant geometric patterns in the landscape; the introduction of large-scale, built facilities; the creation of unnatural lines of demarcation in the valley floor landscape and inconsistent color contrasts; and from the addition of visible night lighting within the broader Chuckwalla Valley. For many travelers along I-10, the scenic experience would be substantially degraded due to the regular occurrence of solar facilities and related effects in the landscape.

Incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings), APM AES-2 (Project Design), APM AES-3 (Minimum use of Nighttime Lighting), and APM AES-4 (Night Lighting Management Plan), APM AIR-1 (Fugitive Dust Control Plan), and effective implementation of MM BIO-5 (Revegetation Plan) would reduce the severity of the Projects' contribution to the cumulative visual effects, though not to levels that would be less than significant. Even with incorporation of the APMs and implementation of the mitigation measure, there would be significant cumulatively considerable visual impacts when viewed by sensitive viewing populations along I-10 and SR-177, from nearby residences, and in the surrounding mountains and wilderness. Accordingly, the Projects' incremental contribution to the cumulative visual impacts caused by other past, present, and probable future projects would be

cumulatively considerable and significant even after incorporation of APMs and mitigation measures. Therefore, issuance of the Permits would result in a significant cumulative impact to sensitive viewing populations along 1-10 and SR-177.

3.2.4 Mitigation Measures

MM BIO-5 Vegetation Resources Management Plan. *Refer to full text in Section 3.4, Biological Resources.*

No other potentially feasible mitigation measures were identified to further avoid or substantially lessen significant and unavoidable impacts to visual resources.

3.3 Air Quality

This section evaluates the emissions of air pollutants and the air quality impacts that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on air quality for both of the proposed Projects as the whole of the action. The analysis in this section describes the applicable regulations, presents an overview of existing conditions that influence air quality, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the potential air quality impacts of the proposed Projects.

The section also considers the scoping comments regarding the importance of protecting air quality, especially regarding soil erodibility as it may lead to wind-driven fugitive dust. Public comments recommended establishing a fugitive dust management plan and using lower-emitting construction equipment.

3.3.1 Regulatory Framework

The Projects are within Riverside County, in the jurisdiction of the South Coast Air Quality Management District (SCAQMD) within the Mojave Desert Air Basin. The SCAQMD-managed portion of the Coachella Valley and Salton Sea Air Basin is west of the Projects' area. East of the sites is the boundary of the neighboring Mojave Desert Air Quality Management District, which oversees the remainder of the Mojave Desert Air Basin, including the easternmost portion of Riverside County.

Federal Laws, Regulations, and Policies

Federal Clean Air Act. The federal Clean Air Act (CAA) was enacted in 1970. The act established the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. With SCAQMD and the California Air Resources Board (CARB), the U.S. Environmental Protection Agency (EPA) shares the responsibility to establish regulations, enforce air pollution control requirements, and develop the necessary air quality management to achieve the NAAQS. EPA implements most aspects of the CAA and reviews local and state air quality management plans and regulations to ensure attainment of the NAAQS.

Federal General Conformity Rule. General conformity (40 CFR Part 93, Subpart B, et seq.) requires each federal lead agency (the Bureau of Land Management [BLM]) to make a determination of whether approval of a project (i.e., a federal action) would cause or contribute to a violation of the NAAQS or interfere with attainment planning. Federal nonattainment designations are in place for portions of the Mojave Desert Air Basin in San Bernardino County and for portions of the SCAQMD including the Salton Sea Air Basin west of the Mojave Desert Air Basin, where the primary pollutants of concern are ozone (O₃) and particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM₁₀). However, there are no federal nonattainment or maintenance designations at the locations of the Project sites in the Mojave Desert Air Basin portion of Riverside County. Federal agency actions in the Mojave Desert Air Basin portion of Riverside County are not subject to CAA general conformity review requirements.

Federal Class I Areas. Section 162(a) of the federal CAA grants special air quality protections to designated federal Class I areas. To protect Class I areas under EPA delegation, the SCAQMD implements the Prevention of Significant Deterioration permitting program, which addresses visibility impairment from new or modified stationary sources in the region, such as power plants, mines, or other industrial sources.

The boundary of the Joshua Tree National Park (JTNP) Class I area is 4 miles (6.4 kilometers) away from the nearest boundary of the Arica site and 5.1 miles (8.2 kilometers) from the nearest boundary of the Victory Pass site. Visibility is considered an important air quality value to be protected within JTNP. There are no other Class I areas within 62 miles (100 kilometers) of the Project sites. Data from the Federal Land Manager Environmental Database indicate that visibility in the JTNP Class I area improved between 2001 and 2010 then remained steady through 2016 (CIRA 2016; CIRA 2020). For JTNP and other Class I areas in Southern California, the Western Regional Air Partnership shows that the visual range has improved more than 20% (2010-2014) when compared to the baseline (2000-2004), and that this improvement is largely due to the local authorities having the ability to control anthropogenic emissions (WRAP 2016).

State Laws, Regulations, and Policies

California Clean Air Act. The California Clean Air Act is implemented by CARB. This act established broad authority for California to regulate emissions from mobile sources and requires regions to develop and enforce strategies to attain the California Ambient Air Quality Standards (CAAQS). Each regional air district is responsible for demonstrating how these standards are met.

EPA/CARB Off-Road Mobile Sources Emission Reduction Program. The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. The earliest (Tier 1) standards for large compression-ignition engines used in off-road mobile sources became effective in California in 1996. Since then, the Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 2006, and Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines model year 2012 or newer. These standards and standards applicable to fleets that are already in-use provide comprehensive regulation and control to reduce oxides of nitrogen (NO_x) and toxic particulate matter emissions from diesel use throughout the state.

CARB In-Use Off-Road Diesel Fueled Fleets Regulation. The regulations for in-use off-road diesel equipment are designed to reduce NO_x and toxic diesel particulate matter (DPM). Depending on the size of the fleet of equipment, the owner would need to ensure that the average emissions performance of the fleet meets certain statewide standards. In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations. Presently, all equipment owners are subject to a 5-minute idling restriction in the rule (13 CCR 2449).

CARB Portable Equipment Registration Program. This program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program. This program allows them to operate their equipment throughout California without having to obtain individual permits from local air districts.

CARB Airborne Toxic Control Measures. Diesel engines on portable equipment and vehicles are subject to various Airborne Toxic Control Measures that dictate how diesel sources must be controlled statewide to protect public health. For example, the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling generally limits idling of commercial motor vehicles (including buses and trucks) within 100 feet of a school or residential area for more than 5 consecutive minutes or periods aggregating more than 5 minutes in any 1 hour (13 CCR 2485). Diesel engines used in portable equipment fleets are subject to stringent DPM emissions standards, generally requiring use of only newer engines or verified add-on particulate filters (17 CCR 93116).

Local Laws, Regulations, and Policies

South Coast Air Quality Management District

The Project sites and activities are under local jurisdiction of the SCAQMD. Most equipment used for construction is classified as mobile sources and is thus exempt from stationary source permit requirements. According to SCAQMD Rule 219, some other equipment used may be subject to permit requirements, such as generators, compressors, and pumps.

SCAQMD Rule 402 and 403. Rule 402 (Nuisance) requires dust suppression techniques to prevent particles from becoming a nuisance off site, and Rule 403 (Fugitive Dust) prohibits creation of dust plumes that are visible beyond the property line of the emission source and requires all active operations to implement applicable best available control measures. Enhanced dust control requirements apply if the project is considered a “large operation” under this rule, which is any active operations on a property that contains 50 or more acres of disturbed surface area.

Riverside County General Plan

Riverside County adopted the Air Quality Element of the County General Plan in 2015. The air quality element includes policies supporting regional cooperation with other jurisdictions to improve air quality; requiring compliance with federal, state, and regional air quality regulations; encouraging programs to reduce vehicle miles traveled; encouraging energy conservation in urban land uses; and encouraging development patterns that improve the county’s jobs/housing balance. The Air Quality Element of the General Plan includes one policy directly relevant to the Projects, to facilitate development and siting of renewable energy facilities and transmission lines in appropriate locations (*Policy AQ 20.19*) (County of Riverside 2018).

3.3.2 Environmental Setting

Air Basin and Local Air Districts. The Projects are located on land administered by BLM within Riverside County, where air resources are regulated by federal, state, and local air quality management agencies. This portion of Riverside County is the jurisdiction of the SCAQMD within the Mojave Desert Air Basin, which is east and downwind of the SCAQMD Salton Sea Air Basin and the Coachella Valley.

Criteria Pollutants. Air quality is determined by measuring ambient concentrations of criteria air pollutants. Criteria pollutants are those pollutants for which acceptable levels of exposure can be determined and for which health-based standards have been set include O₃, PM₁₀, particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. O₃ is an example of a secondary pollutant that is not emitted directly from a source (e.g., a vehicle tailpipe), but it is formed in the atmosphere by chemical and photochemical reactions. Reactive organic gases (ROGs), including volatile organic compounds (VOCs), are regulated as precursors to O₃ formation.

The degree of air quality degradation is then compared to the current NAAQS and CAAQS. Unique meteorological conditions in California and differences of opinion by medical panels established by CARB and EPA cause considerable diversity between state and federal standards currently in effect in California. The California standards are set at levels to adequately protect the health of the public, including infants and children, with an adequate margin of safety (California Health and Safety Code Section 39606); in general, the CAAQS are more stringent than the corresponding health-protective NAAQS.

The ambient air quality standards currently in effect in California are shown in Table 3.3-1.

Table 3.3-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.070 ppm
Respirable Particulate Matter (PM ₁₀)	24-hour	50 µg/m ³	150 µg/m ³
	Annual Mean	20 µg/m ³	—
Fine Particulate Matter (PM _{2.5})	24-hour	—	35 µg/m ³
	Annual Mean	12 µg/m ³	12 µg/m ³
Carbon Monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9.0 ppm
Nitrogen Dioxide (NO ₂)	1-hour	0.18 ppm	0.100 ppm
	Annual Mean	0.030 ppm	0.053 ppm
Sulfur Dioxide (SO ₂)	1-hour	0.25 ppm	0.075 ppm
	24-hour	0.04 ppm	0.14 ppm
	Annual Mean	—	0.030 ppm

Notes: ppm=parts per million; µg/m³= micrograms per cubic meter; “—“ =no standard.
Source: CARB 2016.

Attainment Status and Air Quality Plans. EPA, CARB, and the local air district classify an area as attainment, unclassified, or nonattainment. The classification depends on whether the monitored ambient air quality data show compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively.

Table 3.3-2. Attainment Status for Mojave Desert Air Basin Portion of Riverside County

Pollutant	California Designation	Federal Designation
Ozone	Nonattainment	Attainment
PM ₁₀	Nonattainment	Attainment
PM _{2.5}	Attainment	Attainment
CO	Attainment	Attainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Attainment

Notes: PM₁₀ = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM_{2.5} = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; NO₂ = nitrogen dioxide; CO = carbon monoxide; SO₂ = sulfur dioxide.
Source: SCAQMD 2018.

Table 3.3-2 summarizes attainment status for the criteria pollutants in the Mojave Desert Air Basin portion of Riverside County of both the federal and state standards.

Ozone. O₃ is not directly emitted from stationary or mobile sources but is formed as the result of chemical reactions in the atmosphere between directly emitted NO_x and VOCs in the presence of sunlight. Pollutant transport from the Los Angeles area of the South Coast Air Basin is one source of the pollution across Riverside County. High O₃ concentrations can aggravate respiratory and cardiovascular diseases, irritate eyes, impair cardiopulmonary function, and cause damage to vegetation.

Coarse Particulate Matter (PM₁₀) and Fine Particulate Matter (PM_{2.5}). PM₁₀ can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. PM_{2.5} is derived mainly either from the combustion of materials or from precursor gases

(sulfur oxides, NO_x, and VOCs) through complex reactions in the atmosphere. PM_{2.5} consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds. In the Salton Sea and Mojave Desert Air Basins, most ambient particulate matter is due to fugitive dust, such as vehicle travel on unpaved roads, agricultural operations, or wind-blown dust.¹ Particulate matter can aggravate respiratory diseases, result in reduced lung function, increase and cause chest discomfort, and cause reduced visibility.

Carbon Monoxide. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night, and may extend 1 or 2 hours after sunrise. In the Projects' area, CO concentrations are well below the CAAQS and NAAQS. CO reduces tolerance of exercise, can cause impairment of mental function and impairment of fetal development, can aggravate some heart diseases (angina), and can cause death at high levels of exposure.

Nitrogen Dioxide. Approximately 90% of the NO_x emitted from combustion sources is nitric oxide, while the balance is NO₂. Nitric oxide is oxidized in the atmosphere to NO₂, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO₂ typically occur during the fall. The winter atmospheric conditions can trap emissions near the ground level, but lacking substantial photochemical activity (sunlight), NO₂ levels are relatively low. In the summer, the conversion rates of nitric oxide to NO₂ are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO₂. The NO₂ concentrations in the Projects' area are well below the CAAQS and NAAQS. NO₂ can aggravate respiratory diseases, reduce visibility, reduce plant growth, and form acid rain.

Sulfur Dioxide. SO₂ is typically emitted as a result of the combustion of a fuel containing sulfur. Overall SO₂ emissions are limited due to the limited number of major stationary sources and the regulatory limits on motor vehicle fuel sulfur content. The SO₂ concentrations in the Projects' area are well below the CAAQS and NAAQS. SO₂ can irritate the upper respiratory tract and be injurious to lung tissue, causing reduced lung function, including asthma and emphysema. SO₂ can cause plant leaves to yellow, and can be destructive to metals, textiles, leather, finishes, and coatings. SO₂ can also limit visibility.

Toxic Air Contaminants. Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, or that may pose a present or potential hazard to human health (California Health and Safety Code Section 39655), even when present in relatively low concentrations. Birth defects, neurological damage, cancer, and death are some of the effects of TACs. There are numerous types of TACs with a range of toxicities that varies greatly in the health risk they pose, as some may be many times more hazardous than another at the same level of exposure. These contaminants do not have ambient air quality standards but are regulated by the local air districts using a risk-based approach.

Sensitive Receptor Land Uses. There are no sensitive land uses within 0.25 miles of either Project site. The sites are surrounded by uninhabited open space and agriculture. The nearest residence is located 0.75 miles (3,880 feet) east of the Arica site, but this residence is now part of the separate Athos Solar Project that has been permitted by Riverside County and will be removed. There are no other residences within 1 mile of either Project site, and the nearest communities (Lake Tamarisk and Desert Center) are approximately 5 miles west of the sites.

¹ Fugitive dust, unlike combustion source particulate and secondary particulate, is composed of a much higher fraction of larger particles than smaller particles. This means that a relatively small portion of fugitive dust is PM_{2.5}, and PM₁₀ is dominant. When PM₁₀ ambient concentrations are significantly higher than PM_{2.5} ambient concentrations this tends to indicate that fugitive dust sources are dominant. If PM₁₀ and PM_{2.5} concentrations are at comparable levels, then combustion sources and sources of precursors to secondary particulate are dominant.

3.3.3 Impact Analysis

Methodology

All construction- and operation-related emissions are quantified based on the best available forecast of activities. This analysis uses the California Emissions Estimator Model (CalEEMod), version 2016.3.2, software developed by the California Air Pollution Control Officers Association. This is the most recent version of the CalEEMod software, and it relies upon mobile source emission factors from the CARB OFFROAD inventory and EMFAC2014 models. Details on CalEEMod settings and results are shown in EIR Appendices D-1 through D-4. Daily emissions results for summer and winter months differ slightly, and this analysis uses the higher of the two results.

Criteria for Determining Significance

The significance criteria used to evaluate the Projects' impacts to air quality are based on the recommendations provided in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). For the purposes of this air quality analysis, a significant impact would occur if the Projects would:

- Conflict with or obstruct implementation of the applicable air quality plan (see Impact AQ-1).
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (see Impact AQ-2).
- Expose sensitive receptors to substantial pollutant concentrations (see Impact AQ-3).
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people (see Impact AQ-4).

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to determine whether a proposed project would have a significant impact on air quality.

To characterize the potential impact of criteria air pollutant emissions in the California Environmental Quality Act (CEQA) process, SCAQMD recommends use of regional significance thresholds for construction and for project-related operation emissions that are subject to CEQA review. The emissions from the construction, operation, and future decommissioning of a project are compared to these SCAQMD regional significance thresholds to determine whether the project would result in adverse air quality impacts.

The SCAQMD regional significance emissions thresholds for CEQA review of the Projects are as follows:

- NO_x: 100 pounds per day (lb/day)
- VOC: 75 lb/day
- PM₁₀: 150 lb/day
- PM_{2.5}: 55 lb/day
- CO: 550 lb/day
- Sulfur oxides: 150 lb/day

For projects in the SCAQMD's Salton Sea and Mojave Desert Air Basins, the mass daily thresholds for operation are the same as the construction thresholds (SCAQMD 2019).

For emissions exceeding the regional significance thresholds, the SCAQMD also provides air quality significance thresholds for ambient air quality impact assessments, which may be used to calculate the downwind concentrations caused by the on-site portions of project emissions.

For sites located near sensitive receptors, SCAQMD developed the Localized Significance Thresholds (LSTs) to determine if a project could locally exceed the ambient air quality standards or cause a substantial contribution to existing exceedances at a given distance from an emitting site boundary to a nearby receptor. The LSTs vary depending on the meteorological conditions for each Source Receptor Area within the SCAQMD jurisdiction. These thresholds would not apply to the proposed Projects because the closest residence or inhabitable dwelling is over 1 mile away.

Applicant Proposed Measures

The Applicants identified and have committed to implementing the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to air quality, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM AIR-1 Fugitive Dust Control Plan. The Applicants shall prepare and implement a Fugitive Dust Control Plan to address fugitive dust emissions during project construction, operation, maintenance, and future decommissioning. The plan shall include measures to minimize fugitive dust emissions from development of laydown and staging areas, site grading, vegetation management, and installation of all project facilities through post-construction cleanup. The Applicants shall take every reasonable precaution to prevent all airborne fugitive dust plumes from leaving the Project sites and to prevent visible particulate matter from being deposited upon public roadways. The Applicants shall submit the plan to South Coast Air Quality Management District for review and approval no less than 60 days prior to the start of construction. The Applicants shall incorporate the plan into all contracts and contract specifications for construction work. The Fugitive Dust Control Plan shall identify a Dust Control Supervisor that shall have the authority to expeditiously employ sufficient dust mitigation measures. The Dust Control Supervisor shall be on the site or available on site within 30 minutes during working hours and shall have the authority to implement enhanced (contingency) measures if dust plumes are visible beyond the property line, which indicates that existing mitigation measures are not resulting in effective mitigation.

The following measures would be included within the plan:

- During construction, all unpaved roads, disturbed areas (e.g., areas of scraping, excavation, backfilling, grading, and compacting), and loose materials generated during construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent or watered two times daily or as frequently as necessary to minimize fugitive dust generation. Non-water-based soil stabilizers shall be as efficient as or more efficient for fugitive dust control than California Air Resources Board-approved soil stabilizers and shall not increase any other environmental impacts, including loss of vegetation, adverse odors, or emissions of ozone precursor reactive organic gases or volatile organic compounds.
- For long-term site operations, the Applicants shall establish a Site Operations Dust Control Plan, which includes all applicable fugitive dust control measures identified for operations activities. The Site Operations Dust Control Plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads, shall restrict

vehicular access to established unpaved travel paths within the project boundaries, and shall include the long-term inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized.

- The main access roads through the site shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction. Delivery, laydown, and staging areas for construction or operations and maintenance supplies shall be paved or treated prior to taking initial deliveries.
- Grading and earthwork activities, including vegetation removal, cut and fill movement, and soil compacting, shall be phased across the site to minimize the amount of exposed or disturbed area on any single day.
- No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
- Visible speed limit signs shall be posted at the construction site entrances.
- All construction equipment vehicle tires shall be cleaned free of dirt prior to entering paved roadways to prevent track-out from extending 25 feet or more in cumulative length from the point of origin from an active operation. Actions, including but not limited to sweeping sealed roads, use of stabilized construction/facility entrances, and, if needed, using one or more entrance/exit vehicle tire wash apparatuses, shall be taken to prevent project-related track-out.
- All unpaved exits from the construction site shall be graveled or treated to prevent track-out onto public roadways.
- All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads to access the construction site or staging areas shall be swept as needed when dirt or runoff resulting from the construction activities is visible on the paved public roadway.

APM AIR-2

Control On-Site Off-Road Equipment Emissions. The Applicants, when entering into construction contracts or when procuring off-road equipment or vehicles for on-site construction or operations and maintenance (O&M) activities, shall ensure that only new model year equipment or vehicles are obtained. The following measures would be included with contract or procurement specifications:

- All construction diesel engines not registered under California Air Resources Board's Statewide Portable Equipment Registration Program, with a rating of 50 hp or higher shall meet the Tier 4 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, Section 2423(b)(1), unless a good faith effort demonstrates that such engine is not available for a particular item of equipment. If a Tier 4 engine is not available for any off-road equipment larger than 50 hp, a Tier 3 engine shall be used or that equipment shall be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter

to no more than Tier 3 levels unless certified by the engine manufacturers that the use of such devices is not practical for specific engine types.

- All diesel-fueled engines used in the construction of the facility shall have clearly visible tags showing that the engine meets the standards of this measure.
- All equipment and trucks used in the construction or O&M of the facility shall be properly maintained and the engines tuned to the engine manufacturer's specifications.
- All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

APM AIR-3 Construction Activity Management Plan. Prior to the start of construction, Applicants shall review their construction schedule, updated construction fleet, and construction contractors' commitments and prepare and implement a construction activity or phasing plan if feasible that requires construction contractors to schedule the overlapping activities of on-road motor vehicles and off-road equipment to reduce excessive daily emissions. The activity management plan shall reflect the ultimate design of the solar facility and gen-tie line development timing and shall reflect the anticipated make-up of the construction equipment fleet and workforce. The plan would need to reflect dust control practices and off-road equipment engine standards.

Environmental Impacts

The scoping effort revealed several concerns related to air quality. Concerns identified in the scoping process indicated that fugitive dust could create impacts to visual resources and public health and could increase water usage. The Basin and Range Watch expressed concerns regarding the potential need for a concrete batch plant for construction; however, a concrete batch plant would not be necessary for the proposed Projects. The organization also indicated a concern about valley fever; however, workers in Riverside County are at a relatively lower risk than in other areas of California, as discussed in more detail in Section 3.9, Hazards and Hazardous Materials. In addition, employers have a legal responsibility to provide workers with protection from health risks, including any due to valley fever, including for the Projects (DIR 2017). The primary ways to reduce the risk of valley fever are to avoid exposure to dusty air or dust storms, prevent dirt or dust from becoming airborne, and, if working at a dusty site is unavoidable, wear NIOSH-approved respiratory protection with particulate filters rated as N95, N99, N100, P100, or HEPA (DIR 2017).

Commenters expressed concerns regarding soil erodibility during construction or high wind events and recommended that the Projects include a clearly defined plan or adaptive management plan for air quality monitoring, including the potential for installing real-time monitors throughout the region during construction and operation. Commenters also recommended leaving desert biological crusts and desert pavement intact to the maximum extent possible. In lieu of installing real-time monitoring equipment, the analysis considers designating an on-site supervisor to have the authority to respond effectively and prevent visible dust plumes. The analysis also considers establishing a fugitive dust management plan and using lower-emitting construction equipment.

Impact AQ-1. Would the project conflict with or obstruct implementation of the applicable air quality plan?

LESS THAN SIGNIFICANT. The Projects would be located entirely on BLM-administered public lands, therefore, local plans and ordinances do not apply. The surroundings include unincorporated areas of Riverside

County that are designated in the County's Desert Center Area Plan as Open Space-Rural, with some agriculture, rural residential, and other low-density residential and commercial opportunities nearby.

Within the area of the proposed Projects, SCAQMD and CARB ensure implementation of California's air quality management plans, known collectively as the State Implementation Plan. State-level air quality planning strategies to attain the CAAQS are implemented through rules, regulations, and programs adopted by SCAQMD and CARB to control O₃ precursors, PM₁₀, and PM_{2.5}. All construction and project development-related activities, including operations and maintenance (O&M), would comply with the applicable rules, regulations, and programs. Strategies and control measures identified within the 2016 Air Quality Management Plan apply to project activities where promulgated through SCAQMD's rules and regulations.

All construction, O&M, and future decommissioning activities would comply with SCAQMD's Rule 402 and 403, which prevent nuisance and regulate fugitive dust emissions. The Projects would also conform to the federal and state Clean Air Act requirements by complying with the rules and regulations that are contained in the air quality plan.

A project could be inconsistent with the applicable air quality management plan or attainment plan if it causes population and/or employment growth or growth in vehicle-miles traveled in excess of the growth forecasts included in the attainment plan. The Projects would each employ up to six full-time workers to provide ongoing maintenance, including panel washing and security. The construction workforce would involve short-term employment, up to 18 months. Upon commencing routine operation, the construction workforce would no longer be required at the Project sites, and only the limited workforce of permanent employees would remain in the area. The future decommissioning workforce would also involve short-term employment, similar to construction. Accordingly, project construction, O&M, and future decommissioning would not conflict with or obstruct implementation of the applicable air quality plan because the only meaningful increase in employment would be temporary. Therefore, this impact would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact AQ-2. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?

Construction

SIGNIFICANT AND UNAVOIDABLE. The proposed Projects are in an area designated as non-attainment for state-level O₃ and PM₁₀ standards. Emissions during the construction phase would include criteria air pollutants that could exceed quantitative thresholds for O₃ precursors or PM₁₀ and would represent a cumulatively considerable net increase of nonattainment pollutant. Emissions exceeding the quantitative thresholds could contribute to existing or projected violations of the ambient air quality standards.

Construction would generate emissions at the sites and off site along the roadways traveled by construction traffic, including construction workforce and material delivery. Construction emissions would be caused by exhaust from vehicles and equipment (this includes O₃ precursors [VOC or ROG and NO_x], CO, and particulate matter [PM₁₀ and PM_{2.5}]) and fugitive dust/particulate matter from ground-disturbing activities and travel on unpaved surfaces and on paved roads. Activity assumptions used in the emissions estimates are detailed in Appendix D.

To minimize the amount of fugitive dust from unpaved surfaces and emissions from other ground-disturbing activities during the site preparation period, all construction activity would be required to comply with local air district rules regarding dust control (including SCAQMD Rule 403). Diesel and

gasoline-powered construction equipment would be classified as portable or as mobile sources (off-road equipment), and these sources are subject to statewide registration and fleet requirements. On-road motor vehicle emissions would occur primarily off-site. The on-road sources include the heavy-duty trucks to deliver equipment, concrete, water, and other materials, light-duty vehicles carrying crews, and medium-duty deliveries. Motor vehicle exhaust emissions would occur outside of the proposed work sites as the traffic would occur primarily over the region-serving transportation network.

The nature of construction-phase emissions is to be intermittent and variable due to the need for construction tasks to occur in sequences and adapt to changing site conditions. Additionally, emission sources would be dispersed over the Project sites and not always used continuously or at the same time. Substantial or adverse levels of localized ground-level concentrations would be unlikely with construction because pollutants would be emitted from several pieces of equipment dispersed over large areas. Dust control and engine exhaust would be subject to SCAQMD rules and regulations to avoid adverse levels of air pollutant concentrations.

The timing of the Projects would be interrelated. The 265-megawatt Arica Project would require up to 18 months of construction, and the 200-megawatt Victory Pass Project would require approximately 16 months of construction. The individual sites would have separate construction activity so that the sum of emissions generated at each site would peak separately. The targeted schedule of construction for each site spans 2022 and 2023. Because construction activities at the two sites could occur simultaneously, this analysis assumes that the month-by-month timing of construction would cause some activities to overlap during certain days of peak activity.

This analysis considers construction of each site to follow a sequence of four types of activities, as follows:

- Site preparation, mobilization, and grading
- Solar PV array assembly and installation, with solar module electrical construction
- Electrical construction including gen-tie, inverters, and battery storage and testing
- Commissioning and site cleanup

Including dust control (APM AIR-1) and off-road equipment emissions controls (APM AIR-2) would substantially reduce the construction emissions of NO_x , PM_{10} , and $\text{PM}_{2.5}$. To conserve water while controlling dust, APM AIR-1 would allow use of approved soil stabilizers or soil weighting agents on unpaved roads and disturbed areas. Because some commercially available chemical dust suppression products may cause odors or may contain compounds that are air pollutants, APM AIR-1 specifies using non-toxic soil stabilizers that avoid increasing another impact such as adverse odors or additional emissions of O_3 precursors ROGs or VOCs. In the effort to mitigate off-road construction equipment emissions of NO_x , emissions of CO would increase by approximately 15%. Although the SCAQMD LSTs would not be directly applicable to this project, construction phase CO emissions would be well below the applicable LST, which is over 2,000 lb/day for CO in east Riverside County (SCAQMD 2009). Accordingly, CO would not be emitted at levels that could cause a localized impact. This impact is not discussed further because CO is not a criteria pollutant for which the project region is non-attainment, and CO causes no existing violations of ambient air quality standards in the Projects' area. Project-related CO emissions would not be likely to cause a new violation of standards.

Table 3.3-3 summarizes the annual emissions within each of the calendar years of anticipated construction, including dust control practices (APM AIR-1) and off-road equipment engine standards (APM AIR -2).

Table 3.3-3. Arica and Victory Pass Projects: Construction Annual Emissions

Calendar Year	Annual Emissions, per calendar year (ton/year)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
2022	2.3	6.8	32.1	0.1	74.6	8.4
2023	1.8	4.7	21.9	0.1	64.0	7.2
Maximum Annual Emissions, Mitigated	2.3	6.8	32.1	0.1	74.6	8.4
Annual Emissions Thresholds for NEPA Purposes	25	25	100	100	70	70

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM₁₀ = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM_{2.5} = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; NEPA = National Environmental Policy Act.

Source: Appendix D-1, AQ/GHG Emissions Inventory; Appendix D-2, CalEEMod Output; Appendix D-4, Operations and Maintenance Building.

As seen in Table 3.3-3, the highest rate of construction emissions would occur during one single calendar year (2022), when construction activities at the two sites could occur simultaneously.

Table 3.3-4 summarizes the daily emissions control for dust control practices (APM AIR-1) and off-road equipment engine standards (APM AIR-2) to reduce the total emissions of NO_x, PM₁₀, and PM_{2.5}.

Table 3.3-4. Arica and Victory Pass Projects: Construction Daily Emissions

Calendar Year	Maximum Daily Emissions, per calendar year (lb/day)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
2022	42.6	107.5	595.9	1.5	1,397.9	155.5
2023	54.9	84.2	477.8	1.3	1,182.4	131.5
Maximum Daily Emissions, Mitigated	54.9	107.5	595.9	1.5	1,397.9	155.5
SCAQMD Daily Thresholds (Construction) for CEQA Purposes	75	100	550	150	150	55

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM₁₀ = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM_{2.5} = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SCAQMD = South Coast Air Quality Management District; CEQA = California Environmental Quality Act.

Source: Appendix D-1, AQ/GHG Emissions Inventory; Appendix D-2, CalEEMod Output; Appendix D-4, Operations and Maintenance Building.

With incorporation of dust control practices (APM AIR-1) and for off-road equipment engine standards (APM AIR-2), Table 3.3-4 shows that the maximum daily emissions of NO_x, PM₁₀, and PM_{2.5} during construction could still exceed the SCAQMD significance thresholds.

To further reduce the potentially significant daily rates of emissions that could occur when construction activities at the two sites occur simultaneously, the Projects could use an adaptive “construction activity management plan” as described in APM AIR-3. Implementing an activity management plan could prevent construction from causing concurrent or overlapping activities that cause the sum of emissions to exceed the SCAQMD significance thresholds. Initiating separate projects to facilitate off-site reductions of NO_x could also help to reduce the construction-related emissions to levels below the SCAQMD thresholds. This analysis assumes incorporation of an activity management plan as described in APM AIR-3. However, because the Applicants may find it infeasible to adjust the simultaneous construction activities at the two sites, this APM may not be sufficient to reduce the construction-related emissions to levels below the SCAQMD thresholds. This impact would remain significant and unavoidable. Therefore, even with incorporation of APMs as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in significant and unavoidable air quality impacts during construction.

Operation

LESS THAN SIGNIFICANT. Operations-related emissions would be caused by upkeep, maintenance, inspections, security, and panel washing. These activities necessary for each solar facility and the shared gen-tie line would involve up to six full-time workers for each site. The Projects would be required by general air district provisions to implement controls such as the use of water or chemical dust suppressants to minimize particulate matter emissions, to prevent visible emissions, and to avoid nuisances. Each of the proposed substations would include a 100-kilowatt emergency generator for use if the regional transmission system fails. Each standby emergency generator engine would be fueled either by diesel or propane, and these sources would require the Project to submit an application to the SCAQMD to obtain air permits before installing the engine at the site. The engines would need to meet the SCAQMD Best Available Control Technology requirements. No other stationary sources of air pollutants would be included in the proposed Projects.

Table 3.3-5 summarizes the daily emissions related to operation of the Projects, including standby emergency generators, assuming that emergency-use only, diesel-fueled units would be selected.

Table 3.3-5. Arica and Victory Pass Projects: Operation Daily Emissions

Source Category	Maximum Daily Emissions (lb/day)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Area Sources	1.77	0.16	17.79	0.001	0.06	0.06
On-road Motor Vehicle Trips	1.11	6.77	22.29	0.097	7.65	2.08
Standby Generators, Routine Testing	0.91	2.53	3.28	0.004	0.13	0.13
Maximum Daily Emissions	3.79	9.46	43.36	0.10	7.85	2.28
SCAQMD Daily Thresholds (Operation) for CEQA Purposes	75	100	550	150	150	55

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM₁₀ = particulate matter with an aerodynamic diameter equal to or less than 10 microns; PM_{2.5} = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; SCAQMD = South Coast Air Quality Management District; CEQA = California Environmental Quality Act.

Source: Appendix D-1, AQ/GHG Emissions Inventory; Appendix D-2, CalEEMod Output; Appendix D-4, Operations and Maintenance Building.

Emissions during O&M would be minor due to the limited number of crews and workers, and O&M emissions would not exceed the SCAQMD thresholds. With minimal direct emissions during operation, the Projects would not result in a cumulatively considerable net increase of any criteria pollutant, and this impact of air pollutant emissions would be less than significant. No operational-phase mitigation would be required. Therefore, as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts during operation.

Decommissioning

SIGNIFICANT AND UNAVOIDABLE. Future decommissioning impacts are anticipated to be similar to those determined for construction as described above. Therefore, even with incorporation of APMs AIR-1 through APM AIR-3, impacts are anticipated to remain significant and unavoidable during decommissioning. Therefore, even with incorporation of APMs as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in significant and unavoidable air quality impacts during future decommissioning.

If the Projects were decommissioned at different times, mitigation could likely reduce the impacts to less than significant. In addition, unknown future technologies in 35-50 years may further reduce potential emissions during future decommissioning.

Impact AQ-3. Would the project expose sensitive receptors to substantial pollutant concentrations?

Construction

LESS THAN SIGNIFICANT. Construction activities would result in locally increased concentrations of construction-related emissions, including criteria air pollutants, DPM, and other TACs, which would cause increased health risk and hazards near the site.

The accumulation and dispersion of air emissions within an air basin is dependent upon the size and distribution of emission sources in the region and meteorological factors such as wind, sunlight, temperature, humidity, rainfall, atmospheric pressure, and topography. As expressed in the amicus curiae brief submitted for the *Sierra Club v. County of Fresno* case (Friant Ranch Case) (SJVAPCD 2014), the air districts establish significance thresholds and recommend their use in CEQA air quality analyses of criteria pollutants. The significance thresholds were set at emission levels tied to the region's attainment status, based on emission levels at which stationary pollution sources permitted by the air district must offset their emissions. Such offset levels allow for growth while keeping the cumulative effects of new sources at a level that would not impede attainment of the NAAQS. The health risks associated with exposure to criteria pollutants are evaluated on a regional level, based on the region's attainment of the NAAQS; the mass emissions significance thresholds used in CEQA air quality analyses are not intended to be indicative of any localized human health impact that a project may have (SJVAPCD 2014). Therefore, the Projects' exceedance of the mass regional emissions threshold (i.e., project construction NO_x exceedance) from Projects-related activities does not necessarily indicate that the Projects would cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

The SCAQMD recommends using LSTs for determining near-field impacts as a result of criteria air pollutant emissions from a small development site (up to 5 acres). In contrast, the Projects would each develop approximately 1,400 acres of BLM-administered land. Accordingly, the localized thresholds would not be directly applicable. There are no sensitive receptors within 1 mile of the Project sites, and the nearest communities (Lake Tamarisk and Desert Center) are about 4.75 miles and 5.5 miles west of the sites, respectively. The mass of increased criteria air pollutant emissions during construction would lead to incremental changes in downwind concentrations of these pollutants. Of greatest concern are PM₁₀, PM_{2.5}, and O₃, due to the emissions of O₃ precursors VOCs or ROG and NO_x, which could exacerbate the health impacts of exposure to these pollutants. As noted above, construction phase CO emissions would be well below the applicable LST, which is over 2,000 lb/day for CO in east Riverside County (SCAQMD 2009). Accordingly, CO would not be emitted at levels that could cause a localized impact or hotspot.

Construction emissions would occur only during a small fraction of a lifetime, and construction would cease following completion of the project. By reducing project-level criteria pollutant emissions to levels that would be minor in a regional context, the adverse health effects of incremental criteria pollutant concentrations would also be minimized. The incorporation of dust control practices (APM AIR-1) and off-road equipment engine standards (APM AIR-2) into the Projects would reduce construction-related emissions of criteria pollutants to levels that would avoid exposing any sensitive receptors to substantial pollutant concentrations. With incorporation of APMs to reduce construction emissions, the impact of localized ground-level concentrations and incremental health effects of criteria pollutants would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

The primary health risks to nearby sensitive receptors would be driven by carcinogenic DPM emissions from on-site equipment and vehicles during construction. Noncancer effects of DPM are normally less of

a concern than cancer risks. The construction duration represents a potential to deliver a dose over a short time period, spanning less than 2 calendar years in this case. However, the recommended exposure duration for estimating cancer risk to residents or off-site workers would be 30 years or 25 years, respectively, according to the Office of Environmental Health Hazard Assessment's Guidance Manual for the Preparation of Health Risk Assessments (OEHHA 2015).

Health effects from carcinogenic TACs are usually described in terms of individual cancer risk over a 30-year exposure duration. This introduces uncertainty in the quantification of cancer risk, because the risk from construction emissions would occur only during a small fraction of a lifetime, and construction would cease following completion of the project. Therefore, the total exposure period for construction activities would be approximately 6% of the total exposure period used for typical residential health risk evaluation (30 years). Further, construction emissions would occur at variable rates during the short term and across a combined area of approximately 2,800 acres for the Projects, rather than as a steady rate of emissions. Concentrations of mobile source DPM emissions are greatly reduced by distance, such that a separation of 1,000 feet normally allows sensitive land uses to avoid high levels of DPM concentrations (CARB 2005). Because there are no sensitive receptors within 1 mile of the Project sites, there would be no potential to expose sensitive receptors to substantial pollutant concentrations of carcinogenic DPM. With incorporation of APMs to reduce construction emissions, the impact of localized ground-level concentrations and incremental health effects of toxic air contaminants would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts during construction.

Operation

LESS THAN SIGNIFICANT. The closest residence or inhabitable dwelling to the Project sites is over 1 mile away. Therefore, there would be no potential to expose sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts during operation.

Decommissioning

LESS THAN SIGNIFICANT. Future decommissioning impacts are anticipated to be similar to those determined for construction as described above. Therefore, with incorporation of APMs, impacts would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts during future decommissioning.

Impact AQ-4. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

NO IMPACT. During construction, there would be no other emissions or odors that would adversely affect a substantial number of people. The closest residential use to the Project sites is over 1 mile away. The Project sites are also relatively remote, and there is not a substantial number of people near the Project sites. Therefore, there would be no impact. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in no impact during construction.

Operation

NO IMPACT. During operations, there would be no potential emissions that lead to odors that would adversely affect a substantial number of people. The closest residence or inhabitable dwelling to the Project sites is over 1 mile away. Therefore, there would be no impact. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in no impact during operation.

Decommissioning

NO IMPACT. Future decommissioning impacts are anticipated to be similar to those determined for construction as described above. The proposed future decommissioning action would consider any changes in off-site residential receptors (although with the number of projects constructed, approved, and being permitted in the surrounding area, along with the surrounding public lands, it is unlikely that new residential development will occur near the Project sites). Therefore, there would be no impact. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in no impact during future decommissioning.

Cumulative Impacts

As discussed in Section 3.1.2, Cumulative Impact Scenario, the geographic area affected by the Projects and their potential to contribute to cumulative impacts is based on the topography surrounding the Projects' area and the natural boundaries affecting air resources. For air quality, the geographic scope of cumulative effects includes consideration of regional air emissions across the entire Mojave Desert Air Basin.

The construction and future decommissioning phase emissions related to the proposed Projects would likely occur concurrently with other cumulative projects in the Mojave Desert Air Basin and would contribute to the adverse effects of other cumulative projects to result in a cumulatively considerable impacts to air quality. The incremental contribution of the proposed solar facilities to the cumulative impact would be reduced through incorporation of APM AIR-1 (Fugitive Dust Control Plan), APM AIR-2 (Control On-Site Off-Road Equipment Emissions), and APM AIR-3 (Construction Activity Management Plan) into the Projects as identified in the discussion of Impact AQ-2. Because construction- and future decommissioning-related criteria air pollutant emissions would be mitigated and would entirely cease with completion of the 18-month duration of work and completion of future decommissioning, the construction and future decommissioning emissions would not cause substantial long-term cumulative impacts, and the incremental contribution of the proposed Projects to the cumulative air quality impact would be reduced to the extent feasible during construction and future decommissioning. Accordingly, the Projects' incremental contribution to the cumulative air quality impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to air quality.

3.3.4 Mitigation Measures

In addition to APMs, no other potentially feasible measures were identified to further avoid or substantially lessen impacts to air quality.

3.4 Biological Resources

This section evaluates environmental impacts to biological resources that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes biological effects across the resource spectrum for both of the proposed Projects as the whole of the action. This section describes the existing vegetation and habitat, common plants and wildlife, and special-status plants and wildlife on both sites and in the vicinity of the proposed Projects. In addition, applicable federal, local, and state laws and regulations regarding biological resources are identified in this section. The criteria used to evaluate the significance of potential impacts on biological resources and Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible are also identified. Furthermore, the methods used to evaluate the significance of potential impacts are detailed and, where impacts may be significant or potentially significant according to the criteria identified, potentially feasible mitigation measures are identified to avoid or substantially lessen those impacts to the extent feasible, consistent with the California Environmental Quality Act (CEQA).

The following issues regarding biological resources were raised during scoping:

- Potential effects to connectivity for wildlife in consideration of the California Desert Connectivity Project's Desert Linkage Network. These concerns are addressed under Wildlife Movement in Section 3.4.2, Environmental Setting, and Impact BIO-4.
- Performance of adequate seasonal surveys for sensitive plants, vegetation communities, and wildlife. The methods and results of seasonal field surveys are provided in the Biological Resource Technical Reports (BTRs) (Appendices E-1 and E-2) and the Victory Pass and Arica Shared Gen-tie Line Supplemental Memo (Appendix E-3) and summarized in Section 3.4.2.
- Evaluation of impacts from introducing unpermitted recreational activities by adding roadways, the introduction of non-native plants, the introduction of lighting and noise, and the loss and disruption of essential habitat due to edge effects. The Projects would not introduce new public roads. The other effects are addressed under Impact BIO-1.
- Evaluation of direct, indirect, and cumulative impacts to special-status species and recommendations for avoidance and minimization of impacts to Yuma Ridgway's rail (*Rallus obsoletus yumanensis*), desert tortoise (*Gopherus agassizii*), Mojave fringe-toed lizard (*Uma scoparia*), burrowing owl, migratory birds, desert kit fox (*Vulpes macrotis arsipus*), American badger (*Taxidea taxus*), and other rare species. These direct and indirect effects are addressed under Impact BIO-1 and cumulative effects are addressed in Section 3.4.3.
- Evaluation of impacts to waters of the state. Waters of the state are described under Jurisdictional Waters in Section 3.4.2 and Impact BIO-3.
- Evaluation of data and information on bird mortality due to collision with structures and the lake effect. Addressed under impacts to native birds in Impact BIO-1.
- Updates to mapping of microphyll woodlands. Current mapping of all vegetation types is provided in the BTRs (Appendices E-1 and E-2) and the Victory Pass and Arica Shared Gen-tie Line Supplemental Memo (Appendix E-3) and summarized in Section 3.4.2.

3.4.1 Regulatory Framework

The key federal, state, and local laws and regulations applicable to biological resources are identified and summarized in this section.

Federal Laws, Regulations, and Policies

Federal Land Policy and Management Act (43 USC 170–1787). Directs management of public lands managed by the U.S. Forest Service, National Park Service, and the Bureau of Land Management (BLM); addresses land use planning, rights-of-way (ROWs), wilderness, and multiple-use policies.

Endangered Species Act (16 USC 1531–1543). Establishes legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend. The Endangered Species Act (ESA) is administered by the U.S. Fish and Wildlife Service (USFWS) for terrestrial species. Under the ESA, USFWS may designate critical habitat for listed species. Section 7 of the ESA requires federal agencies to consult with USFWS to ensure that their actions are not likely to jeopardize listed threatened or endangered species, or cause destruction or adverse modification of critical habitat. Under the federal ESA, "the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" and "harm" is further defined to include significant habitat modification or degradation that actually kills or injures listed wildlife by significantly impairing essential behavioral patterns.

Migratory Bird Treaty Act (16 USC 703-711). Prohibits take of any migratory bird, including eggs or active nests, except as permitted by regulation (e.g., licensed hunting of waterfowl or upland game species). Under the Migratory Bird Treaty Act (MBTA), "migratory bird" is defined as "any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle" and applies to most native bird species.

On January 7, 2021, USFWS published a final rule defining the scope of the MBTA as it applied to conduct resulting in the injury or death of migratory birds protected by the MBTA. In a publication released on October 4, 2021, USFWS revoked that rule, effective December 3, 2021. The immediate effect of this final rule is to return to implementing the MBTA as prohibiting incidental take and applying enforcement discretion, consistent with judicial precedent and longstanding agency practice prior to 2017.

Bald and Golden Eagle Protection Act (16 USC Section 668). The Bald and Golden Eagle Protection Act prohibits the take, possession, and commerce of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). Under the act and subsequent rules published by USFWS, "take" may include actions that injure an eagle or affect reproductive success (productivity) by substantially interfering with normal behavior or causing nest abandonment. USFWS can authorize incidental take of bald and golden eagles for otherwise lawful activities.

Noxious Weed Act (7 USC Sections 2801 et seq.). Provides for the "management of undesirable plants on Federal lands."

Executive Order 13112, Invasive Species. Establishes the National Invasive Species Council and directs federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts caused by invasive species.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. Directs federal agencies to review the effects of actions and agency plans on migratory birds according to the National Environmental Policy Act or other established environmental review processes, with emphasis on

species of concern (Section 6 of the order); to identify unintentional take reasonably attributable to agency actions, focusing first on species of concern, priority habitats, and key risk factors; and to develop and use principles, standards, and practices to lessen the amount of unintentional take (Section 9).

California Desert Conservation Area Plan, As Amended. The California Desert Conservation Area (CDCA) Plan guides the management of approximately 12 million acres of BLM-administered lands in the California Desert District, including the Mojave, Sonoran, and a small portion of the Great Basin Deserts. The Projects are within the CDCA Plan area. The CDCA Plan directs management policy for multiple resources, including wildlife and vegetation.

Northern and Eastern Colorado Desert Coordinated Management Plan. The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) provides more specific management direction for BLM lands in the Colorado Desert, including the BLM lands located within the Projects' area. Establishes several Desert Wildlife Management Areas, which cover much of the USFWS-designated critical habitat for the desert tortoise.

Desert Renewable Energy Conservation Plan Land Use Plan Amendment to the CDCA. The purpose of the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) is to conserve and manage plant and wildlife communities in the desert regions of California while facilitating federal permitting of compatible renewable energy projects. The DRECP covers over 10 million acres of BLM land. The BLM Record of Decision for the DRECP was issued in September 2016. Projects that comply with the Conservation and Management Actions (CMAs) specified in the DRECP can be approved by BLM in a Development Focus Area (DFA) without the need for a LUPA. BLM describes the DRECP as a landscape-level plan that streamlines renewable energy development while conserving unique and valuable desert ecosystems and providing outdoor recreation opportunities. No state or local agency, including CDFW, has adopted or approved the DRECP. CDFW recognizes the DRECP under federal law as a land use plan for BLM. It is also a relevant regional plan for purposes of CDFW's lead agency review of the Projects under CEQA, including the DRECP's landscape-level focus on the conservation of, among other things, unique desert ecosystems in the plan area, which includes the Project sites.

State Laws, Regulations, and Policies

California Endangered Species Act (CESA) (California Fish and Game Code Section 2050 et seq.). CESA prohibits "take" of state-listed threatened or endangered species, or candidates for listing, except as authorized under the California Fish and Game Code. For purposes of CESA and the California Fish and Game Code generally, "'take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." In contrast to the federal ESA, take under the California Fish and Game Code does not include harm to or harassment of listed species. CDFW, among other options, may authorize otherwise prohibited take of CESA listed species with the issuance of an Incidental Take Permit, consistent with Sections 2081(b) and (c) of the Fish and Game Code.

Fully Protected Designations (California Fish and Game Code Sections 3511, 4700, 5050, and 5515). The California Fish and Game Code designates 36 fish and wildlife species as "fully protected." Take and possession of fully protected species is prohibited, except in limited circumstances. CDFW may authorize take and possession of fully protected species, for example, with an approved Natural Community Conservation Plan or for necessary scientific research, including efforts to recover those species.

Birds (California Fish and Game Code Sections 3503, 3503.5, and 3513). California Fish and Game Code Section 3503 prohibits take, possession, or the needless destruction of the nest or egg of any bird,

except as otherwise provided by the code or regulation made pursuant thereto. Section 3503.5 provides it is unlawful to take, possess, or destroy birds of prey, or to take, possess, or destroy the nest or eggs of any such bird, except as otherwise provided by the code or related regulation. Section 3513 prohibits take or possession of any migratory nongame bird, as designated in the federal MBTA—and its implementing regulations, except as provided by rules and regulations adopted by the U.S. Secretary of the Interior under the federal act (16 USC 703 et seq.) before January 1, 2017, any additional migratory nongame bird that may be designated in that federal act after that date, or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the U.S. Secretary of the Interior under that federal act before January 1, 2017, or subsequent rules or regulations adopted pursuant to that federal act, unless those rules or regulations are inconsistent with this code.

Protected Furbearers (14 CCR 460). Specifies that several furbearing mammals, including desert kit fox, may not be taken at any time. CDFW, in general, may permit capture or handling of these species for scientific research, but not in other circumstances.

Native Plant Protection Act (California Fish and Game Code Sections 1900-1913). California adopted the Native Plant Protection Act (NPPA) in 1977, prior to the enactment of CESA by name in 1984. The NPPA, in general, protects endangered and rare plants designated under the act. CESA, in general, as subsequently enacted in 1984, governs the listing of and related protection of endangered plants; the take prohibition in CESA incorporates certain exceptions in Section 1913 of the NPPA. Regulations adopted by the California Fish and Game Commission provide authority to CDFW to permit incidental take of NPPA designated rare plants, subject to certain conditions.

California Desert Native Plants Act (California Food and Agriculture Code Section 80001 et seq.; California Fish and Game Code Sections 1925-1926). The provisions in the California Desert Native Plants Act (California Food and Agriculture Code, Division 23) protect specific California desert native plants (i.e., species in the families Agavaceae, Cacti, Fouquieriaceae; species in the genera *Prosopis* and *Parkinsonia* (*Cercidium*); and the species *Acacia greggii*, *Atriplex hymenelytra*, *Dalea spinosa*, and *Olneya tesota*) from unlawful harvest on private and public lands in the California deserts of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. Within these counties, the California Desert Native Plants Act prohibits the harvest, transport, sale, or possession of specific native desert plants unless a person has a valid permit or wood receipt and the required tags and seals.

Lake and Streambed Agreement (California Fish and Game Code Sections 1600-1617). CDFW regulates project activities that would, among other things, divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake.

Porter-Cologne Water Quality Control Act of 1969 (California Water Code Sections 13000 et seq.). Provides Regional Water Quality Control Boards regulation of waters of the state including state coordination with the Clean Water Act where federally jurisdictional waters are present. The Projects are within the Colorado River Regional Water Quality Control Board area.

Local Laws, Regulations, and Policies

Because the Projects are entirely on BLM land, they are not required to meet local regulations. However, the following policies outlined in the Land Use and Open Space Elements of the Riverside County General Plan address biological resources and were reviewed for CEQA purposes (County of Riverside 2015, 2020):

- **Policy LU 9.1:** Provide for permanent preservation of open space lands that contain important natural resources, cultural resources, hazards, water features, watercourses including arroyos and canyons, and scenic and recreational values (AI 10).
- **Policy LU 9.2:** Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and Federal and State regulations such as CEQA, NEPA, the Clean Air Act, and the Clean Water Act.
- **Policy LU 24.1:** Cooperate with the CDFW, USFWS, and any other appropriate agencies in establishing programs for the voluntary protection, and where feasible, voluntary restoration of significant environmental habitats (AI 10).
- **Policy OS 18.1:** Preserve multi-species habitat resources in the County of Riverside through the enforcement of the provisions of applicable MSHCPs and through implementing related Riverside County policies. (The Projects' sites are not within an MSHCP area).

3.4.2 Environmental Setting

Regional Setting

This description of the biological resources of the proposed Projects is based on the Biological Resources Technical Report, Arica Solar Project, Riverside County, California (Arica BRTR; Appendix E-1) and the Biological Resources Technical Report, Victory Pass Solar Project, Riverside County, California (Victory Pass BRTR; Appendix E-2), both prepared by Ironwood Consulting in May 2021.

The proposed Projects are in the Chuckwalla Valley near the community of Desert Center, approximately halfway between the Cities of Indio and Blythe, in the Colorado Desert in unincorporated Riverside County, California. The Project sites are located within two 7.5-Minute U.S. Geological Survey topographic quadrangles: Sidewinder Well and Corn Springs. The elevation of the surrounding landscape ranges from less than 400 feet above mean sea level at Ford Dry Lake to 1,800 feet above mean sea level west of Desert Center and along the upper portions of the alluvial fans that surround the valley perimeter. The surrounding mountains rise to over 3,000 feet above mean sea level. The topography of the Project sites generally slopes downward toward the northeast at gradient of less than 1%.

Anthropogenic features and land use near the Project sites include active and fallow agriculture, renewable energy, energy transmission, and historical military operations.

The Projects are located entirely on federal land within the CDCA Plan area. The solar sites are not located within any Areas of Critical Environmental Concern (ACECs), but several ACECs are located within approximately 5 miles, including Chuckwalla to the west and south, Alligator Rock to the southwest, Corn Springs to the south, Desert Lily Preserve to the north, Palen Ford to the north and east, and Palen Dry Lake to the east. The Chuckwalla ACEC is located adjacent to the Victory Pass Project site, across Interstate (I) 10, and the shared gen-tie line would enter the ACEC within an existing corridor to reach the Red Bluff Substation, located in the ACEC. Joshua Tree National Park is located 5 miles north.

The entirety of the Project sites are located within the boundaries of the Riverside East Solar Energy Zone identified in the Solar Programmatic Environmental Impact Statement approved by a Record of Decision signed by BLM on October 12, 2012. Additionally, the Project sites are within the Chuckwalla Valley ecoregion subarea of the DRECP area. The DRECP LUPA and Final Environmental Impact Statement identifies the federal lands in and around the Project sites as a DFA, as approved by a Record of Decision signed by BLM on September 14, 2016.

Ironwood biologists performed full coverage wildlife surveys and focused special-status plant surveys on the proposed solar field survey area in fall 2019 and spring 2020 (described in detail in Appendices E-1 and E-2). The survey area (2,000 acres for Arica and 1,800 acres for Victory Pass) is larger than the proposed Projects' boundaries (approximately 1,355 acres for Arica and 1,310 acres for Victory Pass) because the boundaries were revised in response to the survey findings to meet the DRECP CMAs. Specifically, the boundaries of the Projects' disturbance areas were designed to minimize impacts to desert dry wash woodland and sensitive plant species to fully comply with the BLM CDCA Plan, as amended. Ironwood Consulting completed additional surveys of the gen-tie alignment (refer to Appendix E-3), access roads, and alternatives during work for the Arica and Victory Pass projects and for the adjacent solar projects including the Oberon Solar Project, Athos Solar Project, and Palen Solar Project and included data from this work in the information used for this Environmental Impact Report (EIR).

Vegetation and Habitat

The term habitat refers to the environmental and ecological conditions where a species is found. Wildlife habitat is generally described in terms of vegetation, though a more thorough explanation includes availability or proximity to water, suitable nesting or denning sites, shade, foraging perches, cover sites to escape from predators, soils that are suitable for burrowing or hiding, limited noise and disturbance, and other factors that are unique to each species. Vegetation reflects many aspects of habitat, including regional climate, physical structure, biological productivity, and food resources (for many wildlife species). Thus, vegetation is a useful overarching description for habitat, and it is one of the primary factors in the assessments of habitat suitability presented in this section, as well as the analysis of potential impacts to wildlife habitat presented in Section 3.4.3. Where additional details of habitat suitability are necessary, they are provided in the discussion of special-status wildlife species below. Examples include the aeolian sand requirements for the Mojave fringe-toed lizard and the availability of shade, cover, and water for burro deer.

Most of the vegetation on the Project sites is creosote bush scrub. One vegetation community present on both sites, desert dry wash woodland, is identified by BLM (2002) and CDFW (2020) as sensitive due to the association with alluvial processes. Development, construction, and other project-related activities in streams in desert dry wash woodland habitat are generally subject to CDFW's regulatory jurisdiction under Section 1600 of the California Fish and Game Code. One distinct natural habitat, desert pavement, is in the Victory Pass Project site and gen-tie line. Vegetation communities are described in the paragraphs below and mapped on Figure 3.4-1. Refer to Appendices E-1 and E-2 for detailed descriptions of vegetation communities.

Vegetation communities found within the Projects are as follows:

Sonoran creosote bush scrub. Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote bush scrub habitat of the Colorado Desert.

- *Arica Solar Project.* Most of the site is covered by creosote bush (*Larrea tridentata*) and burro bush (*Ambrosia dumosa*) and has an understory of annual buckwheat (*Eriogonum* sp.) and *Cryptantha*

species with sparse ironwood (*Olneya tesota*) and blue palo verde (*Parkinsonia florida*) near the southeastern boundary.

- *Victory Pass Solar Project*. Sonoran creosote bush scrub on the site is dominated by creosote bush and burro bush and has an understory of annual buckwheat and *Cryptantha* species. It occurs through most of the site, with ribbons of it located within the desert dry wash woodland in the western portion of the site.
- *Gen-Tie Line*. Sonoran creosote bush scrub is located within the gen-tie line.

Desert Dry Wash Woodland. The desert dry wash woodland on the site is Blue Palo Verde–Ironwood Woodland. It is a sensitive vegetation community, as identified in the NECO Plan and DRECP, and has a state rarity rank of S4 (CDFW 2020). Desert dry wash woodland is a xeric riparian community characteristic of desert washes. Development, construction, and other project-related activities in streams in desert dry wash woodland habitat are generally subject to CDFW’s regulatory jurisdiction under Section 1600 of the California Fish and Game Code. The DRECP includes it as one of the microphyll woodland communities. It is open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland, often supported by braided wash channels that change following every surface flow event and dominated by an open tree layer of ironwood, blue palo verde, and smoke tree (*Psorothamnus spinosus*). This habitat provides greater food, nesting, and cover, and its wildlife diversity is generally greater than in the surrounding desert. Examples of special-status species that depend in part on desert microphyll woodlands include black-tailed gnatcatcher (*Polioptila melanura*) and burro deer (*Odocoileus hemionus eremicus*). In addition, many of the species occupying the surrounding upland desert shrublands are found in greater numbers in microphyll woodlands.

- *Arica Solar Project*. Desert dry wash woodland is located along the western edge and southwestern corner of the Arica survey area.
- *Victory Pass Solar Project*. Desert dry wash woodland is located in the western half of the Victory Pass survey area with a ribbon of it near the eastern edge of the Victory Pass survey area.
- *Gen-Tie Line*. Desert dry wash woodland is located within the gen-tie line.

Desert Saltbush Scrub. Desert saltbush scrub is dominated by fourwing saltbush (*Atriplex canescens*) with sparse creosote bush and *Cryptantha* species within the understory.

- *Arica Solar Project*. Desert saltbush scrub is located on the Arica Project survey area near the sandier soils in the northern and western boundaries of the site.
- *Victory Pass Solar Project*. There is no desert saltbush scrub in the Victory Pass survey area.
- *Gen-Tie Line*. There is no desert saltbush scrub in the gen-tie line.

Desert Pavement. Desert pavement is primarily descriptive of soil and substrate conditions, rather than vegetation. It has a state rarity rank of S4 (CDFW 2020). The ground surface is sandy and gravelly mixed alluvium with various rocks and gravel. The shrub layer of creosote bush is extremely sparse.

- *Arica Solar Project*. There is no desert pavement in the Arica study area.
- *Victory Pass Solar Project*. Desert pavement is located only in the Victory Pass Project survey area primarily near the northern boundary of the site with small patches near the southern boundary.
- *Gen-Tie Line*. Desert pavement is located within the gen-tie line.

Jurisdictional Waters

Ironwood Consulting, on behalf of the Applicants, delineated waters on the Project sites that could be subject to the regulatory authority of CDFW, the U.S. Army Corps of Engineers, and the State Water Resources Control Board or the appropriate Regional Water Quality Control Board using desktop geographic information system analysis and field investigations during spring 2020 (Appendices E-4 and E-5). For purposes of CDFW, Ironwood Consulting used a methodology described in a document cited in the Projects delineation reports, (Mapping Episodic Stream Activity; refer to Appendices E-4 and E-5). In the field, transects were typically performed perpendicular to flow patterns to ensure field verification of all potentially jurisdictional waterways. Jurisdictional areas are shown in Figure 3.4-2.

Waters of the United States. Jurisdictional waters of the United States defined in the Clean Water Act include interstate waters such as lakes, rivers, streams (including intermittent streams), and their tributaries, but exclude ephemeral channels. In the case of intrastate waters (i.e., the ephemeral or intermittent drainage channels on the site), federal jurisdiction as waters of the United States applies only where degradation or destruction could affect interstate or foreign commerce.

The Project sites are located within a closed surface hydrology basin that drains to Ford Dry Lake; are not connected to any interstate waters or traditional navigable waters, such as the Colorado River; and do not meet the criteria described for waters of the United States. No territorial seas or navigable waters or their tributaries, lakes/ponds, or wetlands were found within the sites.

The U.S. Army Corps of Engineers has determined that no jurisdictional waters of the United States ~~were found within other projects in the same basin (Desert Sunlight, Desert Harvest, Palen, and Athos Solar Projects)~~ occur on site (BLM 2021). Therefore, waters of the United States do not occur within the Project sites and regulations under the Clean Water Act are not applicable.

Waters of the State. “Waters of the state” are defined to include “any surface water or groundwater, including saline waters, within the boundaries of the state” (Water Code Section 13050[e]). Unlike waters of the United States, no surface connection to larger water bodies is required under the state definition.

Streams. The only waters of the state found within the Project sites are streams that include Unvegetated Ephemeral Dry Wash and Desert Dry Wash Woodland.

Unvegetated Ephemeral Dry Washes were mapped consistent with the presence of active channels, primarily within the creosote bush scrub. Active channels within the lower alluvial fan, where the Project sites are situated, showed sign of frequent avulsion (changes in flow direction following surface water flow events) due to patterns of brief, intense surface water flow. The avulsion process results in a network of active and currently inactive channels. Active channels supported evidence of scour, cut banks, levee ridges, wrack lines, and organic drift. Inactive channels and swales were characterized as discontinuous, shallow depressions with no evidence of recent episodic flow.

In the Chuckwalla Valley area, the Desert Dry Wash Woodland (Blue Palo Verde–Ironwood Woodland) is the regional riparian vegetation type. Desert Dry Wash Woodland is characterized by braided wash channels that experience regular avulsion. Areas mapped as Desert Dry Wash Woodland were composed of ephemeral dry wash (streambed) and riparian interfluves within a matrix of dominant wash-dependent vegetation. Due to the abundance and close spacing of braided channels throughout the area, all mapped Desert Dry Wash Woodland is adjacent to one or more channels.

Special-Status Plants

Ironwood Consulting conducted focused special-status plant surveys in fall 2019 and spring 2020 on the full Project ROWs. The field methods were consistent with protocols recommended by USFWS, CDFW, California Native Plant Society, and BLM. The BRTRs provide a compilation of special-status plants with the potential to occur within the sites and vicinity. They evaluate the probability of occurrence for each species at each site based on habitat, elevational and geographic ranges, and field survey results. The complete methods and results of the surveys are provided in the Arica BRTR and Victory Pass BRTR (Appendices E-1 and E-2).

In this analysis, special-status plants include those species classified as one or more of the following:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal ESA
- Listed as threatened or endangered, or candidates for listing under CESA, or listed as rare under the California Native Plant Protection Act
- Designated by BLM as Sensitive Plants: “all plant species that are currently on List 1B of the California Native Plant Society Inventory of Rare and Endangered Plants of California, are BLM Sensitive Species, along with others that have been designated by the California State Director” (note that the California Native Plant Society Lists are now known as California Rare Plant Rank, or CRPR)
- Meet the definition of an endangered, rare, or threatened species under CEQA Guidelines Section 15380¹
- Considered special-status species in local or regional plans, policies, or regulations, such as the NECO Plan/Environmental Impact Statement, or by CDFW or USFWS

All special-status plant species that are anticipated to have a moderate to high potential to occur on the Project sites or were observed during 2019 and 2020 field surveys are described in Appendices E-1 through E-3. Special-status plants that were observed within the Project sites or that have high potential to occur are discussed further in the paragraphs below.

No plant species designated as endangered or threatened under the federal ESA or CESA, as listing candidates under the federal ESA or CESA, or as NPPA endangered or rare were observed or have the potential to occur on the Project sites or in the vicinity. The following special-status plant species have a high potential to occur or were observed on the Project sites during surveys (Figure 3.4-3). Some of the northern and eastern parts of the Arica Project site are mapped as aeolian deposits (Refer to Appendix E-1, Figure 4), which may support special-status plants or animals (Harwood’s eriastrum [*Eriastrum harwoodii*], Harwood’s milkvetch [*Astragalus insularis* var. *harwoodii*], or ribbed cryptantha [*Cryptantha costata*]). The Victory Pass Project site serves as a source for aeolian sand but no aeolian deposits are mapped on the site (refer to Appendix E-2, Figure 4). No special-status plants were observed or have moderate or high potential to occur along the gen-tie line.

¹ For this report, this is generally interpreted as all plants ranked as CRPR 1b and, in some cases, may include CRPR 2, 3, or 4 plant occurrences, which may be regionally significant if the occurrence is located at the periphery of the species’ range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate; therefore, all CRPR 1, 2, 3, and 4 plants are addressed in the EIR.

Harwood's eriastrum; CRPR 1B.2, BLM Sensitive Species (S). Harwood's eriastrum is a spring annual, typically found in dunes associated with the margins around dry lakes such as Dale, Cadiz, and Soda lakes. Reports of this species are known from San Bernardino, Riverside, Imperial, and San Diego Counties and Sonora, Mexico. There are 118 records of this species in California (CCH 2020). It has been observed within partially stabilized dunes at nearby project sites. Harwood's eriastrum was identified during the surveys of the Arica Solar ROW (Figure 3.4-3). The Applicants revised the boundaries of the proposed Arica Solar Project to comply with the 0.25-mile buffer for special-status plants as required under the DRECP CMA LUPA-BIO-PLANT-2.

- *Arica Solar Project.* Harwood's eriastrum is located along the northern portion of the Arica Solar survey area. It was not observed during surveys of the remainder of the Arica Solar survey area.
- *Victory Pass Solar Project.* Harwood's eriastrum was not observed during field surveys of the Victory Pass ROW and suitable windblown sand habitat is not present; it is not expected to occur.
- *Gen-Tie Line.* No Harwood's eriastrum was observed or has moderate or high potential to occur within the gen-tie line.

Emory's crucifixion thorn (*Castela emoryi*); CRPR 2B.2. Emory's crucifixion thorn is uncommon but widespread in broad sandy wash habitat in the area. There are several records of occurrences within Riverside County, near or within Desert Center, including Desert Sunlight Solar Farm just north of the Project sites and at Athos Solar Project (CCH 2020).

- *Arica Solar Project.* Suitable habitat is located within wash areas, and it was observed in ~~one two~~ locations in the western portion of the development footprint (Figure 3.4-3). No additional occurrences on the Project site are expected because it is a large conspicuous shrub that can be identified at any time of year, even in years of poor rainfall, and is not easily overlooked.
- *Victory Pass Solar Project.* Suitable habitat is present in wash areas, and it was observed in one location in the eastern portion of the development footprint (refer to Figure 3.4-3) ~~but it was not observed during surveys. Therefore, it is considered absent from this site.~~
- *Gen-Tie Line.* No Emory's crucifixion thorn was observed or has moderate or high potential to occur within the gen-tie line.

Harwood's milkvetch; CRPR 2B.2. Harwood's milkvetch's primary habitat is windblown sand. It has historic and recent collections including, but not limited to, Chuckwalla Basin in Riverside County. There are several California Natural Diversity Database records for this species within the Project vicinity (CNDDDB 2020). Many new occurrences were documented in the Chuckwalla Valley and the Palo Verde mesa during surveys for the Blythe Solar Power Project, the Genesis Solar Energy Project, McCoy Solar Energy Project, and Palen Solar Power Project study areas.

- *Arica Solar Project.* Suitable habitat is present, and it was observed in two locations in the northern portion of the development footprint (Figure 3.4-3).
- *Victory Pass Solar Project.* Harwood's milkvetch was not observed during field surveys and suitable windblown sand habitat is not present. It is not expected to occur.
- *Gen-Tie Line.* Harwood's milkvetch was not observed within the gen-tie line and suitable windblown sand habitat is not present. It is not expected to occur.

Ribbed cryptantha; CRPR 4.3. Ribbed cryptantha occurs in windblown sand habitats. It has 279 records from several locations throughout Riverside, Imperial, and San Diego Counties (CCH 2020). A large local occurrence of ribbed cryptantha was observed just east of the nearby proposed Palen Solar Power

Project. Ribbed cryptantha occurrences in and around the Project sites are on typical habitat, not at the margins of its geographic range, and no unusual morphological features have been reported.

- *Arica Solar Project*. Suitable habitat is present, and several large occurrences were observed in the northern portion of the survey area.
- *Victory Pass Solar Project*. Ribbed cryptantha was not observed during field surveys and suitable windblown sand habitat is not present. It is not expected to occur.
- *Gen-Tie Line*. Ribbed cryptantha was not observed within the gen-tie line and suitable windblown sand habitat is not present. It is not expected to occur.

Special-Status Wildlife

In this analysis, special-status wildlife include those species classified as one or more of the following:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal ESA
- Listed as threatened or endangered or candidates for listing under CESA
- California Fully Protected species
- Meet the definition of an endangered, rare, or threatened species under CEQA Guidelines Section 15380
- Considered special-status species in local or regional plans, policies, or regulations, such as the NECO Plan/Environmental Impact Statement, or by CDFW or USFWS

Ironwood conducted full-coverage wildlife surveys in fall 2019 and spring and fall 2020 on the full ROW application areas. Surveys conducted within the gen-tie line are described in Appendix E-3. Surveys focused on identifying individuals or sign of special-status species, including desert tortoise, Mojave fringe-toed lizard, burrowing owl, desert kit fox, and American badger, and other species as appropriate. In addition to focused surveys for specific animals, the surveys were designed to characterize habitat suitability for all special-status wildlife, including presence or absence of unique habitat features such as potential breeding pools for Couch's spadefoot toad (*Scaphiopus couchii*) or suitable roosting sites for special-status bats.

Surveys in fall 2019 conformed to full coverage desert tortoise protocol surveys. The field methods included one full coverage burrowing owl survey during breeding season in spring 2020, consistent with California Burrowing Owl Consortium (CBOC) guidelines and partially consistent with survey actions presented in the Staff Report on Burrowing Owl Mitigation (CDFG 2012). The surveys identified all burrows and all evidence of wildlife use, including use by desert tortoise, burrowing owl, desert kit fox, and American badger.

During all wildlife surveys, biologists recorded all wildlife species observed, regardless of status. All special-status wildlife that are anticipated to have a moderate to high potential to occur on the Project sites, or were observed during 2019 and 2020 field surveys, are listed and described in Appendices E-1 through E-3. Species present or with high potential to occur are reviewed further below (Figure 3.4-4). A detailed discussion of all special-status wildlife analyzed for the Projects, including their ranges and habitat requirements, is presented in Appendices E-1 through E-3.

Amphibians and Reptiles

Couch's spadefoot toad; Species of Special Concern (SSC), BLM S. Couch's spadefoot uses late season monsoonal rain pools for breeding, development and hatching of eggs into tadpoles, and development of juvenile toads. It requires rain pools that hold water long enough for the eggs and tadpoles to develop and

then disperse into surrounding habitat. Although there are some areas where rainwater may accumulate, no suitable breeding pools have been identified on the site, nor have any been observed on multiple field surveys of nearby sites (Desert Sunlight, Desert Harvest, Palen, and Athos Project sites). Its geographic range is the eastern part of the California desert, where monsoon rains and lowland topography provide suitable breeding pools. Based on the lack of any nearby records over multiple years of surveys in the area, Couch's spadefoot toad is not expected to occur on the Project sites.

Desert tortoise; State Threatened and Candidate Endangered and Federally Threatened. The Project sites are located within the Colorado Desert Recovery Unit (USFWS 2011). Predicted desert tortoise occupancy values were determined as a general habitat assessment metric (BLM 2002).

- *Arica Solar Project.* The site is not within desert tortoise critical habitat. Predicted desert tortoise occupancy levels are lowest in the northernmost portion of the site (less than 0.3) and increase toward the southwest. The highest occupancy levels of 0.5-0.6 are in the southwest portion of the site (Figure 3.4-5, Special-Status Reptiles). The only desert tortoise sign observed during field surveys was a Class 4 desert tortoise burrow (good condition, possibly desert tortoise) on the western boundary of the survey area. This sign is outside of the Arica fence line encompassing the 1,355-acre Arica solar field area. This is consistent with the predicted occupancy model, with the only observed sign occurring in the area with occupancy values of 0.0-0.5 (Appendix E-1).
- *Victory Pass Solar Project.* The Project site is located within the Colorado Desert Recovery Unit and partially within USFWS-designated critical habitat for desert tortoise that is also designated as a Desert Tortoise Conservation Area in the DRECP. The southern margin of the site is partially within the Chuckwalla Desert Tortoise Critical Habitat Unit (CHU) but not within the Chuckwalla ACEC (refer to Figure 3.4-6, Conservation Designations). The ACEC includes most of the CHU but excludes the portion of the CHU north of I-10, which was instead identified in the DRECP as a DFA. Predicted desert tortoise occupancy levels are lowest (0.4-0.5) in the northwestern and northeastern corners of the site. Occupancy levels increase in the southwest portion of the site to 0.6-0.7 (Figure 3.4-5). Biologists observed desert tortoises in five locations on the Project site in areas with occupancy levels higher than 0.5. Biologists observed five Class 1 active desert tortoise burrows, two Class 2 burrows in good condition, two Class 3 burrows in deteriorated condition, one Class 2 pallet, two areas with desert tortoise scat, and five areas with desert tortoise tracks. The most active sign observed was concentrated in areas with higher occupancy values, consistent with the predicted occupancy model.
- *Gen-Tie Line.* The gen-tie line is located within the Colorado Desert Recovery Unit and partially within USFWS-designated critical habitat for desert tortoise that is also designated as a Tortoise Conservation Area in the DRECP. The western margin of the gen-tie line is partially within the Chuckwalla Desert Tortoise CHU but not within the Chuckwalla ACEC (refer to Figure 3.4-6). The ACEC includes most of the CHU but excludes the portion of the CHU north of I-10, which was instead identified in the DRECP as a DFA. The predicted occupancy levels range from 0.5–0.6 along the northern portion of the gen-tie to 0.6–0.7 along the southern portion of the gen-tie line (Figure 3.4-5). Desert tortoise sign was observed within the gen-tie line (Ironwood Consulting 2021).

Mojave fringe-toed lizard; SSC, BLM S. Mojave fringe-toed lizard is primarily found in fine, loose, aeolian (windblown) sand habitat, and in particular in sand dunes. It also uses stabilized or partially stabilized sands and surrounding habitats at the margins of dry lakebeds, washes, and isolated pockets of aeolian sand against hillsides, and mixed habitat such as hummocks or pockets of soft sand interspersed with hard-packed sand and less suitable densities and composition of vegetation. Mojave fringe-toed lizards normally hibernate from November to February; from May to September, they are active in mornings and late afternoon, but seek cover during the hottest parts of the day.

- *Arica Solar Project.* Mojave fringe-toed lizard distribution within the Project area is consistent with suitable sandy soil conditions. All detections for Mojave fringe-toed lizard were concentrated within areas where the DRECP distribution model for the species overlapped with sandier areas, with a total of 32 areas of observations within the survey area near the northern and eastern boundaries (Figure 3.4-5). The sandiest portions of these areas, and in particular sand dunes, would be avoided by the Project footprint.
- *Victory Pass Solar Project.* The DRECP distribution model ends northeast of the site and does not overlap with the site. No Mojave fringe-toed lizards were observed, and suitable windblown sand habitat is not present.
- *Gen-Tie Line.* The DRECP distribution model does not overlap the gen-tie line. No Mojave fringe-toed lizards were observed, and suitable windblown sand habitat is not present.

Golden eagle; California Fully Protected (CFP), Watch List (WL), Birds of Conservation Concern (BCC), BLM S. Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August with peak activity March through July (Kochert et al. 2002). Habitat for golden eagles typically includes rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on rabbits and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002). They generally nest in rugged, open habitats with canyons and escarpments, often with overhanging ledges and cliffs or large trees used as cover.

No focused golden eagle surveys were conducted specifically for the Projects. Golden eagle surveys and raptor surveys have been conducted on a multitude of projects within 10 miles of the Project sites since 2010. The most recent survey was conducted in spring 2020. Active nests and territories were detected in the Coxcomb, Eagle, Hexie, and Little San Bernardino Mountains and Joshua Tree National Park.

The Project sites do not have suitable nesting habitat for golden eagles, but there is suitable foraging habitat. The nearest known cliff sites suitable for nesting are located southeast of the Project sites in the Chuckwalla Mountains, north of the sites in the Coxcomb and Eagle Mountains, and west of the sites in the Palen Mountains. No golden eagles were observed during surveys for the Projects or gen-tie line.

Burrowing owl (*Athene cunicularia*); SSC, BCC, BLM S. Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. The Southern California breeding season (defined as the time from pair bonding of adults to fledging of the offspring) generally occurs from February to August, with peak breeding activity from April through July, although in deserts this seasonality is likely to vary from year to year, depending on rainfall and prey availability. In the Colorado Desert, burrowing owls generally occur at low densities in scattered locations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant.

- *Arica Solar Project*. Five observations of live individuals flying or perching, eight observations of live individuals at burrows with sign, and five burrows with sign (whitewash, pellets, or feathers) were recorded.
- *Victory Pass Solar Project*. Three live individuals flying or perching, three burrows with sign (whitewash, pellets, or feathers), and a burrowing owl kill site, where an owl had killed its prey, were observed.
- *Gen-Tie Line*. No burrowing owl individuals or sign were observed during surveys within the gen-tie line.

California horned lark (*Eremophila alpestris actia*); WL. The California horned lark is found throughout California except the north coast and is less common in mountainous areas. It nests in open areas. There are numerous records in Riverside County. Suitable habitat for foraging and nesting is found throughout the sites and California horned larks were observed frequently at both sites. Observation locations were not mapped because of the low conservation status (WL) and widespread occurrence throughout the Project sites, gen-tie line, and access roads.

Prairie falcon (*Falco mexicanus*); WL, BCC. Prairie falcon nesting and foraging habitats are similar to those of the golden eagle (above), although their primary prey differ (they tend to be ground squirrels and other small mammals, birds, and lizards). The Project sites support suitable foraging habitat but do not provide suitable nesting habitat.

- *Arica Solar Project*. Prairie falcons were observed seven times in flight throughout the Arica Solar survey area during surveys.
- *Victory Pass Solar Project*. Prairie falcons were observed twice in flight throughout Victory Pass Solar survey area during surveys.
- *Gen-Tie Line*. One prairie falcon was observed in flight during surveys along the gen-tie line.

American peregrine falcon (*Falco peregrinus anatum*); BCC, CFP. The American peregrine falcon was formerly listed under CESA and ESA but has been delisted under both acts. In California, its range is primarily central to Northern California, with wintering habitat located in Southern California. Migrants occur along the coast and in the western Sierra Nevada in spring and fall. It is found irregularly in the southern desert region, generally during migratory and winter seasons. It nested historically in desert mountain ranges near the Colorado River and may be re-occupying this historical part of its nesting range as its populations recover. Suitable migratory or foraging habitat is present throughout both the Arica and Victory Pass sites, but no suitable nesting habitat is present.

- *Arica Solar Project*. Suitable migratory or foraging habitat is present throughout the Arica Solar site, but no suitable nesting habitat is present. No individuals were observed within the Arica site.
- *Victory Pass Solar Project*. Suitable migratory or foraging habitat is present throughout the Victory Pass Solar site, but no suitable nesting habitat is present. One live individual was observed incidentally flying over the Victory Pass site.
- *Gen-Tie Line*. Suitable migratory or foraging habitat is present throughout the Arica Solar site, but no suitable nesting habitat is present. No individuals were observed within the gen-tie line.

Loggerhead shrike (*Lanius ludovicianus*); SSC (nesting), BCC. Loggerhead shrikes are uncommon year-round residents throughout much of Southern California. They initiate their breeding season in February and may continue with raising a second brood as late as July. Suitable habitat for loggerhead shrike is found throughout the Project sites and gen-tie line.

- *Arica Solar Project*. There were 10 observations of individuals flying and perching during surveys for Arica Solar.
- *Victory Pass Solar Project*. There were 10 observations of individuals flying, perching, or singing for Victory Pass Solar. One of the Victory Pass observations was a nesting loggerhead shrike.
- *Gen-Tie Line*. No loggerhead shrikes were observed in the gen-tie line.

Gila woodpecker (*Melanerpes uropygialis*); State Endangered, BLM S. Gila woodpecker is a permanent resident across its range, including southeast California along the Colorado River. Gila woodpeckers prefer large patches of woody riparian vegetation for nesting, but they have also been documented in various habitat types, such as desert washes and residential areas. In California, their primary habitat is cottonwood-willow riparian woodland, where they excavate cavity nests in large trees. Where Gila woodpeckers occur in dry desert wash woodlands, they excavate cavity nests in large blue palo verdes. Within the Projects' ROWs, potentially suitable habitat is found in desert washes in palo verde or ironwood trees large enough for cavity nests. The Projects would avoid these areas. No Gila woodpeckers were observed during the surveys.

Elf owl (*Micrathene whitneyi*); State Endangered, BLM S. Elf owl breeds in lowland habitats that provide cover and good nesting cavities, and winters in Mexico and southward. The Project sites are near the western margin of its geographic range. Elf owls probably have never been common in California. The elf owl is a secondary cavity nester (it nests in cavities of trees and cacti, generally in disused woodpecker nests). Its nesting habitat is closely correlated with nesting habitat of woodpeckers, including Gila woodpecker. Elf owls have been documented nesting near Wiley's Well, east of the Project sites. No elf owls were observed during surveys but trees within the desert dry wash woodland habitat could provide suitable marginal (Arica) and suitable (Victory Pass) habitat for nesting. These areas would be avoided by the revised Project boundaries. The desert dry wash woodland within the gen-tie line is minimal.

Black-tailed gnatcatcher (*Polioptila melanura*); WL. Black-tailed gnatcatchers are year-round residents in southeastern California and east through Arizona to southern Texas and northern Mexico. They are found in arid scrublands, desert brush, and dry washes. Suitable foraging and potential nesting habitat are present throughout the Project sites; there were several incidental observations during surveys and avian counts. Observation locations were not mapped because of the low conservation status (WL) and widespread occurrence throughout the Project sites and gen-tie line.

Le Conte's thrasher (*Toxostoma lecontei*); SSC. Le Conte's thrasher is a year-round resident in the Colorado Desert, occurring in desert flats, washes, and alluvial fans with sandy or alkaline soil and scattered shrubs. Its preferred nest sites are thorny shrubs and small desert trees; nesting rarely occurs in monotypic creosote scrub habitat or Sonoran Desert woodlands.

- *Arica Solar Project*. Suitable foraging habitat is located throughout the site. Suitable nesting habitat is present only in the desert dry wash woodland areas (a small area in the southwest corner of the site) and potential for nesting is low. One individual was observed singing.
- *Victory Pass Solar Project*. Suitable foraging habitat is located throughout the site. Suitable nesting habitat may only occur in the desert dry wash woodland areas and potential for nesting is low. One individual was observed foraging and perching on the site.
- *Gen-Tie Line*. Suitable foraging habitat is located throughout the gen-tie line. Suitable nesting habitat may only occur in the desert dry wash woodland areas and potential for nesting is low.

Special-status seasonal migrant birds. The following special-status bird species may migrate through the region during spring or fall or may spend winters in the vicinity but would not nest on or near the Project sites or gen-tie line due to absence of suitable wetland or riparian nesting habitat or due to geographic range. Potential for occurrence on the Project sites or gen-tie line is minimal, except for brief overflight or migratory stopovers.

- *Ferruginous hawk* (*Buteo regalis*); *WL, BCC*. Potential foraging habitat during winter or migratory seasons, no potential nesting, outside breeding range.
- *Swainson's hawk* (*Buteo swainsoni*); *State Threatened, BBC*. Potential foraging habitat during migratory season, no potential nesting, outside breeding range. One individual was observed flying over the Arica Solar Project site.
- *Northern harrier* (*Circus cyaneus*); *SSC*. Potential foraging habitat during winter or migratory seasons, no potential nesting. One individual was observed flying over the Arica Solar Project site.
- *Short-eared owl* (*Asio flammeus*); *SSC*. Potential foraging habitat during winter or migratory seasons, no potential nesting. One individual was observed flying and roosting on the Arica Solar Project site.
- *Vaux's swift* (*Chaetura vauxi*); *SSC*. Potential stopover foraging occurrence during migration; no potential nesting.
- *Mountain plover* (*Charadrius montanus*); *SSC*. Potential foraging habitat during winter or migratory seasons; no potential nesting, outside breeding range.
- *Sonora yellow warbler* (*Setophaga petechia sonorana*); *SSC, BCC*. Potential stopover foraging occurrence during migration; no potential nesting.
- *Yellow-breasted chat* (*Icteria virens*); *SSC*. Potential stopover foraging occurrence during migration; no potential nesting.
- *Yuma Ridgway's rail*; *Federally Endangered, California Threatened (CT), CFP*. Potential stopover occurrence during dispersal; no potential nesting.
- *Yellow billed cuckoo* (*Coccyzus americanus occidentalis*); *Federally Threatened, California Endangered, BLM S*. Potential stopover occurrence during migration; no potential nesting.
- *Least Bell's vireo* (*Vireo bellii pusillis*); *Federally Endangered, CE*. Potential stopover occurrence during migration; no potential nesting.

Mammals

Burro deer; California Protected Game Species (CPGS). Burro deer is a subspecies of mule deer (*O. hemionus*) that inhabits desert dry wash woodland communities in the Colorado Desert. During hot summers burro deer concentrate along the Colorado River, natural springs, or near anthropogenic water sources such as the Coachella Canal or agricultural areas where water developments have been installed and where microphyll woodland is dense and provides good forage and cover.

- *Arica Solar Project*. Burro deer scat and tracks were observed throughout the Project site, but less so in areas with aeolian sand transport. Burro deer may cross the site to access nearby agriculture for water sources.
- *Victory Pass Solar Project*. Scat and tracks were observed throughout the Project site and a partial carcass (skull with antlers) was also observed. Burro deer cross the site to access nearby agriculture for water sources.

- *Gen-Tie Line*. Burro deer sign was observed within the northern portion of the gen-tie line (Ironwood Consulting 2021).

American badger; SSC. The American badger is found in many habitat types where there is an adequate prey base of burrowing rodents and friable soils. Suitable habitat for American badgers is located throughout the Project sites and gen-tie line. There are several canid burrows and complexes observed that could be used by the species, although no badgers were observed and none of the burrows showed definitive badger sign.

Desert kit fox; California Protected Furbearing Mammal (CPF). Desert kit fox is not recognized as rare, but it is a protected fur-bearing mammal pursuant to Section 460 in Title 14 of the California Code of Regulations. Its prey includes small rodents, primarily kangaroo rats, rabbits, lizards, insects, and in some cases, immature desert tortoises. Burrow complexes that have multiple entrances provide shelter, escape, cover, and reproduction, but desert kit foxes also utilize single burrows for temporary shelter. Population numbers are likely to change over time since kit fox distribution is dynamic and populations change under natural conditions due to prey availability and other environmental factors such as the presence of coyotes that prey on kit fox pups.

- *Arica Solar Project*. One old partial carcass of a kit fox was observed. Active and inactive desert kit fox burrows and scat were observed throughout the site. A total of 25 kit fox burrows were observed, 9 of which showed active sign.
- *Victory Pass Solar Project*. There were 3 active kit fox burrows and 14 inactive kit fox burrows observed on the site. In total, 16 unidentified canid burrows and burrow complexes (multiple-entrance connected burrows) were observed that could be used by kit foxes.
- *Gen-Tie Line*. No kit fox burrows were observed in the gen-tie line.

Special-status bats. Seven special-status bat species may forage on or near the Project sites and gen-tie line, as described below and discussed further in Appendices E-1 and E-2. While any of these species may fly over the site to foraging or roosting sites, there is limited roosting potential on the sites for two special-status bat species in the dry wash woodland habitat. No active bat roosts were documented on the sites during surveys. Suitable bat roosts (e.g., rock ledges, cliffs, large tree hollows, mine shafts) occur a few miles from the Project sites in the mountain ranges surrounding the Chuckwalla Valley.

Many bats, including special-status species, forage primarily on large insects such as moths, and tend to concentrate foraging activity around water sources such as the irrigation sources around nearby active agricultural areas. Suitable foraging habitat for common and special-status bats is found on the sites within desert dry wash woodland and near adjacent agricultural parcels where water may be available year-round. One live unidentified bat species was observed within an Ironwood tree cavity during surveys of the Victory Pass site. Acoustic surveys for the Palen Solar Power Project, 1 mile east of the Project sites, detected five special-status bats in the projects' vicinity.

- *Townsend's big-eared bat (Corynorhinus townsendii)*; SSC, BLM S. Foraging habitat in desert dry wash woodland. No roosting habitat.
- *California leaf-nosed bat (Macrotus californicus)*; SSC, BLM S. Suitable foraging habitat, but no roosting habitat.
- *Pallid bat (Antrozous pallidus)*; SSC, BLM S. Marginal foraging habitat in desert dry wash woodland. No roosting habitat. Surveys for Palen Solar (1 mile east) detected pallid bat in project vicinity.

- *Western mastiff bat* (*Eumops perotis californicus*); SSC, BLM S. Suitable foraging habitat, but no roosting habitat. Surveys for Palen Solar (1 mile east) detected western mastiff bat in project vicinity.
- *Western yellow bat* (*Lasiurus xanthinus*); SSC. Potential marginal roosting habitat in desert dry wash woodland. Suitable foraging habitat. Surveys for Palen Solar (1 mile east) detected western yellow bat in project vicinity.
- *Big free-tailed bat* (*Nyctinomops macrotis*); SSC. Marginal foraging and roosting habitat in desert dry wash woodland. Surveys for Palen Solar (1 mile east) detected big free-tailed bat in project vicinity.
- *Pocketed free-tailed bat* (*Nyctinomops femorosaccus*); SSC. Suitable foraging habitat, but no roosting habitat. Surveys for Palen Solar (1 mile east) may have detected presence, but the result was not definitive.

Wildlife Movement

Wildlife migration corridors and movement routes are areas that connect suitable habitat in a region that may otherwise be fragmented by human disturbance, difficult terrain, or unsuitable vegetation. Natural features, including drainages, ridgelines, or contiguous natural habitat may provide routes or corridors for wildlife movement. Wildlife movement routes are critical to survival and reproduction for wildlife populations, as they provide expanded access to mates, food, and water across broad geographic areas; allow for dispersal from high-density areas; and facilitate gene flow among populations.

Accessibility between habitat areas (i.e., “connectivity”) is important to long-term genetic diversity and demography of wildlife populations. In the short term, connectivity may be important to individual animals’ ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations apply to greater or lesser extent to all plants and animals. Plant populations “move” over the course of generations via pollen and seed dispersal; most birds and insects travel and disperse via flight; terrestrial species, including small mammals, reptiles, arid land amphibians, and non-flying invertebrates, disperse across land. Therefore, landscape barriers and impediments are more important considerations for movement of terrestrial species. These considerations are especially important for rare species and wide-ranging mammals, which tend to exist in lower population densities.

Movement opportunity varies for each species depending on behavioral constraints, as well as the presence of native habitats and landscape impediments. In the Chuckwalla Valley, the biologically important functions of large mammal movement are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Desert bighorn sheep (*Ovis canadensis nelsoni*) occupy habitat in the desert mountain ranges surrounding the upper Chuckwalla Valley, and they occasionally use the valley floor habitat either for foraging (near the lower mountain slopes) or as movement routes to reach other subpopulations in surrounding mountain ranges. While no sign of bighorn sheep was found during surveys, they may use the Project areas for movement across the valley. Desert tortoises and other less mobile animals may live out their entire lives within a linkage area between larger habitat blocks; for these species, movement among surrounding habitat areas may take place over the course of several generations.

In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout much of the region, but specific barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on specific sites where animals can cross linear barriers (e.g., wash crossings beneath I-10), and on broader linkage areas that may support stable, long-term populations of target species and allow demographic movement and genetic exchange among populations in distant habitats (e.g., surrounding mountains).

The Project sites are in the Chuckwalla Valley east of Desert Center. The valley is surrounded by the Chuckwalla Mountains to the south, the Palen Mountains to the east, the Coxcomb Mountains and Palen Valley to the north, and the Eagle Mountains to the west. Joshua Tree National Park is located to the north within 5 miles and to the west within 12 miles. Anthropogenic uses in the vicinity that present barriers to movement include I-10 to the south, the Desert Center Airport, other roads and fences, and several other active and proposed solar project facilities that surround the Projects.

The California Desert Connectivity Project identified a Desert Linkage Network to maintain habitat for movement between landscape blocks for a diversity of focal plant and wildlife species, including badger, kit fox, bighorn sheep, pallid bat, burrowing owl, loggerhead shrike, black-tailed gnatcatcher, LeConte's thrasher (*Toxostoma lecontei*), desert tortoise, and Mojave fringe-toed lizard. The landscape blocks (i.e., large, relatively natural habitat areas that support native diversity) identified in the project vicinity are the Palen–McCoy Mountains to the northeast and the Chocolate Mountains to the southwest. Broad habitat linkages that overlap the Project areas connect these landscape blocks. The DRECP identifies a wide multispecies linkage area adjacent to the Arica Solar Project site to the west and overlapping the western portion of the Victory Pass Solar Project site (Figure 3.4-6). The Victory Pass Solar Project area was, nevertheless, designated as a DFA in the DRECP, indicating that BLM determined the corridor outside the Project area would be sufficient for wildlife movement.

The California Essential Habitat Connectivity Project identified areas surrounding the Project sites as Natural Landscape Blocks, including the Coxcomb Mountains to the north, the Eagle Mountains to the west, Palen Mountains to the east, and Chuckwalla Mountains to the south. The California Essential Habitat Connectivity Project identifies the Project sites and surrounding areas as Essential Connectivity Areas.

The Colorado River Aqueduct and I-10, located north and south of the Projects, respectively, are significant obstructions to movement by terrestrial wildlife. There are a few short belowground segments of the aqueduct, but it is impassable to terrestrial wildlife except at those points. Some species, such as coyote, may learn to cross the freeway safely. However, the freeway presents an impassable or high-risk barrier to north–south movement for most terrestrial species, except at underpasses at wash crossings. On the 32-mile stretch of I-10 between the Desert Center and Wiley Wells Road exits there are 24 crossings that provide connectivity and movement corridors between habitat to the north and south of I-10. Three of these crossings are located adjacent to the Victory Pass Project site to the south. An additional nine crossings are located within 5 miles of the Victory Pass Project site (Figure 3.4-6).

Wildlife species and sign detected at the undercrossings include lizards, rodents, rabbit, roadrunner, ground squirrel, fox, coyote, bobcat, and burro deer. Other linear features such as smaller paved and unpaved roads and transmission lines have minimal effects on wildlife movement.

3.4.3 Impact Analysis

In the impact assessment presented in this EIR, potential direct, indirect, and cumulative impacts of the proposed Projects are identified and disclosed. Examples of potential direct impacts to biological resources include mortality, injury, or displacement of special-status plants or animals; loss or degradation of native habitat; interference with wildlife movement or migration; and disturbance to plants, animals, and habitat from noise, light, or dust. Examples of potential indirect impacts that occur later in time or farther removed in distance include erosion, sedimentation, introduction of invasive species, or increased predation on native wildlife due to habitat alterations (e.g., perch sites or “subsides” for predators). The impacts include solar fields and on-site facilities, shared switchyard and gen-tie transmission line, and access roads. While discussed as combined impacts below, the impacts of

the shared gen-tie line and access roads are considered in the Victory Pass Project Incidental Take Permit application.

Methodology

Several meetings were held among the Applicants, wildlife agencies, and BLM biologists to discuss potential impacts and applicable regulations. In addition, written and oral comments regarding the Projects' potential impacts to biological resources (Appendix B, Scoping Report) were reviewed to inform the analysis. The impact analysis is based on the biological resources on the Project sites, described in Section 3.4.2, Appendices E-1 and E-2 (BRTs), Appendix E-3 (Victory Pass and Arica Shared Gen-tie Line Supplemental Memo), and Appendices E-4 and E-5 (Jurisdictional Reports), and on the description of the proposed Projects (Chapters 2 and 3). Each potential impact is evaluated to determine if it would be significant and, if so, if feasible mitigation would reduce its impact to less than significant. There are two categories of measures designed to avoid, minimize, or mitigate project impacts to biological resources:

- **Project-Specific Applicant Proposed Measures (APMs)** – The Applicants identified 25 APMs related to biology (presented in Section 2.6 and in this section). The Applicants commit to complying with the APMs to minimize and avoid potential impacts during construction and operation.
- **Mitigation Measures (MMs)** – Additional measures to supplement the APMs where needed, to reduce significant or potentially significant impacts to the extent feasible under CEQA. The MMs specify further detail such as performance standards and reporting requirements to ensure mitigation will effectively avoid or substantially lessen significant or potentially significant impacts to the extent feasible, consistent with CEQA.

Additional protection for biological resources is specified by the DRECP as CMAs. Applicable CMAs and confirmation of the proposed Projects' conformance are identified in the Plan of Development for each Project (Arica Solar, LLC 2021; Victory Pass I, LLC 2021). The CMAs outline limitations on development and generally require avoidance or management of certain resources. The Applicants specifically designed the boundaries of the Project sites to meet the CMAs through avoidance of desert dry wash woodland (LUPA-BIO-RIPWET1) and sensitive plants (LUPA-BIO-PLANT2).

In addition to the CMAs, APMs, and MMs, the Applicants must obtain multiple permits and approvals for the Projects, and authorizations issued by regulatory agencies (such as CDFW, BLM, and USFWS) would likely include conditions of approval for the same species and resources analyzed in this EIR. Those additional conditions may be more or less stringent than the potentially feasible measures identified in this EIR to avoid or substantially lessen significant or potentially significant impacts under CEQA. If the Projects are approved, they would be required to implement all conditions of authorizations, and where multiple authorizations address the same resource, the most stringent avoidance and minimization measures would be required in addition to the less stringent measures.

The following discussion of impacts to biological resources is organized to:

- Describe each potential impact to biological resources according to a series of significance criteria identified herein
- Identify which APMs or CMAs, if any, would avoid or substantially lessen significant or potentially significant impacts to the extent feasible
- If needed, identify additional MMs that would further reduce the impact

- Provide a conclusion stating whether each potential impact would be less than significant without need for mitigation, mitigated to less than significant through implementation of mitigation measures identified, or potentially significant even with feasible mitigation

Criteria for Determining Significance

The following thresholds are used to determine whether the proposed Projects would result in a significant impact pursuant to CEQA. These thresholds of significance are based in general on Appendix G of the CEQA Guidelines. A biological resources impact is considered significant if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or the U.S. Fish and Wildlife Service (USFWS) (see Impact BIO-1).
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS (see Impact BIO-2).
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, and coastal areas) or any State-protected jurisdictional areas not subject to regulation under Section 404 of the CWA through direct removal, filling, hydrological interruption, or other means (see Impact BIO-3).
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites (see Impact BIO-4).
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (see Impact BIO-5).

The following additional significance criteria are used in the analysis. A project could have potentially significant impact to biological resources if it would:

- Substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species (Impacts BIO-1 regarding endangered, rare, or threatened species, and BIO-2 regarding natural communities).
- Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12) (these citations refer to the CESA and ESA, respectively; Impact BIO-1).
- Conflict with the provisions of an adopted Habitat Conservation Plan; Natural Community Conservation Plan; or other approved local, regional, or State habitat conservation plan (see Impact BIO-6).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to biological resources, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

- APM BIO-1** Pre-construction biological clearance surveys will be performed at all activity areas to minimize impacts on special-status plants or wildlife species.
- APM BIO-2** Every effort will be made to minimize vegetation removal and permanent loss at activity sites. If necessary, native vegetation will be flagged for protection. A Project revegetation plan will be prepared and implemented for areas of native habitat temporarily affected during construction.
- APM BIO-3** Construction crews will avoid affecting wetlands, streambeds, and banks of any streams to the extent feasible.
- APM BIO-4** Construction and operations crews will be directed to use best management practices where applicable, such as for prevention of soil erosion and sedimentation of streams and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction and maintenance operations.
- APM BIO-5** Biological monitors will be assigned to the Project at key times during construction and locations. The monitors will be responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, or unique resources will be avoided to the fullest extent possible. Where appropriate, monitors will flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife or special-status species. These restricted areas will be monitored to ensure their protection during construction.
- APM BIO-6** A Worker Environmental Education Program (WEEP) will be prepared, and all construction crews and contractors will be required to participate in WEEP training prior to starting work on the Project. The WEEP training will include a review of the special-status species and other sensitive resources that exist in the Project area, as well as the locations of the sensitive biological resources, their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all personnel trained will be maintained.
- APM BIO-7** Projects will conduct Project-wide nesting bird surveys. No tree or shrub shall be removed within the nesting season (1 February–31 August) and, if removed ~~outside the nesting season~~, would be removed only in a manner consistent with the California Fish and Game Code. If removal of any tree or shrub is not feasible in a manner consistent with the California Fish and Game Code, the Projects will maintain a buffer adequate to avoid otherwise prohibited take, possession, or destruction of any bird, nest, or egg.
- APM BIO-8** All transmission and sub-transmission towers and poles will be designed to be raptor-safe in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012).
- APM BIO-9** New light sources will be minimized and lighting will be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.

- APM BIO-10** Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
- APM BIO-11** Vehicles will not exceed a speed limit of 15 mph in the rights-of-way or on unpaved roads within sensitive land-cover types.
- APM BIO-12** No vehicles or equipment shall be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to drainages or wetlands shall be checked and maintained daily to prevent leaks of materials.
- APM BIO-13** All trash, food items, and human-generated debris shall be properly contained and/or removed from the site.
- APM BIO-14** The development of new access and right-of-way roads for reconductoring activities will be minimized and clearing vegetation and blading for temporary vehicle access will be avoided to the extent practicable.
- APM BIO-15** Development will maintain existing hydrologic patterns with respect to runoff supporting seasonal wetlands.
- APM BIO-16** The Applicants will prepare and implement an operational Habitat Management Plan for the main Project site that contains all the required operational components of the Bird and Bat Conservation Strategy, Vegetation Management Plan, and other wildlife management plans and actions required by the Applicant Proposed Measures and mitigation measures during construction, operations and maintenance, and decommissioning.
- APM BIO-17** Dust suppression will occur during all construction activities as needed.
- APM BIO-18** No firearms will be allowed on the project site, unless otherwise approved for security personnel.
- APM BIO-19** To prevent harassment or mortality of special-status animals, or destruction of their habitats by dogs or cats, no pets will be permitted on project sites.
- APM BIO-20** All food-related trash items, including wrappers, cans, bottles, and food scraps, will be disposed of and removed from the site each day. Food items may attract coyotes and domestic dogs, consequently exposing special-status animals to increased risk of predation. No deliberate feeding of wildlife will be allowed.
- APM BIO-21** Use of chemicals, fuels, lubricants, or biocides will comply with all local, state, and federal regulations. This is necessary to minimize the possibility of contamination of habitat or primary or secondary poisoning of badgers and other predators utilizing adjacent habitats, and the depletion of American badger prey. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation. If rodent control must be conducted, the use should be restricted to interiors of buildings and zinc phosphide should be used because of the lower risk of poisoning burrowing mammals.
- APM BIO-22** Before starting construction, a representative responsible for communications with the California Department of Fish and Wildlife and U.S. Fish and Wildlife shall be appointed

as the contact for any employee or contractor who inadvertently kills or injures a special-status species or finds a dead, injured, or entrapped individual. The representative will be identified during the employee education program. The name, business address, and contact information shall be provided to the wildlife agencies, and they shall be notified in writing if a substitute Designated Representative is selected or identified at any time.

APM BIO-23 Any contractor or employee that inadvertently kills or injures a special-status animal or finds one either dead, injured, or entrapped will report the incident to the representative immediately. The representative will contact the California Department of Fish and Wildlife (CDFW) by telephone or email and the U.S. Fish and Wildlife Service (USFWS) by telephone by the end of the day, or at the beginning of the next working day if the agency office is closed. In addition, formal notification will be provided in writing within 3 working days of the incident or finding. Notification will include the date, time, location, and circumstances of the incident. Any threatened or endangered species found dead or injured will be turned over immediately to USFWS, CDFW, or its designee for care, analysis, or disposition.

APM BIO-24 Site disturbance, grading, and construction activities after dusk, other than panel cleaning, will be minimized. If such activity is necessary, one or more on-site monitors shall be required to ensure special-status species active at night are avoided.

APM BIO-25 **Bird and Bat Protection.** The following measures shall be undertaken during construction and operations and maintenance (O&M) to avoid or minimize impacts to birds and bats.

Nesting Bird Management Plan. Pre-construction surveys for active nests shall be conducted by one or more qualified biologists at the direction of the Project Lead Biologist. The biologists' qualifications shall be subject to review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management (BLM). Nest surveys shall be conducted for all Project activities throughout the nesting season, identified here as beginning January 1 for raptors and hummingbirds, beginning February 1 for other species, and continuing in both instances through August 15. Nest surveys shall be completed at each work site no more than 7 days prior to initiation of site preparation or construction activities. Nest surveys shall cover all work sites, including the solar facility and gen-tie and surrounding buffer areas of 1,200 feet for raptors and 250 feet for other species, if nesting habitat occurs in the buffer. If adjacent properties are not accessible to the field biologists, the off-site nest surveys may be conducted with binoculars.

At each active nest, the qualified biologist shall establish and mark a buffer area surrounding the nest where construction activities that could disrupt nesting behavior shall be excluded. The Nesting Bird Management Plan may identify species-specific buffer distances or variable distances, depending on activity levels (e.g., driving past the nest to access work sites may be less disruptive than foundation construction). Alternately, buffer distances shall be 500 feet for raptor nests and 250 feet for other species, except as authorized in a particular instance by the qualified biologist. The extent of nest protection shall be based on proposed construction activities, species, human activities already underway when the nest is initiated (e.g., a house finch nest built in the eaves of an occupied structure would warrant less avoidance or protection than a loggerhead shrike nest build in native shrubland), topography, vegetation cover,

and other factors. The avoidance and protection measures shall remain in effect until the nest is no longer active. Projects will maintain a buffer adequate to avoid otherwise prohibited take, possession, or destruction of any bird, nest, or egg.

Bird and Bat Conservation Strategy (BBCS). The Applicants shall prepare and implement a BBCS to avoid or minimize take of migratory birds that may nest on the site or may be vulnerable to collision with Project components. The BBCS shall identify potential hazards to birds during construction and O&M phases of the Project and specify measures to recognize, minimize, or avoid those hazards. The BBCS shall articulate the Applicants' commitment to reduce risk to birds and bats. Over the course of construction and O&M, progress and challenges that are encountered may necessitate review or revision of the BBCS, on mutual agreement among the Applicants and the lead agencies and resource agencies. The initial goals of the BBCS are as follows:

- Assess potential risk to birds and bats based on the proposed activities
- Specify the adaptive management process that will be used to address potential adverse effects on avian and bat species
- Describe baseline conditions for bird species present within the Project site, including results of site-specific surveys
- Specify conservation measures that will be employed to avoid, minimize, and/or mitigate potential adverse effects to birds and bats
- Describe the incidental bird and bat monitoring and reporting that will take place during construction, if not described in the Nesting Bird Management Plan.
- Provide details for following systematic post-construction bird and bat monitoring and reporting

Operations and Maintenance. The BBCS shall specify monitoring and conservation measures to be implemented by the Applicants to document bird mortality that may result from bird injury or mortality, including downed birds on the site that are unable to take flight, or collision with Project components, including solar panel and gen-tie line collisions. The BBCS shall include the following:

- A statement of the Applicants' understanding of the importance of bird and bat safety and management's commitment to remain in compliance with relevant laws
- Documentation of conservation measures to be implemented through design and operations to minimize bird and bat fatalities at the solar facilities and gen-tie line
- Consistent, practical, and up-to-date direction to O&M staff on how to avoid, reduce, and monitor bird and bat fatalities
- ~~■ Description of the incidental bird and bat mortality and injury monitoring and reporting that will take place during construction~~
- Description of the post-construction avian and bat mortality monitoring and reporting of the deaths and injuries of birds and bats from collisions with facility features such as, but not limited to, transmission lines, tower structures (e.g., meteorological towers), and the solar field. The study design shall be approved by BLM and CDFW
- Specifics regarding the process for using the monitoring data to inform an adaptive management program that would avoid and minimize Project-related avian and bat impacts

- Specifics regarding the conservation measures that would be implemented if found necessary through the adaptive management program and the criteria to determine whether conservation measures are necessary. Such measures could potentially include efforts to make panels more visible to birds (e.g., white borders around panel edges or the use of noise deterrents)
- Post-construction mortality monitoring and reporting shall be required for a minimum of 3 years, including the following project components: photovoltaic solar panel arrays (a minimum of 40% survey coverage per year), perimeter fencing (100% survey coverage per year), and the gen-tie line (a minimum of 50% survey coverage per year). If 2 years of monitoring demonstrates bird and bat fatality data are consistent and reliable across years to effectively predict the bird and bat fatalities, then with agreement from U.S. Fish and Wildlife Service (USFWS), BLM, and CDFW, the third year of monitoring will not be conducted and the costs of 1 year of O&M monitoring will be used as funds for conservation measures as mitigation, with BLM, USFWS, and CDFW review and approval, for the predicted impacts on migratory birds in their full life-cycle at their breeding grounds, migratory pathways, or wintering territories
- Identification of fatality thresholds that, if surpassed, would trigger adaptive management measures such as changes to Project O&M

Environmental Impacts

Impact BIO-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

LESS THAN SIGNIFICANT WITH MITIGATION. Potential effects to special-status plants and animals could result from construction, operation and maintenance (O&M), or future decommissioning of the proposed Projects. Construction activities would minimize grubbing and grading, except for specific facilities. Within the solar fields, roadways, and areas around the O&M building, vegetation would be disced under, mulched or composted, and retained on site (Section 2.3). The sites are flat, nearly level, and require minimal grading to allow for installation of the photovoltaic (PV) panels. Grading would be required only for the inverter pads, substation, driveways, and other improvements. Work areas would be prepared using tractors with discing equipment, vibratory rollers, with limited use of scrapers for micrograding.

Vegetation, including the native vegetation and habitat, would be removed or cut and retained on site. Soils throughout the solar fields would be affected by some form of ground disturbance, ranging from drive and roll vehicle access to discing or grading for certain sites. Effects to soils and vegetation, in turn, would affect special-status plants and animals that may be present by removing nesting and foraging habitat, compacting soils, and collapsing burrows. Additionally, construction activities could directly affect these plants and animals.

Altered hydrology (e.g., stormwater ponding behind berms, or increased stormwater runoff that may cause erosion) from site preparation could directly or indirectly affect special-status plant or wildlife habitats. Construction activities could accumulate dust on special-status plants that could diminish gas exchange or photosynthesis.

Construction activities would cause most mobile vertebrate wildlife to leave or attempt to leave the site. Animals dispersing from the site could be at increased risk of predation and possible vehicle collisions as

they flush from cover during site clearing. After leaving their home territories, displaced animals may be unable to find suitable food or cover in new, unfamiliar areas. Displacement effects would apply to common wildlife species and to special-status species.

Construction could cause mortality of small mammals and reptiles, including special-status species, which may be crushed by construction equipment. In most cases, adult birds would fly away from the disturbance, but bird nests (including eggs or nestlings, if present) would be lost. Burrowing owls, if present during construction, would tend to shelter inside burrows where they could be vulnerable to crushing. Land use conversion could exclude special-status reptiles, birds, and mammals from portions of their territories. Facilities could present hazards to wildlife, including special-status wildlife. For example, vertical structures can be collision hazards for birds or bats in flight; trenches can be pitfall hazards for terrestrial wildlife; and construction materials such as open pipes or tubing can attract birds or terrestrial species, which can become trapped inside.

Noise and lighting during construction could affect wildlife in adjacent habitats by disrupting foraging, breeding, sheltering, and other activities or may cause animals to avoid otherwise suitable habitat surrounding the site. Lighting during construction may affect nocturnal wildlife species by causing alterations to foraging or movement behavior, possibly attracting some species to the site (e.g., bats may be attracted to insects at light sources) or dissuading other species from approaching the site. Various other human activities (e.g., vehicle traffic, accumulated waste, or nuisance water sources) can be injurious to special-status wildlife, either as direct hazards (vehicle strikes) or as attractants such as food or water that may put animals in harm's way. Facilities and equipment may become nest or perch sites for certain birds (common raven, loggerhead shrike), which in turn may prey on special-status species (desert tortoise, Mojave fringe-toed lizard).

Potential direct and indirect impact to special-status plants and animals are outlined below for the solar facilities and the shared gen-tie line. These direct and indirect adverse impacts to special-status species and their habitat could be substantial but are avoided and minimized to some extent by incorporation of APMs and are further reduced through implementation of MMs specified in Section 3.4.4.

Special-Status Species Vegetation and Habitat. The Projects, access roads, and gen-tie line would permanently impact native habitats as shown in Table 3.4-1 by removing or substantially altering the soils and vegetation. Permanent impacts to natural habitats would include vegetation removal and soil disturbance in Sonoran creosote bush scrub, desert dry wash woodland, desert saltbush scrub, and desert pavement. During construction, the Projects would temporarily affect surrounding habitat by introducing noise, lighting, dust, and similar disturbances, possibly affecting wildlife behavior. The temporary impacts cannot be quantified because noise and disturbance will be intermittent, occurring at various parts of the Project areas at various times during construction, and each species or individual animal would react differently to the various disturbances. All affected habitats may support certain special-status plants or wildlife (described further below). The principal indirect impact to native habitat and associated special-status species is the potential introduction of invasive weeds, which could degrade plant and wildlife habitat on the site and beyond the site boundaries if the weeds spread. Without mitigation and strict adherence to relevant APMs, the loss of natural habitat on the Project sites would significantly affect special-status wildlife on the sites or in the vicinity of the Projects generally.

Table 3.4-1. Impacts to Vegetation Communities

Cover Type	Victory Pass			Access Road (acres)	Total (acres)
	Arica Solar Project (acres)	Solar Project (acres)	Shared Gen-tie Line (acres)*		
Desert Pavement	0.0	18	3	0	21
Developed/Disturbed	0.0	0.0	2.0	0	2.0
Dry Desert Wash Woodland	0.0	0.3	29	<1	30
Saltbush Scrub	23.0	0.0	0.0	0	23.0
Sonoran Creosote Bush Scrub	1332	1291.4	18	<6	2648
Grand Total	1355	1310**	52	<7	2724

* The gen-tie acres are for the full ROW. The actual acres impacted would be fewer. All gen-tie impacts for both the Arica and Victory Pass Projects are included in this table.

**Victory Pass Solar Project acres rounded up to 1310 acres.

APM BIO-1 requires pre-construction biological clearance surveys to minimize impacts to special-status plants and wildlife. This will reduce impacts to special-status species that could be crushed by construction equipment. APM BIO-2 requires that special-status vegetation be flagged for protection and that a Revegetation Plan be prepared for temporarily impacted habitat to avoid and minimize impacts to vegetation. This will reduce impacts to special-status vegetation communities outside of the permanent impact areas. APM BIO-4 requires the use of best management practices (BMPs) to minimize introduction and spread of invasive plant species to protect native habitat from infestation. APM BIO-5 requires the use of Biological Monitors during construction to ensure that crews avoid impacts to vegetation and habitat to the maximum extent and that sensitive resources are properly flagged. APM BIO-6 requires a Worker Environmental Education Program (WEEP) to train all construction crew on sensitive resources and measures to avoid and minimize impacts. APM BIO-10 requires that vehicles and equipment park in previously disturbed or developed areas to the maximum extent possible to avoid impacts to native vegetation. APM BIO-14 requires that development of new roads be minimized and that clearing and blading of vegetation for temporary vehicle access be avoided to the maximum extent possible. APM BIO-16 requires the implementation of a Habitat Management Plan to manage sensitive biological resources during O&M. APM BIO-17 requires dust suppression to minimize its effects to native vegetation.

Incorporation of the APMs described above would partially minimize impacts to special-status species associated with vegetation communities to some extent; however, the potential for significant impacts would remain absent implementation of additional MMs. With incorporation of the APMs described above and the implementation of additional MMs described below, the impacts would be reduced to less than significant. MM BIO-1 (Biological Monitoring) would require monitoring and reporting to ensure compliance with all biological resource measures, including avoidance and minimization of special-status species and associated habitat impacts. MM BIO-2 (Worker Environmental Awareness Training) would require training of on-site workers to require avoidance of and minimization of impacts to special-status species and their habitat. MM BIO-3 (Minimization of Vegetation and Habitat Impacts) would require clear demarcation of work areas and limitation of activities within those areas, to minimize adverse effects to special-status species and associated habitat. MM BIO-4 (Integrated Weed Management Plan) would require an Integrated Weed Management Plan (IWMP) to reduce or prevent introductions or infestations of invasive weeds and control or eradicate any infestations that may occur. MM BIO-5 (Vegetation Resources Management Plan) would require revegetation of temporarily disturbed areas to minimize dust and erosion, to minimize their effects to special-status species and associated habitat. MM BIO-6 (Compensation for Special-Status Wildlife Species) would require

permanent protection of off-site natural habitat to offset the Projects' impacts to special-status wildlife species and associated natural habitats on the sites. Together with the APMs, these MMs would minimize adverse impacts to special-status species and associated native vegetation and offset the permanent loss through off-site habitat compensation. Therefore, issuance of the Permits and implementation of the Projects generally with the relevant APMs and identified mitigation would result in less-than-significant impacts to special-status species and associated vegetation communities.

Implementation of the IWMP specified in MM BIO-4 would control invasive weeds through mechanical or chemical methods. Herbicides can pose risks to terrestrial and aquatic vegetation. Most aquatic herbicides, and several terrestrial herbicides, are non-selective and could adversely impact non-target vegetation. Accidental spills and herbicide drift from treatment areas could be particularly damaging to non-target vegetation. Herbicides may also pose risks to terrestrial or aquatic animal species. Herbicides that persist on site could adversely affect animals that feed on target plants or are exposed to the herbicides (e.g., by digging or rolling in treated soil). Accidental spills and herbicide drift from treatment areas could reach non-target vegetation or habitat on public or private lands near treatment areas. MM BIO-4 requires that the IWMP specify weed species occurring or potentially occurring in the Projects' area, means to prevent their introduction or spread, monitoring methods to identify infestations, timely implementation of suppression and containment measures, and a reporting schedule. In addition, MM BIO-4 requires the IWMP to identify herbicides that may be used for control or eradication and avoid herbicide use in or around any environmentally sensitive areas. Any herbicide use would need to comply with existing BLM plans and permits including the Vegetation Treatments Using Herbicides (BLM 2007) and Vegetation Treatment Using Aminopyralid, Fluroxypyr, and Rimsulfuron (BLM 2016a), would require a Pesticide Use Permit approved by BLM, and would adhere to the BLM design features from the pesticide Environmental Impact Statement.

Special-Status Plants. The Projects would not affect state or federally listed threatened or endangered plants. Four special-status plants were observed on the Arica Solar Project site. Harwood's eriastrum (CRPR 1.B.2) occurs in the northern part of the site, but outside the proposed development footprint (Figure 3.4-3). To meet CMA LUPA-BIO-PLANT-2, the Arica footprint was redesigned to provide a 0.25-mile setback from the Harwood's eriastrum. Emory's crucifixion thorn and Harwood's milkvetch, both ranked CRPR 2B.2, were observed within the impact footprint. One Emory's crucifixion thorn was observed within the Victory Pass impact footprint. Ribbed cryptantha was observed at several locations outside of the development footprint. Additionally, as a CRPR 4 (watch list) species without additional reasons for conservation concern (e.g., geographic range, unusual morphology, or unusual habitat/substrate), potential impacts to ribbed cryptantha would not be significant.

- ~~No special-status plants were observed on the Victory Pass Solar Project site. No windblown sand habitat is present. Suitable habitat is present for Emory's crucifixion thorn, but this is a conspicuous shrub and would have been detected by the field team if present. No impacts to special-status plants are expected.~~
- No special-status plants were observed along the gen-tie line or are expected to occur.
- Indirect impacts to special-status plants are similar to those described above for vegetation and habitat. Impacts to special-status plants would be minimized by implementing APMs and MMs, listed below.

APM BIO-4 requires the use of BMPs to minimize introduction and spread of invasive plant species to protect native habitat from infestation and to protect special-status species from being outcompeted. APM BIO-5 requires the use of Biological Monitors during construction to ensure that crews avoid impacts to vegetation and habitat to the maximum extent and that sensitive resources are properly flagged. APM BIO-6 requires a WEEP to train all construction crew on sensitive resources and measures to avoid and

minimize impacts. APM BIO-10 requires that vehicles and equipment park in previously disturbed or developed areas to the maximum extent to avoid impacts to special-status species.

Incorporation of the APMs described above would avoid and minimize indirect impacts to Harwood's eriastrum and indirect or direct impacts to Emory's crucifixion thorn and Harwood's milkvetch; however, the potential for significant impacts would remain absent implementation of additional MMs. With incorporation of the APMs described above and the implementation of additional MMs described below, the impacts would be reduced to less than significant. MM BIO-1 through MM BIO-5 would reduce direct and indirect impacts to special-status plants and are described above under Special-Status Species Vegetation and Habitat. Additionally, MM BIO-7 (Emory's Crucifixion Thorn Mitigation) would mitigate potential impacts to Emory's crucifixion thorn by horticultural propagation and off-site introduction. Because salvage may be a feasible mitigation strategy for Emory's crucifixion thorn for the Projects and has been implemented for a nearby project, the measure includes the possibility of contracting a qualified institution to translocate them off site.

Avoidance of the Harwood's eriastrum occurrences at the Arica site protects some suitable aeolian sand habitat for the other special-status plants, including ribbed cryptantha, and for the Mojave fringe-toed lizard, discussed below. No other special-status plant species were observed or had a high potential to occur, but there is a possibility that several CRPR ranked 3 and 4 species could occur in a year of better rainfall. However, potential impacts to these plants would be less than significant due to their relatively low conservation status and regional occurrences outside the Project vicinity. Additionally, many of these plants occur in windblown sand or are low-growing herbaceous species. Windblown sand could continue to move through the Project sites under the solar arrays. Any potential effects to these species on the solar sites would be temporary; suitable on-site habitat would be preserved, and the impact (if any) would be less than significant. Therefore, issuance of the Permits would result in less-than-significant impacts to special-status plants with implementation of mitigation and incorporation of relevant APMs.

Special-Status Wildlife. Direct and indirect impacts to special-status wildlife are discussed in detail below and are minimized and avoided with incorporation of APMs and implementation of MMs, as follows:

APM BIO-1, APM BIO-2, APM BIO-5, APM BIO-6, APM BIO-10, and APM BIO-16 would help reduce impacts and are described above under Special-Status Species Vegetation and Habitat. APM BIO-7 requires nesting bird surveys if project activities occur between February 1 and August 31. APM BIO-8 requires raptor safe towers and poles in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012). APM BIO-9 requires that new light sources be minimized and designed to be downcast to limit the lighted area during construction and O&M. APM BIO-11 requires a speed limit for vehicles to avoid impacts to wildlife occupying and traversing the Projects' area. APM BIO-13 and APM BIO-20 require that trash and food items be properly contained and removed from the site each day to avoid attracting sensitive wildlife and opportunistic predators. APM BIO-18 and APM BIO-19 require that no firearms or pets be allowed on the Project sites to avoid harassment of wildlife. APM BIO-21 requires that biocides be used in compliance with regulations to avoid poisoning predators. Rodent control should be limited to certain areas and methods to minimize and avoid impacts to burrowing mammals. APM BIO-22 and APM BIO-23 require that a representative be appointed to coordinate with CDFW and USFWS in the event of any inadvertent special-status species mortality or injury. APM BIO-24 requires that construction and O&M activities (except panel washing) be restricted at night to avoid disturbance to special-status wildlife.

Incorporation of the APMs described above would avoid and minimize indirect impacts to special-status wildlife species; however, the potential for significant impacts would remain absent implementation of

additional MMs. With incorporation of the APMs described above and the implementation of additional MMs described below, the impacts would be reduced to less than significant. MM BIO-1, MM BIO-2, MM BIO-3, MM BIO-5, and MM BIO-6 would reduce direct and indirect impacts to special-status wildlife species and are described above under Special-Status Species Vegetation and Habitat. Additionally, MM BIO-8 through MM BIO-12 will be implemented; these are described below. Therefore, issuance of the Permits would result in less-than-significant impacts to special-status wildlife with implementation of mitigation and relevant APMs.

- *Desert tortoise*. Predicted desert tortoise occupancy values were determined as a general habitat value metric (BLM 2002). Occupancy values for the Arica Solar facility range from 0.3 in the northern portion of the site to 0.6 in the southwest portion of the site. Occupancy values for the Victory Pass Solar facility range from 0.4 in the northern corners of the site to 0.7 in the southwestern portion of the site. Occupancy values for the gen-tie range from 0.5 to 0.7. The 2,724-acre project area provides suitable desert tortoise habitat, including dry desert wash woodland, Sonoran creosote bush scrub, and saltbush scrub, which would be impacted by construction of the Projects. Overall habitat suitability and quality for desert tortoise varies across the site. Desert dry wash woodland and creosote bush scrub on alluvial substrates are generally more important habitat than windblown sand or saltbush scrub.

If a desert tortoise is found on the Project sites during construction, O&M, or decommissioning, individual members of the species would be vulnerable to adverse direct and indirect impacts, including mortality or injury due to vehicle collision, crushing by site preparation equipment, or increased predation by opportunistic predators such as common ravens that may be attracted to the Project sites. Project activities may also cause harm, injury, or harassment of desert tortoise and/or the need to capture and relocate individual members of the species out of harm's way. Likewise, if either Project site is a part of a desert tortoise's home range, land use conversion could reduce local habitat availability, possibly reducing access to food, water, or other resources. Land use conversion also could affect habitat connectivity in the area; this is addressed below under wildlife movement.

The Victory Pass Project site partially overlaps the 1.2-million-acre Chuckwalla Desert Tortoise CHU (Figure 3.4-5). Approximately 118 acres of critical habitat within the Victory Pass Project site would be impacted. The gen-tie ROW is located on 26.0 acres of designated critical habitat but would impact fewer acres during construction. The access roads would impact up to 7 acres of land. This overlap area is not within the Chuckwalla ACEC and is not designated as a Tortoise Conservation Area in the DRECP. Due to its location north of the freeway, this critical habitat land is partially isolated from the remainder of the CHU. Its long-term function as critical habitat is compromised by its proximity to existing development, and its location within a DRECP-designated DFA further compromises its future habitat value. The DRECP allows for impacts to desert tortoise critical habitat by providing a specific mitigation ratio for impacts to desert tortoise critical habitat. MM BIO-6 mitigates impacts to desert tortoise critical habitat. The Projects would result in significant impacts to desert tortoise absent mitigation and implementation of relevant APMs.

APMs and MMs previously discussed would minimize adverse impacts to desert tortoise and its habitat and offset the permanent loss of desert tortoise habitat through off-site habitat compensation. MM BIO-8 (Wildlife Protection) would minimize mortality and injury to desert tortoise. MM BIO-9 (Desert Tortoise Protection) would minimize take of desert tortoise during construction, O&M, and decommissioning. MM BIO-9 requires pre-construction clearance surveys, installation of permanent desert tortoise fencing, monitoring or exclusion of desert tortoises from active work in unfenced areas, vehicle inspections to prevent any potential fatality or injury of desert tortoise, and implementation of a Raven Monitoring Plan. With incorporation of relevant APMs and

implementation of MM BIO-1 through MM BIO-9, which is specific to desert tortoise, impacts to desert tortoise and its habitat would be less than significant.

- *Mojave fringe-toed lizard*. Construction of the solar arrays would minimize impacts to windblown sand in the northern and eastern parts of the Arica Project site, where sensitive plants are being avoided. Approximately 794 acres of Mojave fringe-toed lizard modeled habitat would be impacted. To comply with CMAs LUPA-BIO-DUNE2 through LUPA-BIO-DUNE4, the Project was designed to follow the sand transport corridor and was pulled back from the active dunes. The NECO Plan (BLM 2002) states that “compensation requirements at 3:1 in Sand Dunes would discourage surface disturbance in dunes and aid in habitat acquisition.” However, it does not specify mitigation for sand fields, which it defines as areas where sand accumulates in non-dune forms, or for adjacent creosote scrub areas on less sandy soil. The only areas with sand dune-like formations on the Arica Project site were areas with the Harwood’s eriastrum, which are entirely avoided. The remainder of the site would be considered sand fields or sandy creosote scrub areas; see Geomorphology in Section 3.7.2 for a detailed discussion of the sand dune system in this area. Direct impacts include loss of habitat in these areas, which would be compensated for as required in MM BIO-6 (Compensation for Special-Status Species Habitat Impacts), including requiring the compensation provide habitat value that is comparable to the habitat impacted. Sand would continue to move through the developed Project sites under the solar arrays and moisture, required for dune stability, would continue to cross the site as sheet flow. The Mojave fringe-toed lizard could continue to occupy the site in suitable habitat following construction. Any potential direct effects to Mojave fringe-toed lizard habitat on the solar site would be temporary and less than significant. However, site preparation for construction, vehicle traffic during O&M, or activities during decommissioning could cause Mojave fringe-toed lizard injury or mortality. This potential impact would be minimized through MM BIO-8 (Wildlife Protection), which identifies practices and requirements to prevent or minimize wildlife injury and mortality. Potential indirect impacts to Mojave fringe-toed lizard include degradation of habitat from invasive weeds, increased predation from certain birds (common raven, loggerhead shrike), and vehicle strikes. The mitigation measures described under Special-Status Species Vegetation and Habitat address these potential indirect impacts. With incorporation of APMs and implementation of MM BIO-1 through MM BIO-6 and MM BIO-8, impacts to Mojave fringe-toed lizard would be less than significant.
- *Special-Status and Native Birds*. Native birds, including special-status birds, are protected under the California Fish and Game Code and federal MBTA (refer to Section 3.4.2). The Project sites and surrounding area provide suitable nesting and foraging habitat for numerous resident and migratory bird species. Bird nests including eggs and nestlings are vulnerable to construction activities that may disrupt nesting behavior or damage nests, birds, or eggs. In addition to the general discussion that follows, this section also addresses certain special-status birds that are known or likely to occur on the Project sites specifically.

MM BIO-1 through MM BIO-6, as previously described, would minimize and mitigate adverse direct and indirect impacts to special-status birds and associated native vegetation that may use the Project sites and offset the permanent habitat loss through off-site habitat compensation. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Additionally, MM BIO-8 (Wildlife Protection) would minimize Project impacts to birds through a series of requirements to minimize or avoid wildlife injury, such as site inspections, prevention of attractants such as trash or water, hazardous material avoidance, and vehicle speed limits.

In addition, APM BIO-7 would minimize potential effects to nesting birds by requiring nesting bird surveys. APM BIO-25 requires a Nesting Bird Plan and Bird and Bat Conservation Strategy (BBCS) that will identify potential hazards to birds and bats during construction and O&M and specify measures to

recognize, minimize, and avoid these hazards, including nesting bird surveys and monitoring, avoidance of nesting season, and documentation of bird and bat mortality during O&M. The Projects would also comply with CMA LUPA-BIO-17, which requires a BBCS. Together these measures would minimize adverse impacts to native birds.

After completion of construction and throughout the life of the Projects, the solar facilities and other components may present a collision or electrocution risk to birds. The causal mechanism for bird collisions with panels is not clear. While the causal mechanism is not known and is under investigation at other facilities, one hypothesis regarding why birds may collide with panels is the idea that birds, particularly water-dependent species, may be attracted to solar panels, mistaking them for water features. These occurrences could lead to collision or other harm (e.g., strandings of water birds). While the causes of avian injuries and fatalities at commercial-scale solar projects are being evaluated, uncertainty remains because (1) mortality data has been collected over a relatively short period and still is being evaluated; (2) in many cases, the cause of death is not outwardly clear; (3) solar sites can vary in habitat type, migration corridor, species, climate, and other factors, which can cause variation of mortality information from one project location to another project location; and (4) mortality data is collected on a subset of a project site, and collected for 2–3 years of a project's operational life, which is typically 30–50 years. In addition to collision with solar panels, birds and bats may collide with the overhead lines, including the shared gen-tie transmission line. While few nocturnal migrant passerines have been found in the solar arrays, more have been found underneath the gen-tie lines at the solar projects.

A collection of 13 fatality monitoring studies at PV solar facilities in three bird conservation regions in California and Nevada have shown that the highest percentage of fatalities across all studies were common species, including mourning dove (*Zenaidura macroura*), horned lark (*Eremophila alpestris*), house finch (*Haemorhous mexicanus*), and western meadowlark (*Sturnella neglecta*). Passerines (55.0%) and doves/pigeons (17.0%), on average, are the most common detections (Kosciuch et al. 2020). Carcasses of water-associated birds (e.g., herons and egrets) and water obligate birds (e.g., loons and grebes) have been found at PV solar facilities in the Sonoran and Mojave Deserts, primarily at sites within 60 miles of the Salton Sea. Water-associated (6.3%) and water obligate species (7.8%) each compose less than 10% of the detections. Raptors are very uncommon detections (less than 1.0%) (Kosciuch et al. 2020; WEST 2020). Detections of Yuma ridgway's rail fatalities have occurred at two solar PV projects (Desert Sunlight in 2013 and Solar Gen 2 in 2014). In addition, a live Yuma ridgway's rail was detected at the Blythe Solar Power Project site in 2015. No other federal- or state-listed threatened or endangered species have been detected as fatalities in the PV arrays at desert sites. Six special-status bird species that could occur at the Project sites have been detected as fatalities in the arrays at desert sites, including loggerhead shrike, burrowing owl, yellow-breasted chat, long-eared owl (*Asio otus*), yellow warbler, and yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

The Projects would include an anti-reflective coating on the panels, which may reduce glare and the potential for collision. For taller structures, such as the shared gen-tie, the Projects will be designed to be raptor safe in accordance with Avian Power Line Interaction Committee guidelines and best management practices (APLIC 2012) per APM BIO-8 and supplemented by MM BIO-10 (Gen-Tie Lines), which provides further detail. Mechanisms to visually warn birds shall be placed on gen-tie lines at regular intervals to prevent birds from colliding with the lines (APLIC 2006). Gen-tie lines shall maintain sufficient distance between all conductors and grounded components to prevent potential for electrocution of the largest birds that may occur in the area (e.g., golden eagle and turkey vulture [*Cathartes aura*]). These measures, in general, are typical of a number of utility-scale solar PV projects under review or recently approved in the vicinity of the Projects.

The analysis in this EIR of the potential avian mortality/collision impact is based on various sources, including available monitoring data from other projects and sources, including from the BLM and the applicant. Based on monitoring data compiled for and by BLM for ~~the Palen Solar Power Project~~ other solar projects in the California desert, bird mortality for the Projects, in combination, is expected to range from a low of 0.4 birds per acre per year up to 1.7 birds per acre per year (BLM 2018). For the 2,724-acre area that includes both Projects, the expected Project-related bird mortality, based on BLM's review of monitoring data compiled for the Palen Solar Power Project, may range from 1,090 to 4,631 birds per year. Over the 50-year operational life of the Projects, the total expected bird mortality ranges from 54,480 to 231,540 birds.

The Applicants provided CDFW with an assessment of the potential direct and indirect impacts from the Projects on birds and bats (Appendix E-6). Using the average and range from the fatality monitoring studies of 1.3 birds/MW/Year (WEST 2020), the predicted mortality value for the Arica Solar Project site is 261 bird fatalities per year. The predicted mortality value for the Victory Pass Project site is 346 bird fatalities per year (West 2020). Based on studies of the gen-ties associated with other desert solar projects, the Applicants estimated approximately 60 birds per kilometer per year may collide with the lines. Seven detections of fatalities of special-status yellow warblers have been reported during surveys of the gen-tie lines at the desert solar sites (WEST 2020). The predicted mortality value for the gen-tie line is 300 bird fatalities per year. The Applicants' total combined predicted mortality value for the Projects is 907 bird fatalities per year.

Monitoring data from three solar projects in eastern Riverside County, Blythe, McCoy, and Desert Sunlight, analyzed by CDFW show an average of 85 bird fatalities per kilometer and range up to 121 bird fatalities per kilometer of gen-tie. Based on CDFW's review, if the Projects' impacts from the gen-tie line were similar to the three projects in eastern Riverside County, mortality for the gen-tie line may be up to 605 bird fatalities per year.

Monitoring data from the three solar projects in eastern Riverside County analyzed by CDFW show that 1.8% of bird fatalities were special-status species. If the Projects' impacts to special-status birds were similar to the three projects in eastern Riverside County, predicted fatalities using BLM 2018 would range from 20 to 83 special-status bird species fatalities per year and from 1,000 to 4,150 special-status bird species fatalities over a 50-year operational life of the Projects. If the Projects' impacts to special-status birds were similar to the three projects in eastern Riverside County, using the average and range from the fatality monitoring studies of 1.3 birds/MW/Year (WEST 2020) and predicted mortality value for the gen-tie line, the predicted mortality is 16 special-status bird fatalities per year and 800 special-status bird fatalities over a 50-year operational life of the Projects. If the Projects' impacts to special-status bird species from the gen-tie line were similar to the three projects in eastern Riverside County, fatalities associated with the gen-tie may be up to 11 special-status bird fatalities per year and up to 550 special-status bird fatalities over a 50-year operational life of the Projects. The mortality predictions therefore range from 16 to 83 special-status bird species fatalities per year and from 800 to 4,150 special-status bird species fatalities over the 50-year operational life of the Projects.

While bird fatalities are expected to occur due to collisions with Project facilities and equipment, no substantial adverse effect on any avian species is expected. There is no current evidence demonstrating that PV solar facilities in California or elsewhere have caused or have the potential to cause a population, species-level, or broader ecological significant impact due to avian collision with project facilities. Avian collision with Project facilities and equipment is expected, but that effect, while adverse, is less-than-significant for purposes of CEQA. Due to the uncertainties related to the causal mechanism resulting in bird

collision and because the effects would not cause population, species-level, or broader ecological effects on special-status bird species, the potential impact is less than significant without mitigation. Incorporation of APM BIO-25 and otherwise required implementation of MM BIO-10 (Gen-Tie Lines) would further reduce this less-than-significant effect on special-status bird species to the extent feasible.

- *Burrowing owl*. Burrowing owls, burrows, and sign were observed at both Project sites but not within the gen-tie line. All sites are suitable foraging habitat.

Potential direct Project impacts to burrowing owls during construction, O&M, and decommissioning include mechanical crushing of individuals or burrows by vehicles and construction equipment, habitat loss, and noise and disturbance to surrounding habitat. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1.

APM BIO-25 requires a Nesting Bird Plan and BBCS that will identify potential hazards to birds and bats during construction and O&M and specify measures to recognize, minimize, and avoid these hazards, including nesting bird surveys and monitoring and avoidance of nesting season. MM BIO-1 through MM BIO-6, listed above, would minimize adverse direct and indirect impacts to burrowing owl and associated native vegetation and offset the permanent habitat loss through off-site habitat compensation. MM BIO-8 (Wildlife Protection) and MM BIO-11 (Burrowing Owl Avoidance and Relocation) would prevent or minimize potential injury to burrowing owl by identifying occupied burrows and safely excluding the owls through passive relocation. These measures are expected to effectively avoid take of burrowing owls by excluding them from the Projects' area or, if active nests are present, by avoiding disturbance in surrounding buffer areas. With incorporation of relevant APMs and implementation of mitigation measures, impacts to burrowing owl would be less than significant.

- *Golden eagle*. Golden eagles are protected under the federal Bald and Golden Eagle Protection Act as well as the MBTA and California Fish and Game Code. The Project sites, gen-tie line, and access roads do not provide suitable golden eagle nesting habitat. However, the sites provide suitable foraging habitat and are within potential foraging distance of known golden eagle nesting territories located in the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains.

Foraging habitat loss may affect golden eagles during nesting, winter, or migratory seasons. APM BIO-25 requires a Nesting Bird Plan and BBCS that will identify potential hazards to birds and bats during construction and O&M and specify measures to recognize, minimize, and avoid these hazards, including nesting bird surveys and monitoring, avoidance of nesting season, and documentation of bird and bat mortality during O&M. Impacts to golden eagle foraging habitat would be offset through MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts), which would require protection of off-site compensation lands to mitigate impacts to special-status wildlife and associated vegetation and habitat, including golden eagle foraging habitat. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Potential indirect impacts would be reduced through MM BIO-1 through MM BIO-5, as previously described. The proposed MMs are expected to effectively avoid take of golden eagles and offset habitat loss. With incorporation of relevant APMs and implementation of mitigation measures, impacts to golden eagle would be less than significant.

- *Other Special-Status Raptors*. Several other special-status raptors have been reported on or near the Projects' sites or are likely to occur in the area seasonally. Several migratory raptors, including ferruginous hawk, northern harrier, Swainson's hawk, American peregrine falcon, and short-eared owl, spend winters in the Southern California deserts or, for Swainson's hawk, migrate through the region between breeding habitat to the north and wintering habitat farther south. Prairie falcon would be expected to nest in the surrounding mountains and to forage over the sites at any time of year. The Projects' potential direct and indirect impacts to prairie falcon nesting and foraging habitat

would be similar to those described for golden eagle. Impacts to raptor foraging habitat would be offset through MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts), which requires compensation for permanent impacts to special-status wildlife and associated native vegetation and habitat. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Potential indirect impacts would be reduced through MM BIO-1 through MM BIO-5, as previously described. With incorporation of relevant APMs and implementation of mitigation measures, impacts to other special-status raptors would be less than significant.

- *Gila woodpecker and elf owl*. Neither Gila woodpecker nor elf owl has been observed on the sites, but both species have been reported at a native palm oasis at Corn Springs, within 10 miles to the south. Elf owl has been documented nesting east of the Project sites near Wiley's Well. Potentially suitable habitat is present in desert dry wash woodland on the Project ROWs, but neither species was observed during surveys and the desert dry wash woodland would not be within the Projects' footprints. Gila woodpeckers are vocally and visually conspicuous during daytime surveys. Since none were detected, there is a low probability that it would nest on the sites. Impacts to special-status bird species and associated habitat will be offset through MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts), which requires compensation for impacts to special-status wildlife species and associated habitat. Direct impacts to nesting Gila woodpeckers or elf owls would be avoided through APM BIO-25 and implementation of a Nesting Bird Plan and BBCS that will include nesting bird surveys and monitoring and avoidance of any active nests during nesting season by an appropriate buffer. These measures are expected to effectively avoid any potential take of Gila woodpecker or elf owl and to offset native habitat loss. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Potential indirect impacts would be reduced through MM BIO-1 through MM BIO-5, as previously described. With incorporation of relevant APMs and implementation of mitigation measures, impacts to Gila woodpecker and elf owl would be less than significant.
- *Special-Status Passerine Birds*. The desert vegetation and adjacent mountains provide foraging, cover, or breeding habitat for resident and migratory special-status birds identified in Section 3.4.2. Potential impacts to these species would be the same as those described for other nesting or migratory birds. APM BIO-25 requires a Nesting Bird Plan and BBCS that will identify potential hazards to birds and bats during construction and O&M and specify measures to recognize, minimize, and avoid these hazards, including nesting bird surveys and monitoring, avoidance of nesting season, and documentation of bird and bat mortality during O&M. These impacts can be mitigated through MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts), which requires compensation for impacts to special-status wildlife species and associated native habitats. These measures are expected to effectively minimize adverse impacts to special-status birds on the site and to offset habitat loss through the acquisition and management of off-site lands. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Potential indirect impacts would be reduced through MM BIO-1 through MM BIO-5, as previously described. With incorporation of relevant APMs and implementation of mitigation measures, impacts to other special-status passerine birds would be less than significant.
- *Desert kit fox and American badger*. Active and inactive desert kit fox burrows were observed on both Project sites, but not within the gen-tie line. Suitable habitat for American badgers is located throughout the Project sites and canid burrows that could be used by them are present; however, no badgers or definitive sign were observed.

Both species could use native habitats wherever prey animals may be present and soils are suitable for burrows. Potential direct impacts during construction, O&M, and decommissioning to American

badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment and habitat loss. Potential indirect effects include vehicle collisions, noise, lighting, and disturbance to surrounding habitat. Exclusion or security fencing could entrap desert kit foxes or badgers in the construction area. MM BIO-1 through MM BIO-6, listed above, would minimize adverse direct and indirect impacts to special-status wildlife species and associated native vegetation and offset the permanent habitat loss through off-site habitat compensation. MM BIO-8 (Wildlife Protection) and MM BIO-12 (Desert Kit Fox and American Badger Relocation) would prevent or minimize potential injury to desert kit fox and American badger. MM BIO-8 identifies practices and requirements to prevent or minimize wildlife injury and mortality, and MM BIO-12 specifies details for pre-construction surveys, exclusion of animals from dens, passive relocation from the site, and avoidance of natal dens. With incorporation of relevant APMs and implementation of mitigation measures, impacts to desert kit fox and American badger would be less than significant.

- *Burro deer.* Nearby active agricultural areas provide a dependable water source for burro deer. Additionally, desert dry wash woodland habitat may provide seasonal foraging or cover habitat for burro deer. Potential impacts of the Projects could include loss of habitat. Existing agricultural ponds are located adjacent to the Victory Pass Project site to the east, in close proximity to an I-10 underpass that supports wildlife movement and desert dry wash woodland habitat that would be avoided. After construction, burro deer could continue to use the open washes to access the adjacent agricultural ponds. Project site security fencing will prevent deer from freely crossing the solar sites, which may further limit their access to the nearby water sources during construction and O&M. There are three undercrossings at washes along I-10 shown on Figure 3.4-6 where burro deer could cross from the south into or near the site. These washes are avoided and unfenced, allowing the burro deer to move through them and still be able to move east to the agricultural ponds.

Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Burro deer have been observed to continue to use the greater Desert Center area during the ongoing solar development and are expected to avoid Project-related disturbance during construction. No special measures are necessary to exclude them from work areas during construction. MM BIO-1 through MM BIO-6, listed above, would minimize adverse direct and indirect impacts to special-status wildlife species and associated native vegetation, including burro deer habitat, and offset the permanent habitat loss through off-site habitat compensation. Potential impacts to burro deer movement are addressed under Impact BIO-4, below. With incorporation of relevant APMs and implementation of mitigation measures, impacts to burro deer would be less than significant.

- *Special-Status Bats.* Several special-status bats could use the Project sites for foraging, but only minimal suitable roosting habitat is available. Project construction could adversely impact special-status bats through the elimination of desert shrubland foraging habitat. Common bats and (less likely) special-status bats may roost in desert dry wash woodland habitat on the sites, but these areas would be avoided by the Projects.

Solar energy development is a relatively new anthropogenic feature for bats to encounter, and responses are not well studied. Bats are susceptible to collisions with moving structures such as wind turbines, but infrequently collide with stationary structures (WEST 2020). Bat mortality could also occur if individuals became trapped in other infrastructure. Bat carcasses were rarely detected at utility-scale PV solar energy facilities that have been monitored. It is anticipated very few bat fatalities will occur during the life of the Projects based on the absent to very low bat fatalities discovered at regional projects.

APM BIO-25 requires a BBCS that will identify potential hazards to birds and bats during construction and O&M and specify measures to recognize, minimize, and avoid these hazards; would require

additional pre-construction surveys and wildlife exclusion or scheduling of tree removal outside the bat maternal roosting season; and includes documentation of bird and bat mortality during O&M. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. MM BIO-1 through MM BIO-6 would minimize adverse direct and indirect impacts to special-status wildlife species and associated native vegetation and habitat and offset the permanent habitat loss through off-site habitat compensation. MM BIO-8 (Wildlife Protection) includes a condition to inspect structures prior to demolition and remove wildlife or allow wildlife to escape. These measures are expected to minimize potential impacts special-status bats and offset habitat loss. With incorporation of relevant APMs and implementation of mitigation measures, impacts to special-status bats would be less than significant.

Impact BIO-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

LESS THAN SIGNIFICANT WITH MITIGATION. Desert dry wash woodland is a sensitive habitat type as identified in the NECO Plan and DRECP and has a state rarity rank of S4. It is a riparian community characteristic of regional episodic hydrologic systems of the regional desert. Desert pavement, a unique habitat type with a state rarity rank of S4, was identified on the Victory Pass Project site and within the gen-tie; however, it is not considered sensitive. No other sensitive natural communities are found on the Project site.

Construction of the Arica and Victory Pass solar facilities would mostly avoid desert dry wash woodland through implementation of CMA LUPA-BIO-RIPWET-1, which requires avoidance of desert dry wash woodland with a 200-foot setback, except for minor incursions. A total of 30 acres of desert dry wash woodland are within the maximum footprint of the shared gen-tie line ROW and proposed access roads, although impacts to the gen-tie and access roads would be substantially less than 30 acres because impacts would be limited to construction-related activities associated with the pole sites and conductor pull sites. The Arica Project would not affect desert dry wash woodland on site. As identified in the Impact BIO-3 discussion below, the construction and use of the interior roads on the Victory Pass Project would permanently impact approximately 0.19 acres of desert dry wash woodland, the shared gen-tie would impact approximately 3.51 acres, and the off-site access road improvements would impact up to 4.95 acres of desert dry wash woodland. The bulk of the gen-tie lines would span the desert dry wash woodland as much as possible. Refer to Table 3.4-1, Table 3.4-2, and Figure 3.4-1.

Direct and indirect impacts to desert dry wash woodland would be minimized and reduced to below a level of significance by incorporating APMs and implementing MMs. APM BIO-2 requires that special-status vegetation be flagged for protection and that a Revegetation Plan be prepared for temporarily impacted habitat to avoid and minimize impacts to vegetation. This will reduce impacts to special-status vegetation communities outside of the permanent impact areas. APM BIO-4 requires the use of BMPs to minimize introduction and spread of invasive plant species to protect native habitat from infestation. APM BIO-5 requires the use of Biological Monitors during construction to ensure that crews avoid impacts to vegetation and habitat to the maximum extent and that sensitive resources are properly flagged. APM BIO-6 requires a WEEP to train all construction crew on sensitive resources and measures to avoid and minimize impacts. APM BIO-10 requires that vehicles and equipment park in previously disturbed or developed areas to the maximum extent possible to avoid impacts to native vegetation. APM BIO-14 requires that development of new roads be minimized and that clearing and blading of vegetation for temporary vehicle access be avoided to the maximum extent possible. APM BIO-16 requires the implementation of a Habitat Management Plan to manage sensitive biological resources during O&M. APM BIO-17 requires dust suppression to minimize its effects to native vegetation.

Incorporation of the APMs described above would avoid and minimize impacts to desert dry wash woodland and other vegetation communities; however, the potential for significant impacts would remain absent implementation of additional MMs. With incorporation of the APMs described above and implementation of the additional MMs described below, the impacts would be reduced to less than significant. Impacts to desert dry wash woodland would be minimized by MM BIO-1 through MM BIO-6, described under Impact BIO-1. Notably, MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts) provides compensation for desert dry wash woodland habitat. Additionally, MM BIO-13 (Stream Protection and Compensation) requires compensation for impacts to streams, including desert dry wash woodland and other streams identified in Impact BIO-3 below, as a measure necessary to protect fish and wildlife associated with streams. Together, this series of MMs would minimize adverse impacts to desert dry wash woodland and offset the permanent loss through off-site habitat compensation. Therefore, issuance of the Permits would result in less-than-significant impacts with implementation of mitigation and relevant APMs.

Impact BIO-3: Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

LESS THAN SIGNIFICANT WITH MITIGATION. No wetlands would be affected by the proposed Projects, and the Project sites are not subject to federal regulation due to their location within the Ford Dry Lake watershed, which is an intrastate basin not identified as jurisdictional waters of the United States (Section 3.4.2, Environmental Setting, Jurisdictional Waters).

Construction would mostly avoid state-regulated jurisdictional waters found along the desert dry wash woodlands on the Project sites. However, there would be impacts, as shown in Table 3.4-2. Impacts to state-jurisdictional streams would require the Applicants to provide required notification to CDFW under California Fish and Game Code Section 1602 and to likely obtain Lake and Streambed Agreements from CDFW, conditioned on reasonable measures necessary to protect fish and wildlife. The Applicants would also provide required notification to the Regional Water Quality Control Board under the Porter-Cologne Water Quality Act and likely obtain a Waste Discharge Requirement.

Table 3.4-2. Impacts to Jurisdictional Waters of the State

	Arica Solar (acres)	Victory Pass (acres) ²	Shared Gen-tie (acres)	Access Road (acres)	Total (acres)
Colorado River Basin RWQCB Jurisdictional Waters					
Unvegetated Ephemeral Dry Wash (OHWM width)	30	32	1	0.5	63.5
CDFW Jurisdictional Streams					
Unvegetated Ephemeral Dry Wash (bank to bank)	40	40.15	0.01	0.5	80.66
Desert Dry Wash Woodland	0	0.19	3.51	4.95	8.65

Note: RWQCB = Regional Water Quality Control Board; OHWM = ordinary high water mark; CDFW = California Department of Fish and Wildlife.

State-jurisdictional waters on the proposed solar facility sites include native desert dry wash woodland habitat, addressed in detail under Impact BIO-2, and unvegetated ephemeral dry wash. The unvegetated

² Includes interior project roads.

streams convey water and sediment to other stream channels and their associated vegetation and habitat (e.g., desert dry wash woodland), both on the sites and off site downstream.

The Projects do not include diversion channels, ~~detention basins~~, or other substantial alterations to the existing surface hydrology that would result in a change to off-site hydrology. Water and sediment would be conveyed downslope across the site by sheet flow or within channels after site preparation and construction. However, surface flow patterns, velocities, and sediment loads may be altered throughout the site by solar panel foundations, access roads, and other features. Potential impacts to the unvegetated ephemeral dry wash could include increased siltation, fluvial transport of silts or pollutants off site via the ephemeral channels, or altered flows causing downstream erosion or eliminating natural transport of sands and water to downstream habitat areas. Details of impacts to desert dry wash woodland are addressed in Impact BIO-2 and Table 3.4-2. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1.

Several APMs are proposed to minimize impacts to jurisdictional waters. APM BIO-3 requires that wetlands, streams, and banks be avoided to the extent feasible. APM BIO-4 requires that BMPs for soil erosion and sedimentation of streams be used. APM BIO-5 requires the use of Biological Monitors during construction to ensure that crews avoid impacts to jurisdictional waters to the maximum extent and that sensitive resources are properly flagged. APM BIO-6 requires a WEEP to train all construction crew on sensitive resources and measures to avoid and minimize impacts. APM BIO-10 requires that vehicles and equipment park in previously disturbed or developed areas to the maximum extent possible to avoid impacts to jurisdictional waters. APM BIO-12 requires that no vehicles or equipment be refueled within 100 feet of an ephemeral drainage or wetland. MM BIO-13 requires a series of BMPs to prevent or minimize adverse effects to stream function and off-site habitats, which may include, but not be limited to, dewatering procedures, retention basins, swales, stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences. APM BIO-14 requires that development of new roads be minimized and that clearing and blading of vegetation for temporary vehicle access be avoided to the maximum extent possible. APM BIO-15 requires that development on the site maintain existing hydrologic patterns that support seasonal wetlands. APM BIO-21 requires that chemicals and fuels be used in compliance with regulations to minimize the possibility of habitat contamination.

Incorporation of the APMs described above would avoid and minimize indirect impacts to jurisdictional waters to some extent; however, the potential for significant impacts would remain absent implementation of additional MMs. With incorporation of the APMs described above and the implementation of additional MMs described below, the impacts would be reduced to less than significant. MM BIO-13 (Stream Protection and Compensation) would require a series of BMPs to prevent or minimize adverse effects to stream function and off-site habitats, would require the Applicants to obtain a Lake and Streambed Agreement from CDFW and Waste Discharge Requirements from the Regional Water Quality Control Board prior to initiating construction in jurisdictional waters of the state including streams, and would provide compensatory mitigation for impacts to desert dry wash woodland and unvegetated ephemeral dry wash. Additionally, potential direct and indirect impacts would be offset by MM BIO-1 through MM BIO-6 described under Impact BIO-1. In combination, these measures will mitigate, minimize, and prevent adverse effects to waters of the state including streams. Therefore, issuance of the Permits would result in less-than-significant impacts with implementation of mitigation and relevant APMs.

Impact BIO-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

LESS THAN SIGNIFICANT WITH MITIGATION. Wildlife movement in the vicinity of the Project sites is compromised by the surrounding existing solar projects and I-10 to the south. The proposed solar facilities would further interrupt potential wildlife movement routes through the area. Approximately 55 acres of the western portion of the Victory Pass Project site is within a 3,480-acre multiple-species linkage area identified in the DRECP (BLM 2016b). The proposed development footprint mostly avoids desert dry wash woodland vegetation, leaving most of the multiple-species linkage area within the boundaries of the ROW open to wildlife movement. This linkage area also overlaps the adjacent Athos and Oberon Solar Projects. The Athos Project solar site is located on private lands administered by Riverside County, not subject to the DRECP CMAs, and is now under construction. The proposed Oberon Project would be located on BLM lands and is currently under environmental review. Like the Victory Pass Project, the Oberon Project is subject to DRECP CMAs and therefore would avoid or minimize development in desert dry wash woodland vegetation and leave a portion of the multiple-species linkage area open to wildlife movement. The Project areas overlap a habitat linkage identified in the California Desert Connectivity Project's Desert Linkage Network. By avoiding desert dry wash woodland, a portion of this habitat linkage within the Project areas would also be avoided. Development within these linkage areas would reduce the available wildlife movement habitat for many species, including desert tortoise, bighorn sheep, and burro deer; however, in confining development to a DFA, the Projects would not infringe on the movement corridor preserved by the DRECP, which struck a balance between development and conservation on a landscape level.

The Victory Pass Project site is located adjacent to I-10 and development of the site may impede wildlife movement in the vicinity of the three nearby undercrossings. Open space areas between the Victory Pass site and the freeway would be valuable for terrestrial wildlife to access the undercrossings. The Arica Solar Project site is located over 1 mile from the freeway and would not interfere with wildlife movement at the undercrossings. The Victory Pass Solar Project fenceline varies in distance from the I-10, with the closest location approximately 70 feet from I-10. The species expected to move through the site and possibly to the undercrossings include smaller and medium-sized mammals, such as rabbits, American badger, kit fox, and rodents. These species are generally able to move freely through solar sites, moving in and out of the sites through openings in the fence. Therefore, small and medium-sized mammals would still be able to access the undercrossings and move through the area. The culverts remain open since the fence lines are located north of the undercrossings and habitat between them remains open. Larger wildlife, such as bighorn sheep and burro deer are described above.

Conservation of the smaller-scale habitat accessibility within the I-10 corridor between Cactus City and Desert Center is important, including conservation of culverts and bridges beneath I-10 and loss of desert tortoise habitat connections to these crossings. MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts) would require acquisition and management of off-site special-status wildlife species habitat in perpetuity to offset impacts to special-status wildlife species and the associated permanent loss of natural vegetation and habitat on the Project sites and incorporates the USFWS focus area between Desert Center and Cactus City to the extent feasible. This measure would offset the proposed Project's impacts to wildlife movement habitat.

Wildlife "nursery sites" such as bird nests or suitable breeding habitat for other species may be found throughout the Project sites. APM BIO-7 requires nesting bird surveys if project activities occur between February 1 and August 31. APM BIO-1 requires pre-construction biological clearance surveys to minimize impacts to special-status plants and wildlife. APM BIO-5 requires the use of Biological Monitors during construction to ensure that crews avoid impacts to habitat to the maximum extent. APM BIO-6 requires

a WEEP to train all construction crew on sensitive resources and measures to avoid and minimize impacts. APM BIO-10 requires that vehicles and equipment park in previously disturbed or developed areas to the maximum extent possible to avoid impacts to habitat. APM BIO-25 (Bird and Bat Protection) would require pre-construction surveys to identify active bird nests and avoidance of disturbance or disruption of nesting behavior, as well as O&M monitoring for bird mortality and implementation of an adaptive management framework if mortality thresholds are exceeded. Potential indirect impacts are described in detail in the introduction text under Impact BIO-1. Implementation of MM BIO-1 through MM BIO-6 would minimize and offset direct and indirect impacts to special-status wildlife species, common wildlife species, and associated habitat, and MM BIO-8 through MM BIO-12 would prevent or offset adverse effects to special-status wildlife nesting or breeding sites by requiring specific pre-construction surveys, passive translocation of certain species away from the area, avoidance of buffer areas while bird nests are active, and other related requirements. Direct and indirect impacts to wildlife “nursery sites” would be reduced to less than significant with incorporation of these APMs and implantation of MMs. Therefore, issuance of the Permits would result in less-than-significant impacts with implementation of mitigation and relevant APMs.

Gen-tie construction activities could dissuade wildlife from approaching construction areas due to noise and disturbance. This effect would be temporary (limited to construction phase). Once completed, the gen-tie lines would have minimal effects on terrestrial wildlife movement. However, the gen-tie towers and conductors would present a collision hazard for birds, including special-status species and common birds that are protected under state and federal laws, as discussed in Impact BIO-1. APM BIO-7 requires nesting bird surveys if project activities occur between February 1 and August 31. MM BIO-10 (Gen-Tie Lines) would require mechanisms to visually warn birds such as permanent markers or bird flight diverters, avoidance or minimized use of guy wires, and maintenance of sufficient distance between all conductors and grounded components to prevent electrocution. These measures would minimize impacts related to collisions and wildlife movement across the proposed gen-tie routes. Therefore, issuance of the Permits would result in less-than-significant impacts with implementation of mitigation and relevant APMs.

Impact BIO-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

LESS THAN SIGNIFICANT WITH MITIGATION. Because the Projects are entirely on federal land, they are not subject to local policies and ordinances. However, to comply with CEQA and for informational purposes, the policies were reviewed and considered. Riverside County policies and ordinances applicable to biological resources are identified in Section 3.4.1. These policies direct permanent preservation of important open space lands, compliance with the Multipurpose Open Space Element of the General Plan, protection of environmental resources, cooperation with resource agencies for the voluntary protection or restoration of significant habitats, and preservation of multispecies habitat resources. The Projects, including their conformance with the DRECP CMAs and the MMs identified in this EIR, are consistent with the County of Riverside’s overall conservation objectives.

The solar facilities and gen-tie lines would impact biological resources protected by the General Plan provisions, including special-status plants and animals, sensitive habitats, and waters of the state, as described under Impacts BIO-1 through BIO-4. Without mitigation, these impacts could result in significant impacts to biological resources. MM BIO-1 through MM BIO-13 would assure consistency with local policies. Therefore, issuance of the Permits would result in less-than-significant impacts with implementation of mitigation.

Impact BIO-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved, local, regional, or state habitat conservation plan?

LESS THAN SIGNIFICANT. The Project sites are not within an area covered by an adopted Habitat Conservation Plan; Natural Community Conservation Plan; or other approved local or state habitat conservation plan. However, as described in Section 3.4.1, CDFW has determined the DRECP is, in an informal sense, an approved regional habitat conservation plan relevant to CDFW’s lead agency review of the Projects under CEQA. The DRECP is relevant to CDFW’s lead agency review of the Projects because information provided by the Applicants to CDFW regarding potential effects to biological resources is presented, in part, against the backdrop of the Projects’ consistency with the DRECP. In addition, as noted in Section 3.4.1, BLM describes the DRECP as a landscape-level plan that streamlines renewable energy development while conserving unique and valuable desert ecosystems and providing outdoor recreation opportunities. CDFW has determined for purposes of CEQA that the DRECP is an “other approved . . . regional . . . habitat conservation plan” relevant to its lead agency review of the Projects.

CDFW appreciates that the Project sites and surrounding public lands are managed by BLM under the DRECP LUPA, a federal land management plan. BLM is reviewing the Projects under the DRECP LUPA. The BLM Environmental Assessment includes review of each CMA to ensure the Projects either comply with the CMA or the CMA is not applicable. BLM publishes the Environmental Assessment and the Applicability of DRECP Conservation and Management Actions for projects on its ePlanning website.³

BLM’s land use determination regarding the Projects’ consistency with the DRECP under federal law is entitled to deference. From a CEQA perspective, CDFW as a lead agency has not identified any inconsistency in its independent judgment between the Projects and the DRECP. Similarly, CDFW has not identified and is not aware of any conflict between the DRECP and the proposed Projects that may cause a physical change to the environment not already considered in this EIR. Therefore, issuance of the Permits specifically and approval of the Projects under CEQA as the whole of the action would not result in significant impacts to the environment as a result of a conflict with an adopted Habitat Conservation Plan; Natural Community Conservation Plan; or other approved local, regional, or state habitat conservation plan.

Cumulative Impacts

Geographic Scope. The geographic extent for this cumulative analysis includes the desert portion of Riverside County (Palm Springs to the Colorado River) because it consists of similar habitat areas and encompasses the home ranges of species such as those that would be directly or indirectly affected by the proposed Projects. Cumulative effects for biological resources apply to both plant and wildlife species and must consider distribution, habitat availability, designated critical habitat, local rarity or commonness, and likely responses to Projects’ effects for each species.

From a timing perspective, the Projects could contribute to cumulative effects to biological resources starting with the initiation of on-site activities and continuing throughout the O&M phase, through final decommissioning.

³ The Victory Pass Solar Project ePlanning webpage is <https://eplanning.blm.gov/eplanning-ui/project/1502795/510> and the Arica Solar Project ePlanning webpage is <https://eplanning.blm.gov/eplanning-ui/project/1502789/510>.

As the number of solar projects and other development and land use changes increase in the region, the cumulative impacts to biological resources, such as habitat loss, also increase. This analysis considers the current and foreseeable future projects identified in Tables 3.1-1 and 3.1-2 (Section 3.1.2 Cumulative Impact Scenario). This analysis presumes that MM BIO-1 through MM BIO-13 and APM BIO-1 through APM BIO-24, identified in Section 3.4.4 to avoid and substantially lessen the Projects' impacts to biological resources, would be implemented.

Vegetation and Habitat. Construction-related impacts of the cumulative projects would temporarily increase noise and activities, dust, and other habitat disturbances throughout the region. On completion of construction, longer-term land use conversion would contribute to reduced habitat availability and increased habitat fragmentation. In the context of the number of past, present, and future projects, many of which are large solar projects, the effects of the proposed Projects would contribute incrementally to the cumulative significant impacts to vegetation and habitat. The loss of natural habitats that would result from the Projects would be offset by protecting compensation lands off site and by the areas conserved under the DRECP. Under the DRECP, ACECs and California Desert National Conservation Lands were protected as part of the overall goal of the DRECP to "advance federal and state natural resource conservation goals" (BLM 2016b). The project would compensate for impacts to Sonoran creosote bush scrub and desert saltbush scrub, widespread and common habitat types, and desert dry wash woodland, a sensitive community. MM BIO-6 requires compensation of approximately 3,598.5 acres of habitat. Accordingly, the Projects' incremental contribution to the cumulative vegetation and habitat impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Sensitive Habitat and Jurisdictional Waters of the State. The proposed Projects would minimally affect desert dry wash woodland. They would also affect unvegetated ephemeral dry wash, which meets criteria as jurisdictional waters of the state. Many of the cumulative projects would have qualitatively similar impacts to desert dry wash woodland and unvegetated ephemeral dry wash due to the nature of the area and the large washes that cross it, resulting in a significant cumulative impact. The effects of the proposed Projects would contribute incrementally to the cumulative impacts to sensitive habitat and jurisdictional waters of the state, but this incremental contribution would not be considerable because the Projects have been designed to avoid sensitive habitat or are avoiding the desert dry wash woodland except for minor incursions because of the DRECP CMAs and because mitigation measures identified under Impact BIO-4 and BIO-5 would reduce the impacts so that residual effects would be minimal. MM BIO-6 and MM BIO-13 require compensatory mitigation for impacts to vegetation communities and streams, and requires obtaining permits from CDFW and RWQCB prior to ground-disturbing activities in jurisdictional waters of the state, including streams. Accordingly, the Projects' incremental contribution to the cumulative impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Special-Status Plants. The proposed Projects could affect special status plants identified in Section 3.4.3 under Impact BIO-1. No threatened or endangered plants were identified on the site. One BLM sensitive plant, Harwood's eriastrum, was identified on the Arica Solar Project ROW but would be avoided by the project development by a 0.25-mile buffer. A few individual Emory's crucifixion thorn and Harwood's milkvetch would be affected, and several additional more widespread special-status plants could be affected. The past, present, and future projects would have similar or greater impacts to special-status plants, which would result in a cumulatively significant impact to regional special-status plants. The contribution of the Project would not be considerable because of the limited number of special-status plants on site, avoidance of the Harwood's eriastrum, and because mitigation measures identified under Impact BIO-1 would reduce the impacts so that residual effects would be minimal. MM BIO-7 requires special-status plant species mitigation. Accordingly, the Projects' incremental contribution to the

cumulative impacts to special-status plants caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Desert Tortoise. Suitable habitat is present throughout the Projects' area, and desert tortoises or signs were observed on both Project sites but not within the gen-tie line. Most of the past, present, and foreseeable future projects in the vicinity would impact desert tortoise habitat and many of them could directly affect desert tortoises. Due to the number and size of the cumulative projects they would result in a cumulatively significant impact. Mitigation measures and APMs identified in this EIR for the Projects would minimize take of desert tortoise and offset adverse impacts to its habitat. These measures would reduce the impacts so that residual effects to desert tortoise would be minimal and the incremental contribution of the proposed Projects to the cumulative impacts to desert tortoise would not be considerable because the potential for mortality of desert tortoise would be minimized and habitat loss would be offset. Accordingly, the Projects' incremental contribution to the cumulative impacts to desert tortoise caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Mojave Fringe-Toed Lizard. Mojave fringe-toed lizards and suitable habitat were observed in the Arica Solar Project site but not the Victory Pass Project site or gen-tie line. In combination with the Palen Solar Project and other projects in the sand habitat such as the Eagle Crest Pumped Storage gen-tie line and the Easley Solar & Green Hydrogen Project, the Arica Project could have a cumulatively significant impact on Mojave fringe-toed lizard populations and habitat. Windblown sand would be limited by project fencing but would continue to move through the developed solar field and Mojave fringe-toed lizard could continue to occupy the site following construction. Mitigation measures identified under Impact BIO-1 would minimize potential Mojave fringe-toed lizard injury or mortality. Residual impacts to Mojave fringe-toed lizard would be minimal. Therefore, the incremental contribution of the Arica Project to the cumulative impacts to Mojave fringe-toed lizard would not be considerable because little or no take or habitat loss would occur. Accordingly, the Projects' incremental contribution to the cumulative impacts to Mojave fringe-toed lizard caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Native Birds, Including Special-Status Passerine Birds. Migratory birds are expected to occur throughout the area during construction and O&M of the Projects. Land use conversion for the Projects and any of the cumulative projects would result in habitat loss and degradation, displacement, decreased foraging activities, and potentially disruption or failure of nesting, increased predation, or mortality. Solar panels and the gen-tie line of the proposed Projects and other solar PV projects may cause collision hazards leading to bird mortality. Taken together, the projects would result in a cumulatively significant impact for native birds.

The proposed Projects' impacts would be mitigated to the extent feasible through pre-construction surveys, avoidance of active nests, O&M phase mortality monitoring, and mitigation applied through adaptive management, depending on monitoring results, as described in APM BIO-7 (nesting bird surveys) and APM BIO-25 (Bird and Bat Protection). Natural habitat loss would be minimized and offset through mitigation measures identified under Impact BIO-1. The incremental contribution of the proposed Projects to the cumulative impacts to native bird habitat and nesting success would not be considerable because any incidental take would be minimized and native habitat loss would be offset.

Regarding potential collision from the solar facilities or gen-tie line, APM BIO-25 (Bird and Bat Protection) would require monitoring of bird kills and implementation of adaptive management. MM BIO-10 (Gen-tie Lines) would require mechanisms to visually warn birds, such as permanent markers or bird flight diverters, avoidance or minimized use of guy wires; and maintenance of sufficient distance

between all conductors and grounded components to prevent electrocution. With incorporation of relevant APMs, the Projects' incremental contribution to the cumulative impacts to native birds, including special status passerine birds, caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Burrowing Owl. Potential impacts of the cumulative solar projects to burrowing owl include habitat loss or degradation; injury or mortality if burrowing owl are present in a work area, particularly during nesting season; and mortality or injury from collision with project facilities, as described above for native birds. Other cumulative projects in the vicinity include several transmission lines and solar energy projects with similar habitat for burrowing owl, compared to the Projects. The effects of the cumulative solar projects, in combination, constitute a significant impact to habitat loss and mortality to burrowing owls. The incremental contribution of the proposed Projects and gen-tie line to the cumulative impacts to burrowing owls, including habitat loss, construction-related mortality, or collision mortality, would not be considerable with implementation of various APMs and other measures; native habitat loss would be offset, no take of individuals is expected during construction, and the prospect of potential collision as described above for native birds is insubstantial. Accordingly, the Projects' incremental contribution to the cumulative impacts to burrowing owl caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Special-Status Raptors, Including Golden Eagle. No special-status raptors (except burrowing owl, above) are expected to nest on the solar facility sites. However, the sites provide suitable seasonal or year-round foraging habitat for several raptor species, described under Impact BIO-1, and are within potential foraging distance of known golden eagle nesting territories. Several raptors are likely to forage infrequently on the solar facility sites at any time of year, including winter and migration seasons. Effects of the other projects in the vicinity would be similar to potential effects of the proposed Projects. Cumulatively, these projects could result in significant impact due to habitat loss. The incremental contribution of the proposed Arica and Victory Pass facilities and gen-tie line to the cumulative impacts to special-status raptors, including habitat and collision mortality, would not be considerable because native habitat loss would be offset and the prospect of potential collision is insubstantial as described above for Native Birds. Accordingly, the Projects' incremental contribution to the cumulative impacts to special-status raptors, including golden eagle, caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Gila Woodpecker and Elf Owl. Potential habitat for Gila woodpecker and elf owl is present in desert dry wash woodland on the Project sites but would be largely avoided through compliance with CMAs. Based on habitat conditions and negative field surveys, there is a low possibility that either species may nest on the site or may be subject to potential collision with the facilities. Potential impacts, including mortality or other direct impacts, as well as habitat loss for both species, would be avoided and substantially lessened through mitigation measures and APMs identified under Impact BIO-1. These APMs and measures are expected to avoid take of Gila woodpecker or elf owl and to offset native habitat loss. Impacts of the projects in the vicinity would cumulatively result in significant loss of desert dry wash woodland habitat, potentially affecting Gila woodpecker and elf owl habitat availability. The incremental contribution of the Projects to the cumulative impacts to Gila woodpecker and elf owl, including habitat loss and collision mortality, would not be considerable because native habitat loss would be limited and offset. The prospect of potential collision impacts is insubstantial as described above for native birds. Accordingly, the Projects' incremental contribution to the cumulative impacts to Gila woodpecker and elf owl caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Desert kit fox and American badger. Recently active desert kit fox burrows and potential American badger burrows occur on the Project sites. Both species could use native habitats wherever prey animals may be present. Both species are expected to occur on the cumulative project sites and loss of the habitat and prey species could result in a significant cumulative impact. APMs and mitigation measures identified under Impact BIO-1 would offset habitat loss for both species, prevent or minimize wildlife injury and mortality, and require pre-construction surveys to exclude both species from work sites. The incremental contribution of the proposed Projects to the cumulative impacts to these species would not be considerable because any incidental take will be minimized and native habitat loss would be offset. Accordingly, the Projects' incremental contribution to the cumulative impacts to desert kit fox and American badger caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Burro Deer. The principal potential cumulative impacts to burro deer would be reduced access to dependable irrigation water at agricultural sites. Burro deer are expected to occur on the cumulative projects and loss of the habitat and access to water sources could result in a significant cumulative impact. Access to water sources may be interrupted by the Projects; however, burro deer have been observed to continue to use the greater Desert Center area during the ongoing solar development and are expected to avoid Project-related disturbance during construction. Existing agricultural ponds are located adjacent to the Victory Pass Project site to the east and desert dry wash woodland habitat that could be used for movement in the vicinity of the ponds would be avoided. These ponds can be accessed through the I-10 undercrossings, including the three directly adjacent to the Victory Pass Project site and the Palen Project site. APMs and mitigation measures identified under Impact BIO-1 and BIO-4 would offset habitat loss and wildlife movement habitat. The incremental contribution of the proposed Projects to the cumulative impacts to burro deer would not be considerable because no take would occur, and movement habitat loss would be offset. Accordingly, the Projects' incremental contribution to the cumulative impacts to burro deer caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Special-Status Bats. Construction of the Projects could adversely impact special-status bats through the elimination of desert shrubland foraging habitat or (less likely) loss of roost sites in desert dry wash woodland habitat on the sites, albeit the bulk of the desert dry wash woodland is avoided. Removal of those features could disturb, injure, or kill bats. APMs and mitigation measures identified under Impact BIO-1 would minimize and offset habitat loss, require inspection of structures prior to activities, allow wildlife to escape prior to demolition, and require pre-construction surveys or scheduling of tree removal outside the bat maternal roosting season. These measures are expected to avoid or substantially lessen potentially significant impacts to special-status bats and offset habitat loss. Cumulative projects would also eliminate desert shrubland foraging habitat and result in the loss of roost sites, a significant cumulative impact to special-status bats. These projects would implement measures similar to those identified for the proposed Projects, including offset of native habitats, avoidance of active roosts, and BBCSs. The incremental contribution of the proposed Projects to the cumulative impacts to special-status bats caused by other projects, including habitat loss and collision mortality, would not be considerable because native habitat loss would be offset and the prospect of potential collision is insubstantial as described above for Native Birds. Accordingly, the Projects' incremental contribution to the cumulative impacts to special-status bats caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Wildlife Movement. Cumulative impacts analysis for wildlife movement takes into account projects within 5 miles that could impact the multispecies linkage area identified in the DRECP, which links the Palen–McCoy Mountains to the northeast and the Chocolate Mountains to the southwest. These projects include

the existing Southern California Edison Red Bluff Substation to the south and the Palen Solar Project to the east, the Athos Solar Project to the east and west, ~~and~~ the Oberon Solar Project to the west, and the Easley Solar & Green Hydrogen Project to the east and west. By avoiding dry desert wash woodland habitat on the Victory Pass site, portions of the multispecies linkage on the Victory Pass site would be avoided, leaving an approximately 0.25-mile-wide corridor that connects to one of the I-10 undercrossings. An additional portion of the linkage that connects to another undercrossing between the Victory Pass and Oberon Solar Projects would remain undeveloped. Furthermore, while the Victory Pass Project site and gen-tie line overlap with the multi-species linkage area, the site is within a DFA, as presented in the DRECP. Undeveloped lands would remain in the ACECs that surround the Project sites, which, in combination with the multispecies linkage area, would allow wildlife to pass around the Projects and access the I-10 crossings. In addition, probable future projects on BLM-administered lands would be permitted under the DRECP and would be required to comply with the CMAs regarding avoidance of desert dry wash woodland and to ensure the linkage area retains its function as a wildlife corridor. Therefore, cumulative impacts to wildlife movement would be less than significant. Accordingly, the Projects' incremental contribution to any cumulative impacts to wildlife movement caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Local Policies and Ordinances. All existing projects underwent environmental review and were approved by federal or local agencies. During that review, the agencies reviewed the applicable policies and ensured the projects complied or required a LUPA or conditional use permit. BLM is reviewing the proposed Projects to ensure they are consistent with the applicable BLM policies, including the DRECP, which specifically identified land including the Project sites as likely suitable for solar development. Cumulative impacts to policies and ordinances would be less than significant. Therefore, the Projects are not expected to result in a cumulatively considerable incremental contribution related to any relevant policies or local ordinances.

3.4.4 Mitigation Measures

The APMs are considered part of the Projects and the Applicants commit to complying with and implementing these measures to reduce potential impacts during construction and O&M.

The impact analysis in this EIR assumes incorporation of all the APMs. However, where other impacts are identified that are not addressed by these APMs, or where the APMs do not reduce impacts to less-than-significant levels, the EIR identifies and recommends the additional potentially feasible MMs set forth below to avoid and substantially lessen significant effects to the extent feasible. APMs will be incorporated into the Mitigation Monitoring and Reporting Program developed for the Projects and monitored in the same fashion as the MMs.

The following MMs were developed to supplement the APMs and to avoid and substantially lessen the significant effects to biological resources expected to result from CDFW's issuance of the Permits and the Applicants' construction and operation of the proposed Projects.

MM BIO-1 Biological Monitoring. The Applicants shall assign a Lead Biologist as the primary point of contact for the Bureau of Land Management (BLM), the California Department of Fish and Wildlife (CDFW), and the U.S. Fish and Wildlife Service (USFWS) regarding biological resources mitigation and compliance. For desert tortoise protection measures (MM BIO-9, below), the Lead Biologist will serve as the Field Contact Representative or Designated Representative. The Applicants shall provide the resume of the proposed Lead Biologist to BLM, CDFW, and USFWS for concurrence prior to onset of ground-disturbing activities. The Lead Biologist shall have demonstrated expertise with the biological resources within the Projects' area. The Lead Biologist duties will vary during the construction, operations

and maintenance (O&M), and future decommissioning of the Projects. In general, the duties will include, but will not be limited to those listed below:

- Regular, direct communication with representatives of lead agencies and resource agencies, as appropriate.
- Train and supervise additional Biological Monitors to ensure that all biological monitoring activities are completed properly and according to schedules. Monitoring will include inspections of any area or activity that may impact biological resources to ensure compliance with all mitigation measures for biological resources.
- Conduct or oversee Worker Environmental Awareness Program training (MM BIO-2).
- Conduct or oversee clearance surveys and monitoring duties as defined in all adopted mitigation measures.
- Halt any activities in any area if it is determined that the activity, if continued, would cause an unauthorized adverse impact to biological resources.
- Clearly mark sensitive biological resource areas during construction, O&M, and future decommissioning, and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions.
- Conduct or oversee bi-weekly (twice weekly) compliance inspections during ground-disturbing construction activities. Inspections will include delineating limits of disturbance, fence construction activities, pre-construction clearance surveys, and initial clearing, grubbing, and grading.
- Inspect or oversee daily inspection of active construction or O&M activity areas where animals may have become trapped. At the end of each workday, either inspect installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way and relocate them if necessary.
- During the operations phase of the Project, conduct quarterly compliance inspections (fencing condition, trash management, wildlife mortality logs, etc.); conduct weed monitoring and control (according to the Integrated Weed Management Plan).
- Immediately notify the Applicants, lead agencies, and resource agencies (as applicable) in writing of dead or injured special-status species, or of any non-compliance with biological mitigation measures or permit conditions.
- During construction, provide weekly verbal or written updates to the lead agencies and resources agencies including any information pertinent to state or federal permits.
- During construction, prepare and submit monthly compliance reports. During operations, prepare and submit annual compliance reports.

MM BIO-2

Worker Environmental Awareness Training. Applicants shall conduct an education program for all persons employed or otherwise working in the Projects' area before performing any work. The program shall consist of a presentation from the Authorized Biologist(s) or Biological Monitor(s) that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to the California Endangered Species Act, including legal protection, recovery efforts, penalties for

violations and Project-specific protective measures described in this Incidental Take Permit. Applicants shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Projects' area. Applicants shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Projects' area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually. If the training program is presented as a prerecorded presentation, it shall be accompanied by a formal process that allows submission of questions that shall be answered by the Authorized Biologist(s) within 24 hours of submission.

The Worker Environmental Awareness Program shall:

- Be developed by or in consultation with the Lead Biologist and consist of an on-site or training center presentation with supporting written material and electronic media, including photographs of protected species, available to all participants.
- Provide an explanation of the function of flagging that designates authorized work areas and specify the prohibition of soil disturbance or vehicle travel outside designated areas.
- Discuss general safety protocols such as vehicle speed limits, hazardous substance spill prevention and containment measures, and fire prevention and protection measures.
- Review mitigation and biological permit requirements.
- Explain the sensitivity of the vegetation and habitat within and adjacent to work areas and proper identification of these resources.
- Discuss the federal and state Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act and the consequences of non-compliance with these acts.
- Discuss the locations and types of sensitive biological resources on the Project sites and adjacent areas and explain the reasons for protecting these resources.
- Inform participants that no snakes, other reptiles, mammals, birds, bats, or any other wildlife will be harmed or harassed.
- Place special emphasis on species that may occur on the Project sites and/or gen-tie lines, including special-status plants, desert tortoise, Mojave fringe-toed lizard, burrowing owl, golden eagle, nesting birds, desert kit fox, American badger, and burro deer.
- Specify guidelines for avoiding rattlesnakes and reporting rattlesnake observations to ensure worker safety and avoid killing or injuring rattlesnakes. Wherever feasible, rattlesnakes should be safely removed from the work area using appropriate snake handling equipment, including a secure storage container for transport.
- Describe workers' responsibilities for avoiding the introduction of invasive weeds onto the Project sites and surrounding areas; describe the Integrated Weed Management Plan.
- Provide contact information for the Lead Biologist and instructions for notification of any vehicle-wildlife collisions or dead or injured wildlife species encountered during Project-related activities.

- Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines. Along with their signature, each worker will receive a sticker for their hard hat indicating they received the training.

MM BIO-3 **Minimization of Vegetation and Habitat Impacts.** Prior to ground-disturbing activities, work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and spoils) shall be delineated with construction fencing (e.g., the common orange vinyl material) or staking to clearly identify the limits of work and shall be verified by the Lead Biologist. No paint or permanent discoloring agents shall be applied to rocks or vegetation (to indicate surveyor construction activity limits or for any other purpose). Fencing/staking shall remain in place for the duration of construction. Spoils will be stockpiled in disturbed areas. All disturbances, vehicles, and equipment shall be confined to the fenced/flagged areas.

When feasible, construction activities shall minimize soil and vegetation disturbance to minimize impacts to soil and root systems. Upon completion of construction activities in any given area, all unused materials, equipment, staking and flagging, and refuse shall be removed and properly disposed of, including wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, and metal or plastic containers. Any unused or leftover hazardous products shall be properly disposed of off site.

Hazardous materials shall be handled, and spills or leaks shall be promptly corrected and cleaned up according to applicable requirements. Vehicles will be properly maintained to prevent spills or leaks. Hazardous materials, including motor oil, fuel, antifreeze, hydraulic fluid, grease, shall not be allowed to enter drainage channels.

MM BIO-4 **Integrated Weed Management Plan.** The Applicants shall prepare and implement an Integrated Weed Management Plan (IWMP) to minimize or prevent invasive weeds from infesting the site or spreading into surrounding habitat. The IWMP must comply with existing Bureau of Land Management (BLM) plans and permits including the Vegetation Treatments Using Herbicides (2007) and Vegetation Treatment Using Aminopyralid, Fluroxypyr, and Rimsulfuron (2016a), including requiring a Pesticide Use Permit approved by BLM and adhering to the BLM design features. The IWMP shall also comply with the California Department of Fish and Wildlife (CDFW) measures to minimize impacts to desert tortoise: The Applicants shall only use herbicides containing a harmless dye and registered with the California Department of Pesticide Regulation (DPR). All herbicides shall be applied in accordance with regulations set by DPR. All herbicides shall be used according to labeled instructions. Labeled instructions for the herbicide used shall be made available to CDFW upon request. No herbicide application when winds are greater than 5 miles per hour. CDFW and BLM must approve the plan prior to ground-disturbing activities. The IWMP shall identify weed species occurring or potentially occurring in the Projects' area, means to prevent their introduction or spread (e.g., vehicle cleaning and inspections), monitoring methods to identify infestations, and timely implementation of manual or chemical (as appropriate) suppression and containment measures to control or eradicate invasive weeds. The IWMP shall identify herbicides that may be used for control or eradication and avoid herbicide use in or around any environmentally sensitive areas. The IWMP shall also include a reporting schedule to be implemented by the Lead Biologist.

MM BIO-5 **Vegetation Resources Management Plan.** The Applicants shall prepare and implement a Vegetation Resources Management Plan (VRMP), to be reviewed and approved by the

Bureau of Land Management (BLM) and the California Department of Fish and Wildlife prior to ground-disturbing activities. The VRMP will address revegetation of temporarily disturbed areas and ongoing operations and maintenance management of native vegetation within the solar fields.

The goal of revegetation shall be to prevent further degradation of areas that may be temporarily disturbed by Project activities, but not to restore pre-disturbance habitat values (those impacts are mitigated through off-site compensation). The VRMP shall detail the methods to revegetate temporarily impacted sites, salvage cacti from the Project footprint, and long-term vegetation management within the solar facility during its operations.

- *Revegetation of temporarily impacted sites.* The VRMP shall specify methods to prevent or minimize further site degradation; stabilize soils; maximize the likelihood of vegetation recovery over time (for areas supporting native vegetation); and minimize soil erosion, dust generation, and weed invasions. The nature of revegetation will differ according to each site, its pre-disturbance condition, and the nature of the construction disturbance (e.g., drive and crush vs. blading). The VRMP shall include (a) soil preparation measures, including locations of recontouring, decompacting, imprinting, or other treatments; (b) details for topsoil storage, as applicable; (c) plant material collection and acquisition guidelines, including guidelines for salvaging, storing, and handling plants from the Project sites, as well as obtaining replacement plants from outside the Projects' area (plant materials shall be limited to locally occurring native species from local sources); (d) a plan drawing or schematic depicting the temporary disturbance areas (drawing of "typical" gen-tie structure sites is appropriate); (e) time of year that the planting or seeding will occur and the methodology of the planting; (f) a description of the irrigation, if used; (g) success criteria; (h) a monitoring program to measure the success criteria, commensurate with the VRMP's goals; and (i) contingency measures for failed revegetation efforts not meeting success criteria.
- *Cactus Salvage.* In conformance with CMA LUPA-BIO-VEG-5, LUPA-BIO-VEG-7, and BLM policy, the Applicants shall include salvaged or nursery stock yuccas (all species) and cacti (excluding cholla species, genus *Cylindropuntia*) in revegetation plans and implementation affecting BLM lands. The VRMP shall include methods to salvage and replant cacti and yucca found on the site; season for salvaging the plants; methods for salvage, storage, and re-planting them; locations for re-planting; and appropriate monitoring and success criteria for the salvage work.
- *Other Plants Protected under Desert Native Plants Act.* The Applicants shall, to the extent feasible, salvage other species protected under the California Desert Native Plants Act, including species in the families Fouquieriaceae; species in the genera *Prosopis* and *Parkinsonia* (*Cercidium*); and the species *Acacia greggii*, *Atriplex hymenelytra*, *Dalea spinosa*, and *Olneya tesota*. The VRMP shall include methods to salvage these species on site; season for salvaging the plants; methods for salvage, storage, and re-planting them; locations for re-planting; and appropriate monitoring and success criteria for the salvage work.
- *Operations Phase On-Site Vegetation Management:* The VRMP shall include methods and scheduling for on-site vegetation management throughout the operations phase, describing mowing or other vegetation treatments to be implemented to minimize

interference with the solar panels, fire hazard, soil disturbance, and disturbance of any bird nests. It also shall address disposal of mown material and incorporate all applicable components of the Integrated Weed Management Plan, including any proposed herbicide usage.

MM BIO-6 Compensation for Special-Status Wildlife Species Impacts.

The Applicants shall acquire, protect and fund the management, in perpetuity, of 3,598.5 acres of compensation habitat to offset loss of special-status wildlife species. The Arica Project compensatory mitigation is 1,355 acres and the Victory Pass Project compensatory mitigation is 2,243.5 acres. The California Department of Fish and Wildlife (CDFW) will calculate and identify the final amount of required compensatory mitigation as provided by this measure, and may consider additional minimization measures that may reduce the final amount of required compensatory mitigation, prior to issuance of the Permits and final approval of the Projects under CEQA⁴.

Criteria for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of compensation lands shall include all the following: Provide habitat value that is biologically superior or equivalent to the habitat impacted, taking into consideration the habitat requirements and presence of special-status species including desert tortoise, Mojave fringe-toed lizard, and burrowing owl, soils, vegetation, topography, human-related disturbance, invasive species, wildlife movement opportunity, proximity to other protected lands, management feasibility, and other habitat values. The primary focus area for acquiring parcels shall be within the Colorado Desert Recovery Unit. Compensatory mitigation required for MM BIO-7 and MM BIO-13 may be fulfilled by the compensatory mitigation lands acquired to fulfill MM BIO-6 to the extent that the mitigation lands also meet the requirements of those mitigation measures. The Applicants shall provide funding or bonding, subject to the review and approval of CDFW, for the acquisition in fee title and through a conservation easement, initial habitat improvements and long-term maintenance and management of the compensation lands prior to construction activities on native habitat. Prior to initiating project construction, or within 18 months of initiating construction if financial security is provided, the Applicants shall implement a Compensation Plan approved by CDFW by recording a conservation easement over the compensation lands and funding an endowment or other long-term funding mechanism approved by CDFW. A draft Compensation Plan, identifying proposed compensation lands, proposed land ownership, proposed draft conservation easement language, proposed draft long-term management plan, draft funding analysis, and proposed long-term management funding mechanism amount, along with all supporting information for the acquisition and conservation of the proposed compensation lands, shall be submitted for review and approval to the Bureau of Land Management, CDFW, and the U.S. Fish and Wildlife Service prior to initiating project construction or within 9 months of initiating project construction if financial security is provided.

⁴ The Applicant's approach to mitigating for special-status wildlife species included compensatory mitigation ratios for impacts to vegetation community types and desert tortoise critical habitat consistent with CMA LUPA-BIO-COMP-1. However, CDFW, for the purposes of CEQA, has taken a different approach to compensation in MM BIO-6 to compensate for special status wildlife species and associated habitat impacted by the Projects.

MM BIO-7 **Special-Status Plant Species Mitigation.** The Applicants shall mitigate impacts to Emory's crucifixion thorn and Harwood's milkvetch (CRPR 2) through one or a combination of the following strategies.

- *Off-site compensation.* The Applicants shall provide compensation lands consisting of occupied Emory's crucifixion thorn and Harwood's milkvetch habitat at a 1:1 ratio for any occupied habitat affected by the Project, according to the terms described in MM BIO-6 (Compensation for Special-Status Wildlife Species Impacts). Occupied habitat shall be calculated on the Project sites and on the compensation lands as including each special status plant occurrence and a surrounding 100-foot buffer area. Off-site compensation shall be incorporated into the Projects' Habitat Compensation Plan for review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management (BLM). Compensatory mitigation required for MM BIO-7 may be fulfilled by the compensatory mitigation lands acquired to fulfill MM BIO-6 to the extent that the mitigation lands also meet the requirements of this mitigation measure.
- *Salvage.* The Applicants shall consult with Rancho Santa Ana Botanic Garden (RSABG) regarding the success of salvage efforts for these species at the Desert Sunlight Solar Farm Project site. If the strategy has been shown to be feasible, then the Applicants shall prepare and implement an Emory's Crucifixion Thorn and Harwood's Milkvetch Salvage and Relocation Plan to be reviewed and approved by CDFW and BLM prior to disturbance of any occupied Emory's crucifixion thorn and Harwood's milkvetch habitat. Emory's crucifixion thorn and Harwood's milkvetch on private lands may also be subject to the provisions of the California Desert Native Plants Act. The Applicants shall contract with RSABG or another entity with comparable experience and qualifications to salvage at minimum 75% of Emory's crucifixion thorn and Harwood's milkvetch individuals from the Project sites and transfer them to a suitable off-site location.
- *Horticultural propagation and off-site introduction.* If salvage and relocation is not believed to be feasible for Emory's crucifixion thorn or Harwood's milkvetch, then the Applicants shall consult with RSABG or another qualified entity to develop and implement an appropriate experimental propagation and relocation strategy.

MM BIO-8 **Wildlife Protection.** The Applicants shall undertake the following measures during construction, operations and maintenance, and decommissioning to avoid or minimize impacts to wildlife. Implementation of all measures shall be subject to review and approval by the California Department of Fish and Wildlife (CDFW) and the Bureau of Land Management.

- *Wildlife avoidance.* Wherever feasible, Project activities shall avoid interference with wildlife (include ground-dwelling species, birds, bats) by allowing animals to escape from a work site prior to disturbance; conducting pre-construction surveys and exclusion measures for certain species as specified in other measures; checking existing structures (homes, trailers, etc.) for animals such as bats, barn owls, skunks, or snakes that may be present; and safely excluding them prior to removing the structures.
- *Minimize traffic impacts.* The Applicants shall specify and enforce maximum vehicle speed limits as specified in the Traffic Control Plan to minimize risk of wildlife collisions and fugitive dust.
- *Minimize lighting impacts.* Night lighting, when in use, shall be designed, installed, and maintained to prevent side casting of light towards surrounding fish or wildlife habitat.

- *Avoid use of toxic substances.* Soil bonding and weighting agents used for dust suppression on unpaved surfaces shall be non-toxic to wildlife and plants.
- *Minimize noise and vibration impacts.* The Applicants shall conform to noise requirements specified in the noise analysis of this EIR to minimize noise to off-site habitat.
- *Water.* Potable and non-potable water sources such as tanks, ponds, and pipes shall be covered or otherwise secured to prevent animals (including birds) from entering. Prevention methods may include storing water within closed tanks or covering open tanks with 2-centimeter netting. Dust abatement shall use the minimum amount of water on dirt roads and construction areas to meet safety and air quality standards. Water sources (e.g., hydrants, tanks, etc.) shall be checked periodically by biological monitors to ensure they do not create puddles.
- *Trash.* All food and trash that could attract predators will be properly disposed of in self-closing, sealable containers, with lids that latch to prevent wind, common ravens (*Corvus corax*), and other scavengers from opening the containers. Applicants shall ensure all trash receptacles are regularly inspected, emptied, and removed from the Project Area at least once a week to prevent spillage and maintain sanitary conditions.
- *Firearms and Dogs.* The Applicants shall prohibit Project personnel and any other individuals associated with the Project from bringing any firearms on the Project site, except those in the possession of authorized security personnel or local, state, or federal law enforcement officials. To prevent harassment or mortality of special-status animals or destruction of their habitats by dogs or cats, no pets should be permitted on project sites except dogs that may be used to aid in official and approved monitoring procedures/protocols or service dogs under Title II and Title III of the American with Disabilities Act.
- *Wildlife netting or exclusion fencing.* The Applicants may install temporary or permanent netting or fencing around equipment, work areas, or Project facilities to prevent wildlife exposure to hazards such as toxic materials or vehicle strikes or prevent birds from nesting on equipment or facilities. Bird deterrent netting shall be maintained free of holes and shall be deployed and secured on the equipment in a manner that, insofar as possible, prevents wildlife from becoming trapped inside the netted area or within the excess netting. The biological monitor shall inspect netting (if installed) twice daily, at the beginning and close of each workday. The biological monitor shall inspect exclusion fence (if installed) weekly.
- *Wildlife entrapment.* Any pipes, culverts, or similar structures with a diameter greater than 3 inches and less than 8 inches aboveground shall be inspected by the Authorized Biologist(s) and/or Biological Monitor(s) before the material is moved, buried, or capped. The Authorized Biologist(s) and/or Biological Monitor(s) shall inspect all open holes and trenches within the project site a minimum of once a day and just prior to backfilling. At the end of each workday, Applicants shall place an escape ramp at each end of trenches to allow any animals that may have become trapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees. If any worker discovers an animal has become trapped, they shall halt activities and notify the Biological Monitor(s), Authorized Biologist(s), or Lead Biologist immediately. Project workers shall allow the animal to escape

unimpeded if possible, or an approved biologist shall move the animal out of harm's way before allowing work to continue.

- *Dead or injured wildlife* shall be reported to CDFW or the local animal control agency, as appropriate (special-status species must be reported to CDFW). A biological monitor shall safely move the carcass out of the road or work area if needed and dispose of the animal as directed by the agency. If an animal is entrapped, a biological monitor shall free the animal if feasible, or work with construction crews to free it, in compliance with safety requirements, or work with animal control or CDFW to resolve the situation.
- *Pest control*. No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project sites, on off-site project facilities and activities, or in support of any other project activities.

MM BIO-9

Desert Tortoise Protection. No desert tortoise may be handled or relocated without authorization from U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). The Applicants shall obtain incidental take authorization from both agencies to address any potential take of desert tortoise, including authorization to handle or translocate desert tortoise. Desert tortoises would be handled or translocated according to a Desert Tortoise Relocation Plan, pending approval by both agencies.

The Applicants shall employ an approved Authorized Biologist(s) who is qualified to handle desert tortoises and an approved Biological Monitor(s). Additionally, the Applicants shall designate a Lead Biologist as the Designated Representative for purposes of the desert tortoise protection measures identified below. The Authorized Biologist may be the Project's Lead Biologist, a biological monitor, or another individual.

Biological Monitor(s). The Biological Monitor(s) shall be knowledgeable and experienced in the biology and natural history of the desert tortoise. They shall be responsible for monitoring activities to help minimize and fully mitigate or avoid the incidental take of desert tortoise and to minimize disturbance of habitat.

Authorized Biologist. The Authorized Biologist(s) shall be knowledgeable in the biology and natural history of the desert tortoise. They shall be responsible for monitoring activities to help minimize and fully mitigate and avoid the incidental take of individual desert tortoise and to minimize disturbance of habitat. Additionally, the Authorized Biologist(s) shall have experience with all activities that will be carried out for the Project including, but not limited to, excavating burrows; handling and temporarily holding the desert tortoise; relocating/translocating; reconstructing burrows; unearthing and relocating eggs; locating, identifying, and recording all forms of signs; collecting blood samples; conducting health assessments; conducting protocol level surveys; and/or attaching and removing transmitters to and from the Covered Species.

Biologists and Veterinarians Approvals. The Applicants shall obtain CDFW approval of the Authorized Biologist(s), Biological Monitor(s), and if needed veterinarian(s), in writing before starting ground disturbance, and shall also obtain advance written approval if any of these entities are changed.

Authorized Biologist(s) and Biological Monitor(s) Authority. To ensure compliance with protective measures, the Biological Monitor(s) and/or Authorized Biologist(s) shall have

authority and take necessary steps to immediately stop work if necessary and/or Authorized Biologist(s) shall order any reasonable measure to avoid the unauthorized take of a desert tortoise. If a Biological Monitor or Authorized Biologist stops work, work shall not resume until an Authorized Biologist determines that all activities are in compliance and communicates that determination to the on-site manager. The applicant shall inform all persons employed or otherwise working in the Projects' area that the Biological Monitor(s) and Authorized Biologist(s) have the authority described in this subsection.

The Authorized Biologist shall conduct or direct pre-construction clearance surveys for each work area, direct Biological Monitors to watch for tortoises wandering into the construction areas, check under vehicles, and examine excavations and other potential pitfalls for entrapped animals. The Authorized Biologist shall be responsible for overseeing compliance with desert tortoise protective measures and for coordination with the Project's Lead Biologist or Designated Representative.

Neither the Designated Representative nor any other Project employee may bar or limit any communications between the lead agencies or resource agencies and any Project biologist, Biological Monitor, or contracted biologist. Upon notification by the Authorized Biologist or another Biological Monitor of any noncompliance, the Field Contact Representative shall ensure that appropriate corrective action is taken. Corrective actions shall be documented by the Authorized Biologist. The following incidents shall require immediate cessation of any Project activities that could harm a desert tortoise: (1) location of a desert tortoise within a work area; (2) imminent threat of injury or death to a desert tortoise; (3) unauthorized handling of a desert tortoise, regardless of intent; (4) operation of construction equipment or vehicles outside a Project area cleared of desert tortoise, except on designated roads; and (5) conducting any construction activity without a biological monitor where one is required.

The Applicants shall be responsible for implementing the following requirements, under direction by the Authorized Biologist and Designated Representative where appropriate.

- *Preconstruction Clearance Survey.* Clearance surveys shall use the methods described in the most recent USFWS Desert Tortoise (Mojave Population) Field Manual. Pre-construction clearance surveys shall be completed using perpendicular survey routes within the Project Area. Pre-construction clearance surveys cannot be combined with other clearance surveys conducted for other species while using the same personnel. Ground disturbance cannot start until two negative results from consecutive surveys using perpendicular survey routes for the desert tortoise are documented. Clearance surveys must be conducted during the active season for desert tortoises (April through May or September through October), unless authorized by CDFW and USFWS. If a tortoise or an occupied tortoise burrow is located during clearance surveys, work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord, or if it has been translocated off the site under authorization by USFWS and CDFW.
- *Worker Training:* The Applicants shall conduct an education program for all persons employed or otherwise working in the Projects' area before performing any work. The program shall consist of a presentation from the Authorized Biologist(s) or Biological Monitor(s) that includes a discussion of the biology and general behavior of the Covered Species; information about the distribution and habitat needs of the Covered Species; sensitivity of the Covered Species to human activities; its status pursuant to

the California Endangered Species Act, including legal protection, recovery efforts, and penalties for violations; and Project-specific protective measures. The Applicants shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. They shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Projects' area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. If the training program is presented as a prerecorded presentation, it shall be accompanied by a formal process that allows submission of questions that shall be answered by the Authorized Biologist(s) within 24 hours of submission.

- *Construction phase, operation phase, and decommissioning phase tortoise exclusion fencing.* Prior to initiation of Project construction, permanent desert tortoise exclusion fencing shall be installed around work areas where a permanent chain link fence will also be installed (such as the solar arrays). The permanent desert tortoise exclusion fencing shall be attached to the 6-foot-high standard chain link security fencing. This fencing shall be installed around the array fields, operation and maintenance facilities, warehouses, substations, switchyard, and interconnection facilities. The desert tortoise fence shall be constructed according to Chapter 8 of the USFWS Field Manual, but if any tortoises less than or equal to 100 millimeters Midline Carapace Length are translocated within 500 meters of the Project site, tortoise fencing shall be 16 gauge or heavier galvanized after welded wire with mesh opening of ½ inch horizontal by ½ inch vertical.
- The Authorized Biologist shall direct a clearance survey before the tortoise fence is enclosed to ensure no tortoises are in the work area. Any potentially occupied burrows shall be avoided until monitoring or field observations (e.g., with a motion-activated camera or fiber-optic mounted video camera) determine absence. If live tortoises or an occupied tortoise burrow are identified in the work area, tortoises shall be relocated under authorization by USFWS and CDFW or allowed to leave on their own accord before enclosing the fence. The fence shall be either continuously monitored prior to closure, or clearance surveys shall be repeated prior to closure after tortoises are removed. Once installed, exclusion fencing shall be inspected at least monthly and within 24 hours following all major rain events, and corrective action taken if needed to maintain it. Tortoise exclusion fencing shall include a "cattle guard" or desert tortoise exclusion gate at each entry point. This gate shall remain closed at all times, except when vehicles are entering or leaving. If it is deemed necessary to leave the gate open for extended periods of time (e.g., during high traffic periods), the gate may be left open as long as a qualified biologist is present to monitor for tortoise activity in the vicinity. The permanent desert tortoise exclusion fencing shall be maintained for the life of the Project.
- *Unfenced work areas.* As an alternative to installation of permanent desert tortoise exclusion fencing, any work conducted in an area that is not fenced to exclude desert tortoises (e.g., gen-tie tower sites) shall be monitored by a qualified biologist who must stop work if a tortoise enters the work area. Work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord or been translocated off the site under authorization by USFWS and CDFW. Work sites with potential hazards to desert tortoise (e.g., auger holes, steep-sided

depressions) that are outside of the desert tortoise exclusion fencing shall be fenced by installing exclusionary fencing, covered, or shall not be left unfilled overnight.

- *Tortoises under vehicles.* The ground beneath vehicles parked outside of desert tortoise exclusion fencing shall be inspected immediately prior to the vehicle being moved. If a tortoise is found beneath a vehicle, the vehicle shall not be moved until the desert tortoise leaves of its own accord.
- *Tortoises on roads.* If a tortoise is observed on or near the road accessing a work area, vehicles shall stop to allow the tortoise to move off the road on its own.
- *Tortoise observations.* Any time a tortoise is observed within or near a work site, Project work activities shall only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord or been translocated off the site under authorization by USFWS and CDFW. If a tortoise is observed outside of exclusion fencing, construction shall stop and the tortoise shall be allowed to move out of the area on its own. If a tortoise or tortoise burrow is observed within the exclusion fencing, construction in the vicinity shall stop, pending translocation of the tortoise or other action as authorized by USFWS and CDFW.
- *Dead or injured specimens.* Applicants shall immediately notify the Biological Monitor(s) and/or Authorized Biologist(s) if a Covered Species is taken or injured by a Project-related activity, or if a desert tortoise is otherwise found dead or injured within the vicinity of the Project. The Biological Monitor(s), Authorized Biologist(s), or Designated Representative shall provide initial notification to CDFW and USFWS. Following initial notification, a written report shall be emailed within 3 calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and, if possible, a photograph, explanation as to cause of take or injury, and any other pertinent information. The Applicants or their agent shall also immediately notify the Palm Springs Fish and Wildlife Office by email or telephone. Written notification must be made within 5 days of the finding, both to the appropriate USFWS field office and to USFWS's Division of Law Enforcement.
- **Raven Management Plan.** The Applicants shall develop and implement a Raven Management Plan to address activities that may occur during the pre-construction, construction, future decommissioning, and operations and maintenance phases of the Project that may attract common ravens (*Corvus corax*), a nuisance species that is a subsidized predator of desert tortoises and other sensitive species in the Project vicinity. The measures contained in the Raven Management Plan shall be designed to:
 - Identify conditions associated with the Project that might provide raven subsidies or attractants
 - Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities
 - Describe monitoring during construction and operations, including methods to identify individual ravens that prey on desert tortoises
 - The Project Applicants shall submit payment to the Project sub-account of the Renewable Energy Action Team Account held by the National Fish and Wildlife Foundation to support the Service's Regional Raven Management Program. The one-time fee shall be as described in the cost allocation methodology or more

current guidance as provided by the Service or CDFW. The contribution to the regional raven management plan shall be \$105 per acre impacted

MM BIO-10 Gen-Tie Lines. Gen-tie line support structures and other facility structures shall be designed in compliance with current standards and practices to discourage their use by raptors for perching or nesting (e.g., by use of anti-perching devices). This design would also reduce the potential for increased predation of special-status species, such as the desert tortoise. Mechanisms to visually warn birds (permanent markers or bird flight diverters) shall be placed on gen-tie lines at regular intervals to prevent birds from colliding with the lines (APLIC 2006). To the extent practicable, the use of guy wires shall be avoided because they pose a collision hazard for birds and bats. Necessary guy wires shall be clearly marked with bird flight diverters to reduce the probability of collision. Shield wires shall be marked with devices that have been scientifically tested and found to significantly reduce the potential for bird collisions. Gen-tie lines shall maintain sufficient distance between all conductors and grounded components to prevent potential for electrocution of the largest birds that may occur in the area (e.g., golden eagle and turkey vulture). They shall utilize non-specular conductors and non-reflective coatings on insulators.

MM BIO-11 Burrowing Owl Avoidance and Relocation. The Applicants shall prepare and implement a plan for burrowing owl. The plan shall be reviewed and guidance provided by the lead agencies prior to the start of ground-disturbing activities. Burrowing owl protection and relocation shall follow the Staff Report on Burrowing Owl Mitigation (CDFG 2012) and incorporate the following requirements:

- Pre-construction surveys for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash) shall be conducted throughout each work area. Survey schedules shall be coordinated with constructing the desert tortoise exclusion fence and the pre-construction desert tortoise clearance surveys. As needed, follow-up surveys shall be conducted no more than 14 days prior to construction.
- Should any of the pre-construction surveys identify burrowing owl or active burrows within the solar facility, the Lead Biologist shall coordinate with the Construction Contractor to implement avoidance and setback distances as specified in the Staff Report on Burrowing Owl Mitigation (CDFG 2012).
- Any unoccupied suitable burrows within the solar facility footprint shall be excavated and filled in under the supervision of the Lead Biologist prior to site preparation during the non-breeding season.
- The plan shall specify detailed methods for passive relocation of burrowing owls if needed and monitoring and management of the passive relocation including a 3-year monitoring program.

MM BIO-12 Desert Kit Fox and American Badger Relocation. The Applicants shall prepare and implement a plan for desert kit fox and American badger. The plan shall be reviewed and guidance provided by the lead agencies prior to the start of ground-disturbing activities. Under direction of the Lead Biologist, biological monitors shall conduct pre-construction surveys for desert kit fox and American badger. Survey schedules shall be coordinated with construction of the desert tortoise exclusion fence and the pre-construction desert tortoise clearance surveys. Surveys shall also consider the potential

presence of dens within 100 feet of the Project boundary (including utility corridors and access roads). If dens are detected, each den shall then be further classified as inactive, potentially active, or active. Active dens shall be avoided between January 15 and July 1 (or when pups are independent) and a 500-foot (no vegetation removal) buffer will be created around the den. Depending on the location of the den, a 500-foot buffer of intact vegetation may need to be maintained all the way up to the fenceline to allow cover for desert kit fox and/or American badger to get on and off the site before animals can be passively relocated. CDFW may authorize a reduction in the buffer distance in limited circumstances where site access is inhibited and a buffer reduction would not adversely affect desert kit fox and/or American badger.

Inactive dens directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse. During the non-breeding/pupping season potentially active dens within the construction footprint shall be monitored by a Biological Monitor for 3 consecutive nights using a tracking medium such as diatomaceous medium or fire clay and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after 3 nights, the den shall be excavated and backfilled by hand. If tracks are observed, dens shall be fitted with one-way trap doors to encourage animals to move off site. After 48 hours post-installation, the den shall be excavated by hand and collapsed. Dens shall be collapsed prior to construction of the perimeter fence, to allow animals the opportunity to move off site without impediment. If an active natal den is detected on the site, the California Department of Fish and Wildlife (CDFW) shall be contacted within 24 hours. The course of action would depend on the age of the pups, location of the den site, status of the perimeter fence, and the pending construction activities proposed near the den. A 500-foot no disturbance buffer shall be maintained around all active dens. Additionally, the following measures are required to minimize the likelihood of distemper transmission:

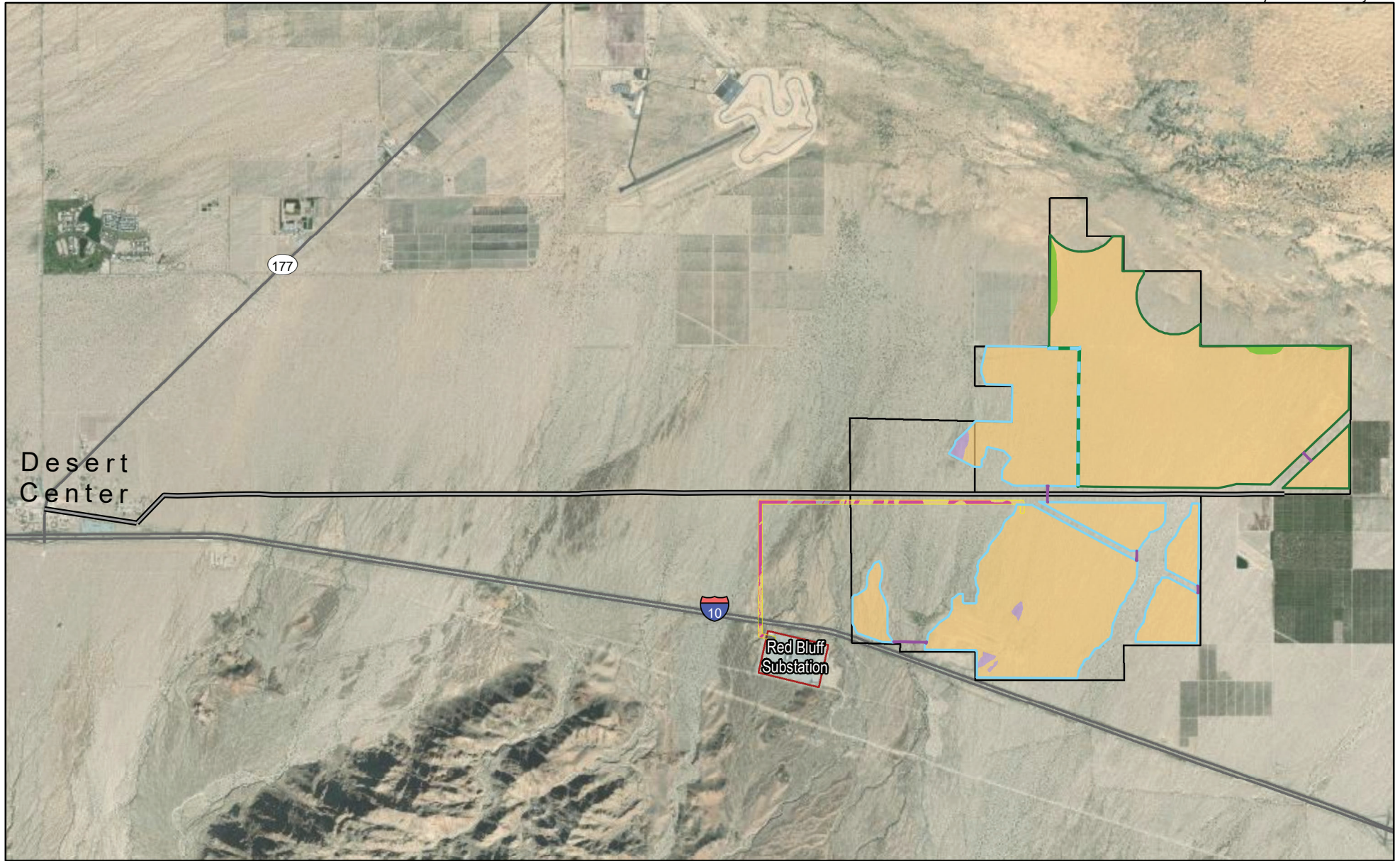
- Disinfection procedures for equipment and personnel will be followed during any activities related to kit fox on site. Any documented kit fox mortality shall be reported to CDFW within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until CDFW determines if the collection of necropsy samples is justified.

MM BIO-13

Stream Protection and Compensation. Prior to ground-disturbing activities in jurisdictional waters of the state including streams, the Applicants shall enter into a Lake and Streambed Agreement with the California Department of Fish and Wildlife (CDFW) and obtain applicable authorization from the Regional Water Quality Control Board. The Applicants shall implement all conditions associated with regulatory agency agreements/authorizations including compensatory mitigation and shall implement Best Management Practices identified below to minimize adverse impacts to streams and watersheds.

- Vehicles and equipment shall not be operated in ponded or flowing water except as specified by resource agencies.
- The Applicants shall minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible.
- The Applicants shall prevent water containing mud, silt, or other pollutants from grading or other activities from entering ephemeral drainages or being placed in locations that may be subjected to high storm flows.

- Spoil sites shall not be located within 30 feet from the boundaries of drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.
- Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources resulting from Project-related activities shall be prevented from contaminating the soil and/or entering ephemeral drainages. The Applicants shall ensure that safety precautions specified by this measure, as well as all other safety requirements of other measures and permit conditions, are followed during all phases of the Project.
- When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high-water mark of any drainage during construction, operation, and future decommissioning the Project.
- No petroleum products or other pollutants from the equipment shall be allowed to enter any state-jurisdictional waters under any flow.
- With the exception of the drainage control system installed for the Project, the installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade.
- No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters.
- Stationary equipment such as motors, pumps, generators, and welders located within or adjacent to a drainage shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as brooms, absorbent pads, and skimmers shall be on site prior to the start of construction.
- The cleanup of all spills shall begin immediately. CDFW and the Bureau of Land Management shall be notified immediately by the Applicants of any spills and shall be consulted regarding clean-up procedures.
- Projects impacts to 8.65 acres of desert dry wash woodland and 80.66 acres of unvegetated ephemeral dry wash shall be mitigated by providing compensatory mitigation. The CDFW will calculate and identify the final amount of required compensatory mitigation as provided by this measure prior to issuance of the Permits. Compensatory mitigation required for MM BIO-13 may be fulfilled by the compensatory mitigation lands acquired to fulfill MM BIO-6 to the extent that the mitigation lands provide adequate acres of desert dry wash woodland and unvegetated ephemeral dry wash as agreed to in the Lake and Streambed Agreement.



Sources: Aspen, 2021; Clearway, 2020; Ironwood, 2020; SCE, 2013; Esri, 2020

- BLM Right-of-Way Grant Application Area
- Proposed Access
- Proposed Shared Gen-tie Line
- Arica Solar Project Facilities (Project Fenceline)
- Victory Pass Solar Project Facilities (Project Fenceline)
- Project Roads
- Shared Fenceline

Vegetation and Cover Types

- Desert Pavement
- Developed/Disturbed
- Dry Desert Wash Woodland
- Saltbush Scrub
- Sonoran Creosote Bush Scrub

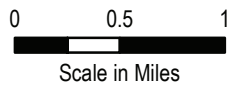
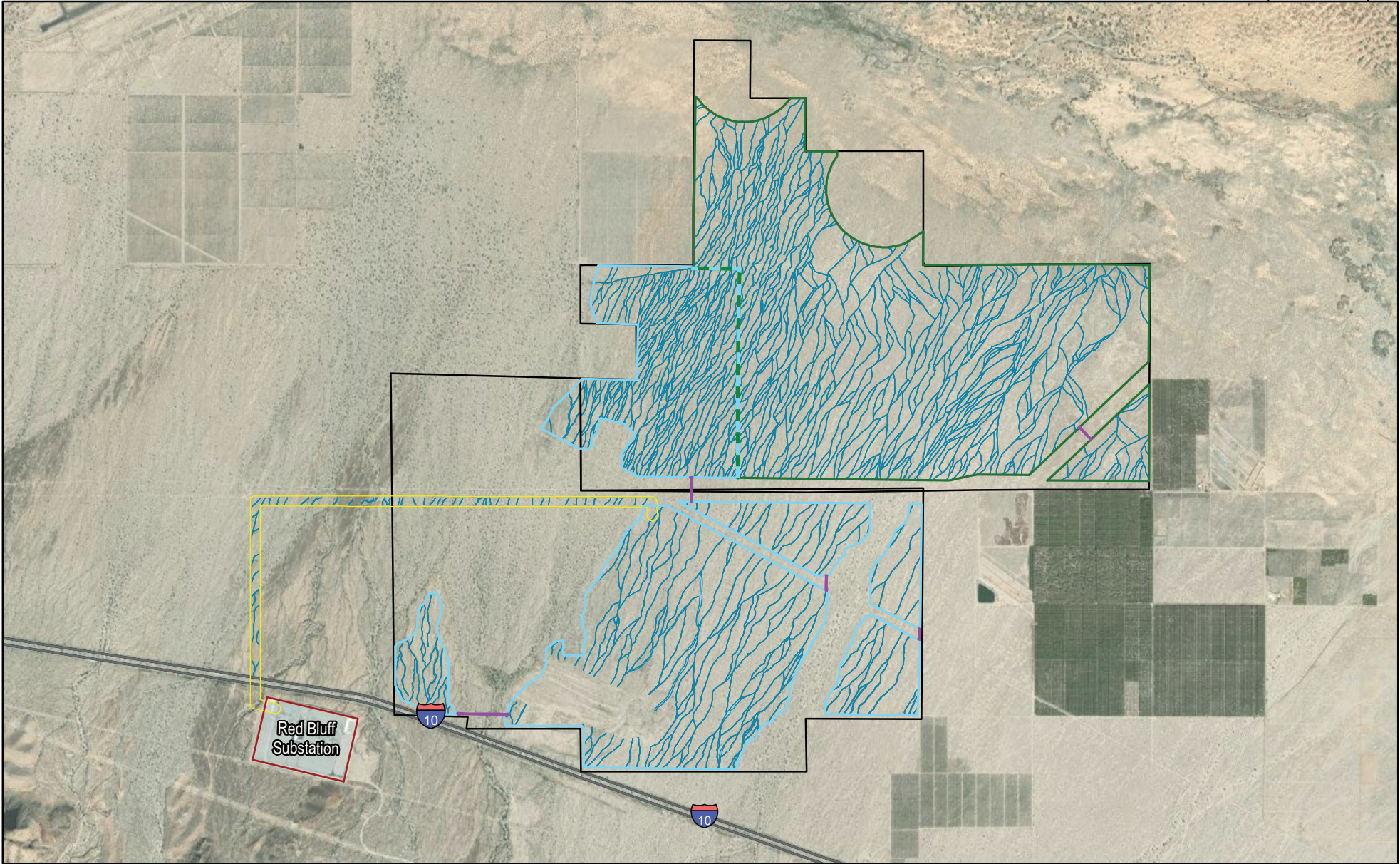


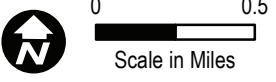
Figure 3.4-1

Vegetation Communities

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Sources: Aspen, 2021; Clearway, 2020; Ironwood, 2020; SCE, 2013; Esri, 2020

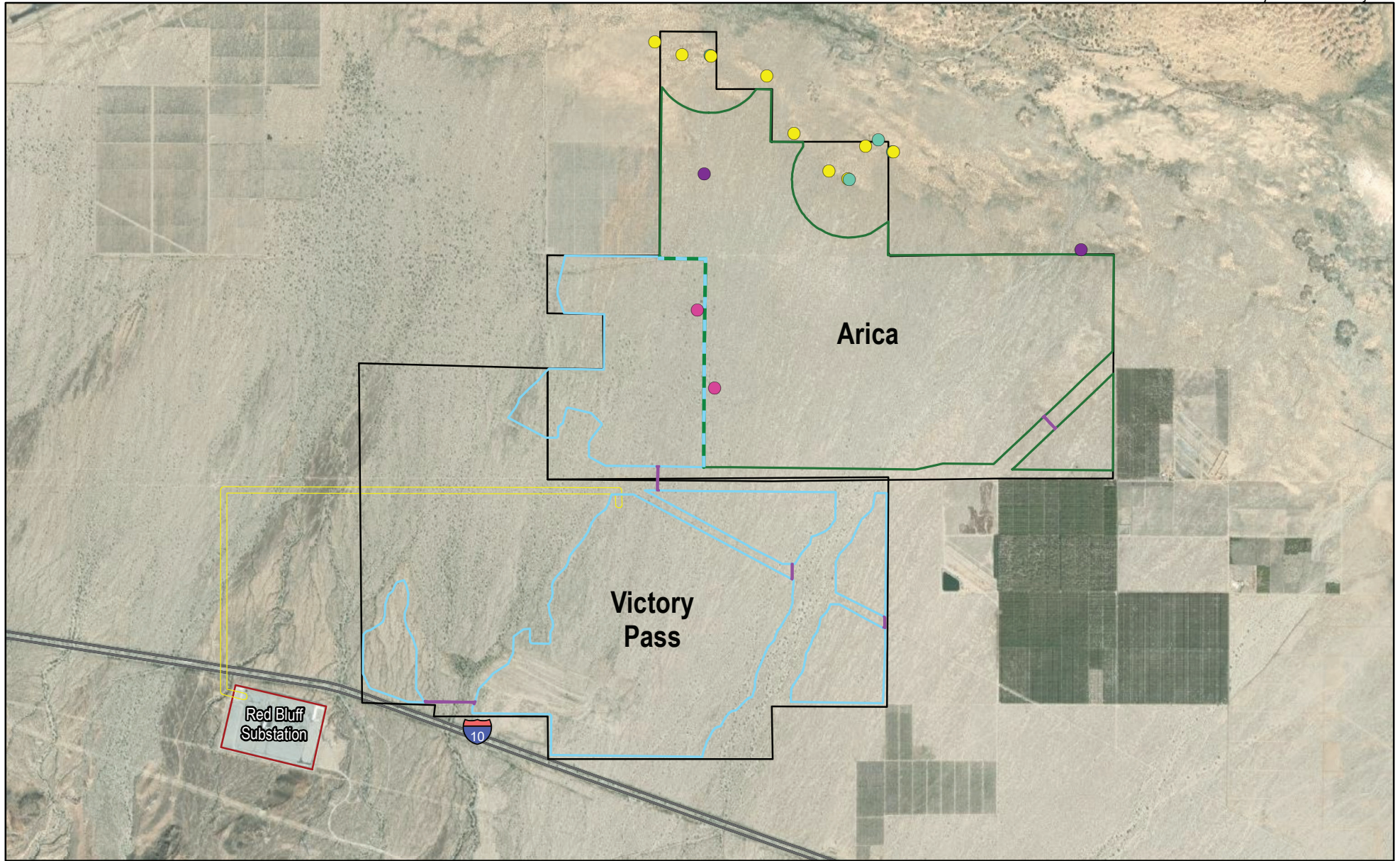


- BLM Right-of-Way Grant Application Area
- Shared Fenceline
- Arica Solar Project Facilities (Project Fenceline)
- Victory Pass Project Facilities (Project Fenceline)
- Project Roads
- Shared Gen-tie Line
- Jurisdictional Waters







Figure 3.4-2

Jurisdictional Waters





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Sources: Aspen, 2021; Clearway, 2020; Ironwood, 2020; SCE, 2013; Esri, 2020

-  BLM Right-of-Way Grant Application Area
-  Shared Fenceline
-  Arica Solar Project Facilities (Project Fenceline)
-  Victory Pass Solar Project Facilities (Project Fenceline)
-  Project Roads
-  Shared Gen-tie Line

Special-status Plant Occurrence

-  Emory's crucifixion thorn (*Castela emoryi*) CRPR 2B.2
-  Harwood's milkvetch (*Astragalus insularis* var. *harwoodii*) CRPR 2B.2
-  Harwood's eriastrum (*Eriastrum harwoodii*) CRPR 1B.2
-  Ribbed crypstantha (*Cryptantha costata*) CRPR 4.3

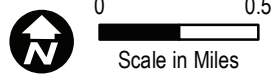
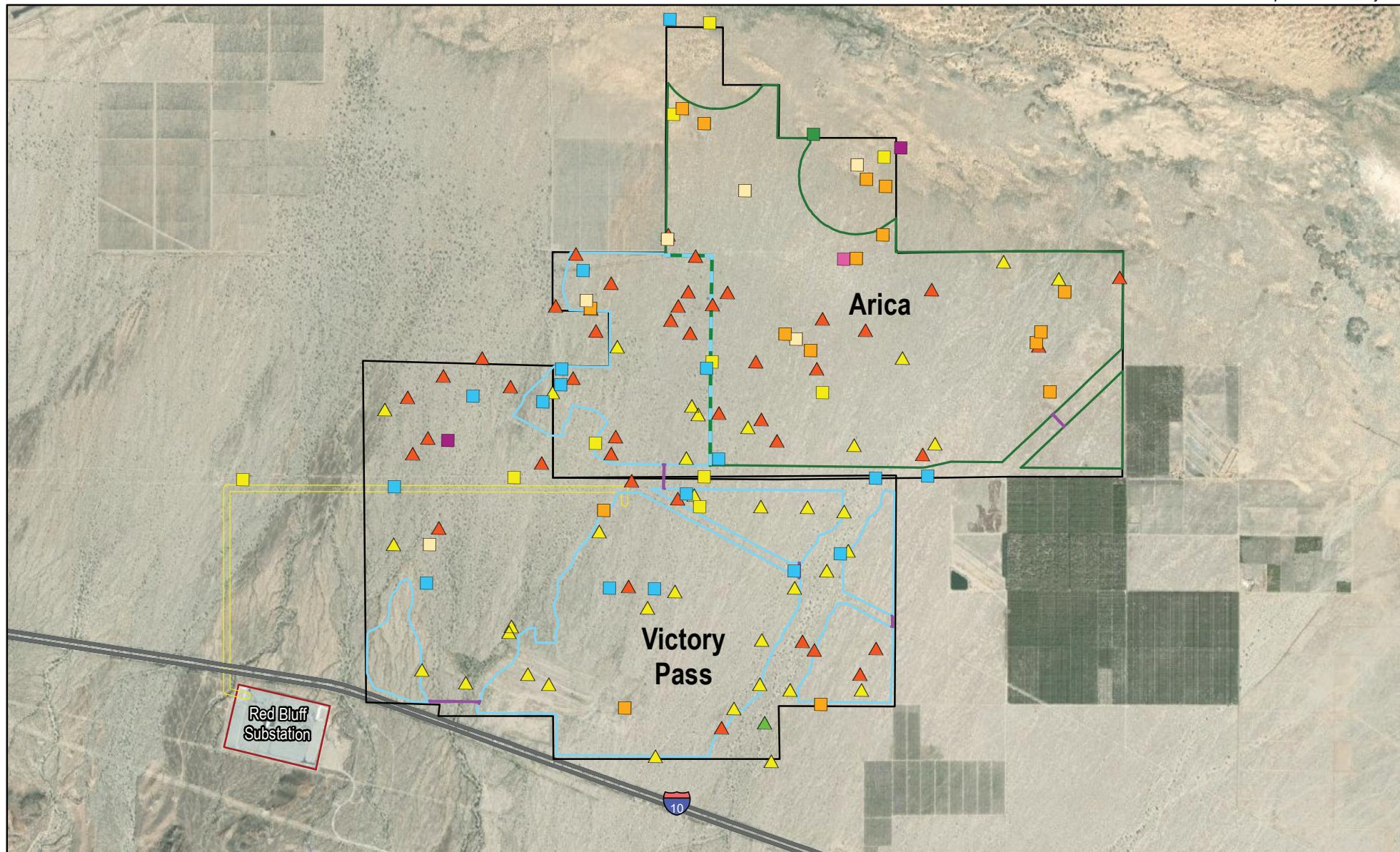


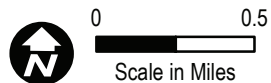
Figure 3.4-3

Special-status Plant Occurrences

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Sources: Aspen, 2021; Clearway, 2020; Ironwood, 2020; SCE, 2013; Esri, 2020



- BLM Right-of-Way Grant Application Area
- Shared Fenceline
- Arica Solar Project Facilities (Project Fenceline)
- Victory Pass Solar Project Facilities (Project Fenceline)
- Project Roads
- Shared Gen-tie Line

Birds

- Burrowing owl (observation)
- Burrowing owl (suitable burrow or other sign)
- LeConte's thrasher (observation)
- Loggerhead shrike (observation)
- Prairie falcon (observation)
- Short-eared owl (observation)
- Swainson's hawk (observation)

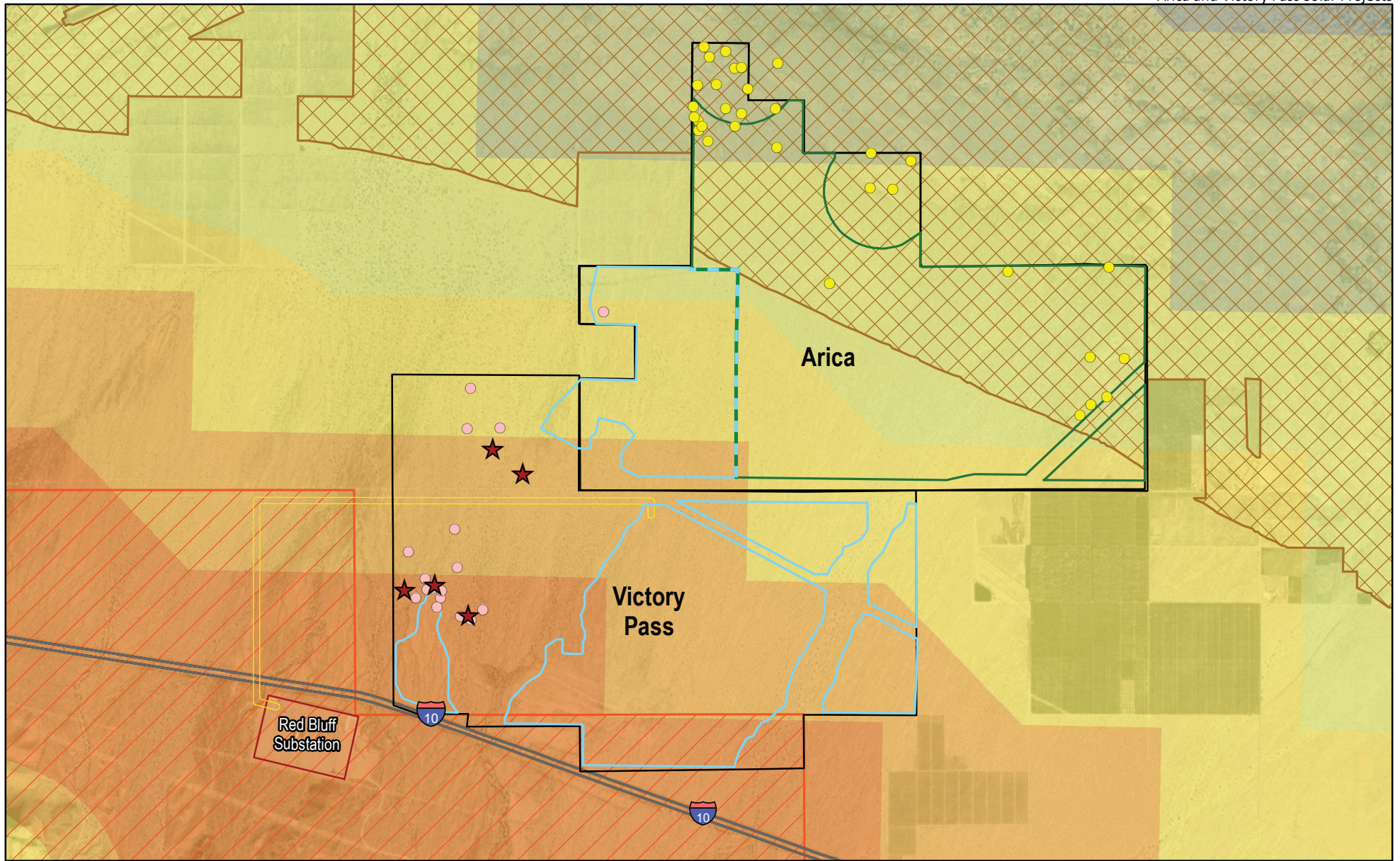
Mammals

- ▲ Bat (unknown species, unknown conservation status)
- ▲ Burro deer (sign)
- ▲ Desert kit fox (suitable burrow)

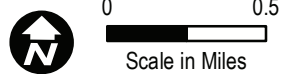
Figure 3.4-4

**Special-status
Birds and Mammals**

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Sources: Aspen, 2021; Clearway, 2020; Ironwood, 2020; DRECP, 2013; Nussear, et. al. 2009; SCE, 2013; Esri, 2020



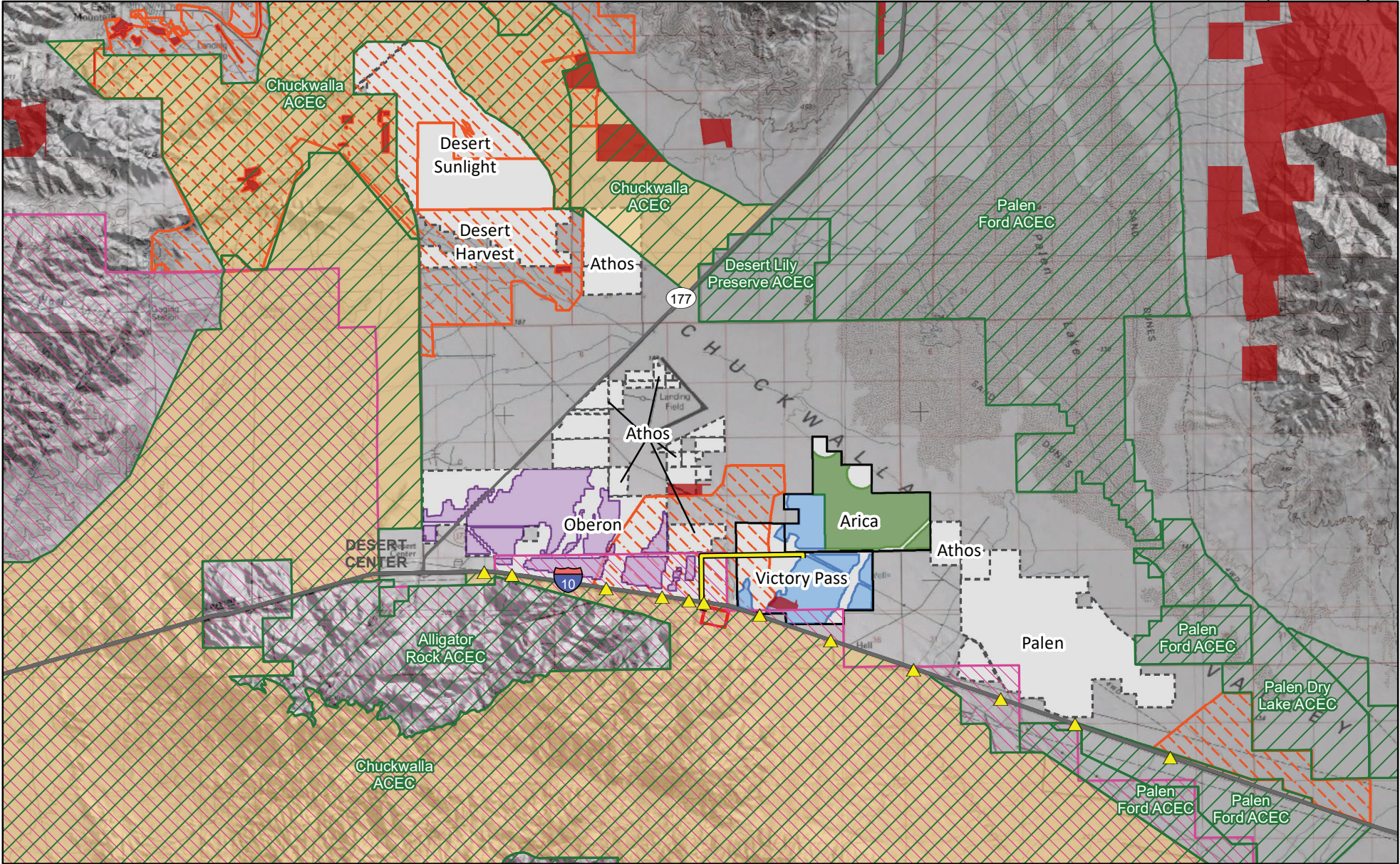
- BLM Right-of-Way Grant Application Area
- Shared Fenceline
- Arica Solar Project Facilities (Project Fenceline)
- Victory Pass Solar Project Facilities (Project Fenceline)
- Shared Gen-tie Line
- Mohave fringe-toed lizard (observation)
- Desert Tortoise Sign
- ★ Live Desert Tortoise Individual
- Desert tortoise critical habitat
- Mojave Fringe-toed Lizard Species Distribution Model

Predicted Desert Tortoise Occupancy

- | | | | |
|--|-----------|--|-----------|
| | 0.1 - 0.2 | | 0.4 - 0.5 |
| | 0.2 - 0.3 | | 0.5 - 0.6 |
| | 0.3 - 0.4 | | 0.6 - 0.7 |

Figure 3.4-5
Special-status Reptiles

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BLM Right-of-Way Grant Application Area	Other Existing and Proposed Solar Projects	<u>Conservation Designations</u>	
Arica Solar Project Facilities (Project Fenceline)	Oberon Solar Facility Fence Line (approximately 3,340 acres)	Multi-species Linkage	Desert Tortoise Critical Habitat
Victory Pass Solar Facilities (Project Fenceline)	SCE Red Bluff Substation (Existing)	Area of Critical Environmental Concern	High Priority Habitat
Shared Gen-tie Line	I-10 Undercrossing	Desert Tortoise Conservation	

Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; CDFW, 2021; SCE, 2013; Esri, 2020

**Figure 3.4-6
Conservation
Designations**

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3.5 Cultural Resources

This section evaluates the environmental impacts to cultural resources that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits during construction and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes cultural resources effects for both of the proposed Projects as the whole of the action. This section describes the regulatory framework for cultural resources and provides information on existing cultural resources in and surrounding the Projects' area. The section also identifies the criteria used to determine the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and evaluates the Projects' potential impacts on cultural resources. Tribal cultural resources are addressed in Section 3.17 of the Environmental Impact Report (EIR).

The discussion in this section is based on the following confidential cultural resources technical reports and indirect effects analysis prepared for the Projects: Class III Cultural Resource Inventory for the Arica Solar Project, Riverside County, California (Thomas et al. 2021a); Class III Cultural Resource Inventory for the Victory Pass Solar Project, Riverside County, California (Thomas et al. 2021b); Indirect Effects Assessment for the Arica Solar Project, Riverside County, California (Knabb et al. 2020a); and Indirect Effects Assessment for the Victory Pass Solar Project, Riverside County, California (Knabb et al. 2020b). It also relies on the Cultural Resources sections for the Desert Harvest Solar Project Environmental Impact Statement and the IP Athos Renewable Energy Project Final EIR (BLM 2012; County of Riverside 2019).

Issues raised during scoping related to cultural resources include the following, which are addressed in the potential impacts analyzed and discussed in this section:

- Concern about impacts to known and unknown cultural resources
- Concern about cumulative impacts to cultural resources
- Concerns about indirect impacts to cultural resources

3.5.1 Regulatory Framework

Numerous laws and regulations require state and local agencies to consider the effects a project may have on cultural resources and tribal cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies.

Federal Laws, Regulations, and Policies

National Environmental Policy Act. The National Environmental Policy Act (NEPA) of 1969, as amended, requires analysis of potential environmental impacts to important historic, cultural, and natural aspects of our national heritage (42 USC 4321-4375; Title 40 Code of Federal Regulations Sections 1500-1508). The discussion of impacts pursuant to NEPA is defined by the Council on Environmental Quality regulations and requires consideration of the temporal scale, spatial extent, and intensity of the change that would be introduced by the Projects.

National Historic Preservation Act. The federal government has developed laws and regulations designed to protect cultural resources that may be affected by actions undertaken, regulated, or funded by federal agencies. Under the National Historic Preservation Act (NHPA) of 1966, the Projects are considered a federally licensed "undertaking" per Title 36 Code of Federal Regulations Section 800.2(o) and subject to

compliance with Section 106 of the NHPA, as amended. Under these guidelines, federal agencies are required to identify cultural resources that may be affected by project actions, assess the significance of these resources and their eligibility for inclusion on the National Register of Historic Places (NRHP) as per 16 USC 470w(5), and consult with the Advisory Council on Historic Preservation regarding project effects on significant resources. Eligibility is based on criteria defined by the Department of the Interior. Generally, districts, archaeological sites, buildings, structures, and objects that possess integrity are potentially eligible for inclusion on the NRHP under the following criteria (Title 36 Code of Federal Regulations Section 60.4):

- A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B) that are associated with the lives of persons significant in our past; or
- C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D) that have yielded, or may be likely to yield, information important in prehistory or history.

If a cultural resource is determined to be an eligible historic property under Title 36 Code of Federal Regulations Section 60.4, then Section 106 requires that the effects of the proposed undertaking be assessed and considered in planning the undertaking. According to Title 36 Code of Federal Regulations Section 800, Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process, the lead agency, State Historic Preservation Office (SHPO), and Council

should be sensitive to the special concerns of Indian tribes in historic preservation issues, which often extend beyond Indian lands to other historic properties. ...When an undertaking may affect properties of historic value to an Indian tribe on non-Indian lands, the consulting parties shall afford such tribe the opportunity to participate as interested persons. Traditional cultural leaders and other Native Americans are considered interested persons with respect to undertakings that may affect historic properties of significance to such persons.

Desert Renewable Energy Conservation Plan Programmatic Agreement. Compliance with Section 106 of the NHPA will be guided by the Desert Renewable Energy Conservation Plan (DRECP) Programmatic Agreement (PA) since the Projects are within the Riverside East Solar Energy Zone and within the DRECP Land Use Plan Amendment Development Focus Area as defined in the Final Environmental Impact Statement (BLM 2015a). The subsequent DRECP PA resulted from consultation among agencies, tribes, and other interested parties in defining how the Bureau of Land Management (BLM) will conduct Section 106 compliance within the DRECP Land Use Plan Amendment Area. The DRECP PA establishes a process that guides BLM in fulfilling its responsibilities under Section 106 of the NHPA for proposed renewable energy projects sited on public lands administered by BLM. Importantly, Section II of the DRECP PA directs BLM to obtain the active involvement of the SHPO, Advisory Council on Historic Preservation, other federal agencies, federally recognized tribal governments and Native American organizations, other interested parties, and the public. BLM is to engage tribes and tribal organizations at the earliest stages of assessing a proposed undertaking to identify areas that may be of “religious and cultural significance and potentially eligible to the NRHP” (Section II.E.2 of BLM 2015b).

The following summary of the DRECP PA primarily addresses those sections that inform development of a work plan to guide identification and evaluation of resources and areas of cultural interest. DRECP PA

Sections III and IV prescribe a process for BLM to involve the participating entities identified in Section II, while pursuing the identification and evaluation of historical and cultural resources that may be affected by the proposed development. This process description informs how a project applicant proposes to apply the process to a site-specific case (BLM 2015b).

Section III.B of the DRECP PA describes initial steps related to a specific renewable energy project in the form of pre-application procedures, including a meeting with the applicant and invited parties comprised of SHPO, tribes, and other potential consulting parties to discuss inventory and research strategies to identify historic properties and resources, such as those of cultural or religious significance to tribes. Section IV of the DRECP PA describes the major stages of assessment, which involve timelines provided in Section III.C: (1) determination of the area of potential effect (APE); (2) development of a Class I records search and literature review to guide development of a research design and work plan; (3) conducting a Class III inventory of the direct effects APE; (4) geoarchaeological, indirect effects, and historic built environment studies; (5) an ethnographic assessment; and (6) evaluations to determine NRHP eligibility. The stages are as follows (BLM 2015b):

- The initial step of the assessment process is the determination by BLM of the direct and indirect effects APEs for the following assessment steps. Buffers to the right-of-way application area may be added in defining the direct effects APE. A possibly larger area comprises the indirect effects APE (Section IV.A.1.c), in which historic properties potentially vulnerable to visual, auditory, and atmospheric effects resulting from the project may lie beyond the right-of-way application area boundaries. A cumulative effects APE will entirely encompass the direct and indirect effects APEs and include “reasonably foreseeable effects” occurring later in time or farther removed in distance (Section IV.A.1.d). The APEs may include lands not administered by BLM where NEPA compels analysis of project impacts as a “connected action” (Section IV.A.1.e). BLM will provide the initial APE determinations to the SHPO and consulting parties, including tribes, for a 30-calendar-day review (Section III.C.1.a). All resulting comments will be provided to the SHPO (Section III.C.1.c) for a 10-calendar-day comment period (Section III.C.1.d). BLM must seek to resolve any disagreement on comments received during the 30-day review period.
- Identification of historic properties for assessment of potential proposed project effects begins with development of a research design and work plan for all cultural resource studies by the applicant informed by a Class I records search and literature review of existing cultural resources information (Section IV.B.1). As stipulated in Section IV.B.1, BLM will use data in the BLM Class I overview to determine the appropriate level of identification effort for the proposed undertaking through review of the applicant’s work plan, which sets forth the steps to be taken to complete all NHPA Section 106 identification and evaluation requirements for the project. As with the APE, BLM will distribute the research design and work plan, including proposed identification efforts, to the SHPO and project-specific consulting parties for review and comment (Section IV.B.1.a), pursuant to the DRECP PA specified 30-calendar-day comment period (Section III.C.1.a). In addition, an ethnographic literature review will be circulated for review as part of the Class I study (Section IV.B.1.b).
- Following review of the work plan and proposed identification efforts, the applicant will initiate the various identification efforts, including Class III field survey documentation and testing (Section IV.B.2), geoarchaeology study (Section IV.B.3), an indirect effects study (Section IV.B.4), a built environment study (Section IV.B.5), and an ethnographic assessment (Section IV.B.7). Tribal consultation under the PA extends to opportunities to participate in the Class III archaeological surveys of proposed project areas (Section II.E.4). These documents will be subject to peer review and production of a final review report (Section IV.B.6).

- Using the various study reports, including initial archival research, input through BLM consultation efforts with Indian tribes, and peer review report, the applicant will evaluate the significance and integrity of all resources identified and make a recommendation regarding each resource's eligibility for listing in the NRHP (Section IV.C). The resulting evaluations report is subject to the same review process by the SHPO and interested parties as the APE and identification studies (Section III.C). This entails BLM submitting the agency-proposed determinations of eligibility to the project-specific consulting parties for review and comment, and concurrent request to SHPO for review and concurrence pursuant to Stipulation III (C). Comments resulting from this review process form the basis for subsequently determining the findings of effects posed by the proposed project as addressed in DRECP PA, Sections V and VI.

Native American Graves Protection and Repatriation Act. The Native American Graves Protection and Repatriation Act was enacted on November 16, 1990, to address the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony. The act assigned implementation responsibilities to the Secretary of the Interior.

If human remains are encountered on federal lands, this act states that the responsible federal official must be notified immediately and that no further disturbance shall occur in the area until clearance is given by the responsible federal official (Title 43 Code of Federal Regulations Section 10.4). If the remains are determined to be Native American Indian, the federal agency will then notify the appropriate federally recognized Native American tribe and initiate consultation.

Archaeological Resources Protection Act. If federal or Indian lands are involved, the Archaeological Resources Protection Act may impose additional requirements on an agency. The act (1) prohibits unauthorized excavation on federal and Indian lands, (2) establishes standards for permissible excavation, (3) prescribes civil and criminal penalties, (4) requires agencies to identify archeological sites, and (5) encourages cooperation between federal agencies and private individuals.

Antiquities Act of 1906. The Antiquities Act of 1906 states, in part, that any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

State Laws, Regulations, and Policies

There are numerous state regulations and policies that direct management of cultural resources on state lands and by state agencies. The following is a discussion of the most pertinent laws affecting the Projects and impact analysis from a state and California Environmental Quality Act (CEQA) perspective. These laws identify three types of resources: historical resources, unique archaeological resources, and human remains. Tribal cultural resources are addressed in Section 3.17.

Historical Resources

Under CEQA, cultural resources listed in, or determined to be eligible for listing in, the California Register of Historic Resources (CRHR) or a local register meet the CEQA definition of "historical resources" and must be given consideration in the CEQA process. For this EIR, effects on historical resources may be considered impacts of the Projects. Under the California Code of Regulations, Title 14, Chapter 11.5,

properties listed on or formally determined to be eligible for listing in the NRHP are automatically eligible for listing in the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one (and may meet more than one) of the following four criteria:

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Unique Archaeological Resources

Additionally, CEQA states that it is the responsibility of the lead agency to determine whether the project will have a significant effect on “unique” archaeological resources. An archaeological artifact, object, or site can meet CEQA’s definition of a unique archaeological resource even if it does not qualify as a historical resource (California Public Resources Code, Section 21083.2[g]; 14 CCR 15064.5[c][3]). An archaeological artifact, object, or site is considered a unique archaeological resource if “it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (California Public Resources Code, Section 21083.2[g]):

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.
- If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require that reasonable efforts be taken to preserve these resources in place or provide mitigation measures.

Human Remains

California Public Resources Code, Sections 5097.98(b) and (e), requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified most likely descendants to consider treatment options. In the absence of most likely descendants or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance. Section 5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. Finally, Section 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.

California Health and Safety Code Section 7050 makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery and further requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

Local Laws, Regulations, and Policies

Riverside County General Plan

Because the Projects are entirely on BLM land, they are not required to meet local regulations. However, the follow policies outlined in the Multipurpose Open Space Element of the County of Riverside General Plan (County of Riverside 2015) address cultural resources and were reviewed:

- **Policy OS 19.1** Cultural resources (both prehistoric and historic) are a valued part of the history of the County of Riverside.
- **Policy OS 19.2** The County of Riverside shall establish a Cultural Resources Program in consultation with Tribes and the professional cultural resources consulting community that, at a minimum would address each of the following: application of the Cultural Resources Program to projects subject to environmental review; government-to-government consultation; application processing requirements; information database(s); confidentiality of site locations; content and review of technical studies; professional consultant qualifications and requirements; site monitoring; examples of preservation and mitigation techniques and methods; curation and the descendant community consultation requirements of local, state and federal law. (AI 144)
- **Policy OS 19.3** Review proposed development for the possibility of cultural resources and for compliance with the cultural resources program.
- **Policy OS 19.4** To the extent feasible, designate as open space and allocate resources and/or tax credits to prioritize the protection of cultural resources preserved in place or left in an undisturbed state. (AI 145)
- **Policy OS 19.5** Exercise sensitivity and respect for human remains from both prehistoric and historic time periods and comply with all applicable laws concerning such remains.

3.5.2 Environmental Setting

Cultural resources can reflect the history, diversity, and culture of a region, as well as the people who created them. Cultural resources are often the only remaining evidence of human activity that occurred in the past. Cultural resources can be natural or built, purposeful or accidental, physical or intangible. They encompass archaeological, traditional, and built environment resources, including but not necessarily limited to buildings, structures, objects, districts, and sites. Cultural resources include locations of important events, traditional cultural places, sacred sites, and places associated with important people.

Definitions of Cultural Resources

A cultural resource is defined as any object or specific location of past human activity, occupation, or use identifiable through historical documentation, inventory, or oral evidence. Cultural resources can be separated into three categories: archaeological, built environment, and tribal cultural resources.

Archaeological resources include both historic era and prehistoric remains of past human activity. Historic era resources can consist of structural remnants (such as cement foundations), historic era objects (such as bottles and cans), and sites (such as refuse deposits or scatters). Prehistoric resources can include lithic scatters, ceramic scatters, quarries, habitation sites, temporary camps/rock rings, ceremonial sites, and trails.

Built environment resources consist of standing historic era buildings and structures, the latter of which include canals, roads and trails, bridges, ditches, and cemeteries.

A **tribal cultural resource** can include Native American sacred sites (such as rock art sites) and traditional resources that are important for maintaining the cultural traditions of any group. See Section 3.17 for a discussion of tribal cultural resources.

Pursuant to CEQA Guidelines Section 5064.5, **historical resource** is a term used to define a prehistoric or historic aged resource that is recommended eligible for, determined eligible for, or listed on the CRHR. Any resource that is determined eligible or listed on the NRHP is automatically eligible for listing in the CRHR and is considered a significant resource for the purpose of this analysis.

Additionally, a **unique archaeological resource**, as defined above in the State Law, Regulations, and Policies section, is also considered a significant resource for the purpose of this analysis.

Within the State of California there are provisions in CEQA, its Guidelines, and other provisions of the California Public Resources Code for the protection and preservation of significant cultural resources (i.e., “historical resources” and “unique archaeological resources”). The CEQA Guidelines provide three ways in which a resource can be a “historical resource,” and thus a cultural resource meriting analysis: (1) the resource is listed on the CRHR; (2) the resource is included in a local register of historical resources (pursuant to Section 5020.1(k) of the California Public Resources Code), or identified as significant in an historical resources survey (meeting the criteria in Section 5024.1(g) of the California Public Resources Code); or (3) the lead agency determines the resource is “historically significant” by assessing CRHR listing guidelines that parallel the federal criteria (14 CCR 15064.5[a][1]-[3]). To qualify as a historical resource under (1) or (3), the resource must also retain the integrity of its physical identity that existed during its period of significance. Integrity is evaluated with regard to retention of location, design, setting, materials, workmanship, feeling, and association (14 CCR 4852[c]). Finally, under California law, Native American human remains and associated grave goods are granted special consideration.

Mitigation of cultural resources that are found to be ineligible for CRHR-listing is not required (Title 36 Code of Federal Regulations Section 800 and 14 CCR 15064.5[c][4]).

Cultural Resources Study Area

The study area for direct effects to cultural resources is defined as all areas that would be subject to ground-disturbing activity associated with the development of both Projects, which include the solar facilities within the fenceline, the shared gen-tie line, access roads, substations, and all other temporary work and laydown areas.

Indirect effects may occur from construction of both Projects. These effects can include visible, auditory, or atmospheric changes that impact the setting of the Projects. The indirect effects area includes a 1-mile radius around all components of the Projects.

Natural Setting

The Projects are in the northern margin of the Colorado Desert Region, which is situated within the southern Basin and Range geomorphic province. The Colorado Desert’s terrain consists of a series of broad, shallow southeast-trending valleys that drain into the Colorado River. Several playas, or closed basin sinks, exist on the valley floor. North–south trending weathered mountain ranges, rarely exceeding 4,000 feet in elevation, surround the valleys.

The climate of the Colorado Desert is generally hot and dry, with minimal rainfall. Average daily temperatures typically range from 66°F in winter to 105°F in summer, although summer temperatures can be upward of 120°F. Annual rainfall totals within the Colorado Desert are among the lowest in the Sonoran Desert, averaging less than 2 inches per year in the Salton Trough and between 2 and 4 inches near the Colorado River.

The Projects are in the Chuckwalla Valley. Mountains that surround the valley include the Palen and Coxcomb ranges to the north and northeast, the Eagle Mountains to the west, and the Chuckwalla Mountains to the south. The Chuckwalla Valley basin includes four dry lakes or playas: Palen Lake, Ford Lake, Hayfield Lake, and an unnamed playa between the McCoy Range and Mule Mountain. Materials for groundstone tools, such as gneiss, schist, and granitic rocks from bedrock in the mountains, would have been abundant within many areas of the alluvial piedmont and available for groundstone tool manufacture or heat retention in hearth features. Surface water sources are minimal in the Chuckwalla Valley, limited to seasonal and perennial sources. Perennial water comes from the Colorado River, which lies approximately 40 miles east of the sites and is one of the major river systems in North American.

The primary plant community in the Colorado Desert is the creosote scrub community, which is dominated by creosote bush. Other plant communities include the cactus scrub community, which includes barrel cactus, calico cactus, and ocotillo, and the saltbush series. Common animals include desert cottontail, jackrabbit, kangaroo rat, packrat, chuckwalla iguana, desert tortoise, and desert quail.

Prehistoric Setting

The Project sites are near the boundary of the Colorado and Mojave deserts and are located along a known prehistoric and historic travel corridor. Scholars suggest multiple groups were present in the region at various times. Groups in the region originated from portions of the Mojave Desert, the interior Colorado Desert, and the Colorado River, as well as more distant locations, such as the peninsular ranges or the Southwest. Therefore, the area's archeological record also may reflect affinities with any of these regions. Consequently, the prehistoric context herein draws on current knowledge from both the Mojave and Colorado desert regions.

Paleoindian Period (circa 12,000 to 8,000 B.P.)

This first period of human occupation in California is commonly referred to as the Paleoindian Period (circa 12,000 to 8,000 years before present [B.P.]). Evidence of a permanent Paleoindian occupation in the Colorado Desert is scant. Isolated Paleoindian projectile points (large fluted points) have been recovered on the surface at several locations, including Pinto Basin, located 37 miles northwest of the Projects' area, and near McCoy Spring in the northern Chuckwalla Valley. However, few Paleoindian archaeological sites have been identified in the Colorado Desert. The lack of evidence may be due to an absence of large-scale data recovery efforts in the region and the instability of landforms rather than a lack of human occupation.

Archaic Period (8,000 to 1,500 B.P.)

During the Archaic Period (8,000 to 1,500 B.P.), climates were generally warmer and drier. Populations grew and prehistoric economies became more diversified, shifting away from large game hunting. New technologies, such as the milling stone, indicate an increasing dependence on plant resources. Archaic Period projectile points include Gypsum, Elko, and Humboldt series.

Late Prehistoric Period (1,500 B.P. to Historic Period)

The Late Prehistoric Period (1,500 B.P. to the historic period) is represented in this region by the Patayan complex. By this time an extensive network of established trade routes wound their way through the desert. The complex network of prehistoric trails consisted of major travel routes and special activity areas, interconnected with smaller trails. Broken ceramic vessels, lithic debitage, and small rock features are often found along trails.

Artifacts typical of the Late Prehistoric Period include Desert Side-notched and Cottonwood projectile points, brownware and buffware ceramics, and steatite shaft straighteners. Imported goods from the California coast, such as shell beads, are also found and testify to the importance of trade during this period. Late Prehistoric sites are often associated with trails, pictographs, petroglyphs, bedrock milling surfaces, and rock shelters. During this period, a shift took place along the Colorado River from hunting and gathering to floodplain horticulture. A large number of Late Prehistoric sites have been found on the shoreline of ancient Lake Cahuilla.

Numerous petroglyphs and geoglyphs exist in the lower Colorado River area, the most well-known of which are the Blythe Intaglios, large anthropomorphic (human-shaped) and zoomorphic (animal-shaped) figures located along the Colorado River north of the town of Blythe, California.

Ethnographic Setting

There is archaeological evidence that ancestors of the Yuman-speaking groups have been in the area for some time. However, these were not the only people who would have used this area. Ethnographic information indicates that several other Native American groups, such as the Cahuilla and Chemehuevi, at least traversed the vicinity of the Projects.

Native use of the Chuckwalla Valley area in the eighteenth and early nineteenth centuries was conditioned by its location as a frontier or boundary zone between the Halchidoma to the east and the Takic groups, the Cahuilla, to the west. The Halchidoma were linked to the desert division of the Cahuilla and the mountain division of the Serrano by ties of political friendship and long-distance exchange. Thus, the Chuckwalla Valley area formed a geographical link between these groups and formed a major travel corridor for communication between them. In addition to this east–west travel, the Chuckwalla Valley also provided a corridor for north–south travel between the territories of two Colorado River groups who were enemies of the Halchidoma, the Mohave (also spelled Mojave) and the Quechan. Traveling parties from either one of these two groups going up or down the Colorado River had to veer away westward from the Palo Verde Valley to avoid the Halchidoma. This often took them through the Chuckwalla Valley region.

Ethnohistorical and ethnographic sources for the Chuckwalla Valley area have been limited by the fact that the area was not regularly visited by non-native people until the 1860s. This was due in part to the fact that water and feed management on the eastern California deserts posed a severe challenge to successful horse or mule travel to the Colorado River and Arizona by non-native people. In addition, the boundaries and areas of settlement of native groups in the region have changed over time. Thus, ethnohistoric information and archaeological data may outline different patterns of occupation and territoriality. Nevertheless, it can be said with confidence that most groups living in the vicinity of the Projects when the Spanish first made forays into the area spoke languages in the Yuman family of the Hokan language stock. These include the Halchidoma, the Mohave, and the Quechan. Surrounding groups are Uto-Aztecan speakers; the Chemehuevi speak a language of the Numic branch, and the Cahuilla are Takic-speakers. The final desiccation of Lake Cahuilla is thought to have caused major disruptions in the

population in the Colorado Desert, perhaps contributing to the persistent warfare reported along the lower Colorado and Gila rivers.

Native American groups having historical tribal territories falling within the vicinity of both Projects include the Quechan, Halchidoma, Mohave, Chemehuevi, and the Desert Cahuilla, which are discussed briefly below.

Quechan

Quechan is a variation on the names Kwichyan or Kuchiana but this group is also commonly known as the Yuma; today they refer to themselves as Kw'tsan. The Quechan are among the Yuman-speaking tribes who occupied the lower Colorado River where it forms the boundary between California and Arizona. Prior to contact, Quechan populations may have reached 4,000.

Quechan subsistence was based on a combination of horticulture, fishing, and gathering. Plants such as maize, melons, teparies, corn, black-eyed beans, and pumpkins were cultivated in the rich silt of the Colorado River floodplain. During wet winter and spring months, Quechan groups occupied seasonal villages located above the river floodplain. In the summer and fall, small kin groups would relocate along the river to plant crops. Diets were supplemented with fish taken from the river. Several villages were located along the Colorado River, including *Avi Kwotapai* located on the west side of the Colorado River between Blythe and Palo Verde Valley and *Xenu mala vax* on the east side of the river near present-day Ehrenberg.

For the Quechan, like other lower Colorado River groups, individual dreaming to seek guidance in life and spiritually based power was a principal aspect of religious belief and practice. This included learning sacred songs about events that occurred at the time of the creation of the world through dreaming. Singing these songs was, and remains, a principal avenue of religious expression. The dreaming experience meant that sacred places could be visited, and the sacred landscape traversed, through dreaming rather than through conventional travel, although physical travel along trails to sacred places was also an important aspect of the religious experience. Travel on key Native American trails continues to be a cultural practice today to commemorate and experience traditional culture. The geography of sacred places related to the sacred song cycles of Yuman groups is a major cultural feature of the lower Colorado River region. In the early 20th century, Alfred Kroeber collected large quantities of information on places mentioned in Mohave song cycles, from as far afield as the Pacific Ocean, the Tehachapi Mountains, the Gulf of California, Tucson, and southern Nevada.

Halchidoma

The Halchidoma (also known as the Panya) are a Yuman-speaking people who, until about 1825, lived along the Colorado River between the present-day cities of Blythe and Needles. According to the oral history of the Halchidoma, they traveled south to Mexico where they lived adjacent to a Yaqui settlement until around 1838 when most died of an epidemic. At that point the remaining Halchidoma moved north-east and eventually settled down with the Maricopa tribe, another Yuman-speaking group living along the Gila River.

The Halchidoma were known to travel and trade over great distances. The Coco-Maricopa Trail, leading west from a portage point across the Colorado River adjacent to the City of Blythe, linked the Halchidoma with the Pacific coast. Ceramic seriation and radiocarbon dates from marine shell artifacts indicate that an extensive trade network between the Pacific coast and the lower Colorado River region was established by at least 1100 B.P. The Halchidoma traded with the Cahuilla, Hualapai, Papago, and Pima of Arizona, and were closely allied with the Maricopa.

By all accounts, the Halchidoma were frequently in conflict with their Colorado River neighbors, the Quechan and Mohave. During the decades, if not centuries, of open hostility, the Halchidoma established strong alliances with the Yuman-speaking Maricopa and Cocopa peoples who lived to the east, along the Gila River. Ultimately, the Halchidoma went to live with and intermarried with their allies the Maricopa, and are, therefore, poorly documented in the ethnographic literature.

Mohave

The Yuman-speaking Mohave Indians were among the earliest residents in the Mojave Desert. They moved from the area approximately 500 years ago to the Colorado River where they were documented by Father Francisco Garcés, a Spanish explorer, in 1776. Another Spanish explorer, Juan de Onate, may have observed this group as early as 1604 based on his descriptions of the “Mohave” people along the Colorado River. The Mohave are notable for their understanding of themselves as a unified “nation” of people, known as the Hamakhava, rather than as a series of loosely related clans or villages. The whole of the Mohave acted together in defending their territory and attacking their enemies.

During much of the year, the Mohave lived in villages on terraces above the Colorado River, only moving down onto the floodplain in the spring to plant crops after the seasonal floods. Like other lower Colorado River peoples, the Mohave relied on floodplain horticulture, fishing, and gathering for subsistence. Planted crops included maize, black-eyed beans (cowpeas), squash, pumpkin, and several local grasses. Cultivated plants were supplemented by the collection of wild plant foods including honey mesquite and mesquite screwbean, which could be stored for long periods of time and were traditional staple foods. Although the pods of both plants could be eaten green, they were usually pounded into flour using long stone or wooded pestles. Additionally, screwbean pods were often processed in large pits dug into sandy soil where the pods were placed, covered with vegetation, and then periodically watered to leach out bitter compounds.

The Mohave are well known for their long-distance travel. Like other Colorado River tribes, they participated in a trade network extending east to the Pueblos of Arizona and west to the Pacific coast. A number of important passes and routes of travel, including the well-known Mohave trail connecting the high deserts with the Southern California coastal valleys, were developed or frequented by the Mohave. The endurance and speed of Mohave travelers were legendary at the time of European contact. During the Colonial era, the Spanish frequently encountered groups of traveling Mohave who continued the tradition of desert–coastal travel and trade throughout the mission period, occasionally in conflict with the wishes of Spanish officials.

The general Yuman belief in the importance of dreaming, and the fundamental interrelationship between the mundane and spiritual worlds, was particularly developed among the Mohave. All people were capable of meaningful dreaming, and most individuals came to their chosen roles in life as a result of their dreams. In dreams, the Mohave travel in a mythical place and time when the world was first formed and the important places, such as mountains and springs, came into being. Dreams also inform public rituals, and the many complicated “song series” that singers perform from memory are said to be dreamed as much as learned. The songs of the Mohave are remarkably specific geographically, noting “the exact spot at which each character journeyed or slept or stood or looked about.” Thus, Mohave songs seem to act as a means of storing and transferring important landscape knowledge; they are, among other things, a collection of meaningfully constituted mental maps of the Mohave territory and beyond. Many nearby groups, including the Chemehuevi, borrowed extensively from the Mohave song series repertoire.

Chemehuevi

The Chemehuevi are the southernmost of 16 groups of Southern Paiute peoples, and the only non-Yuman speakers living along the lower Colorado River at the time of European contact. The traditional territory of the Chemehuevi was an extensive area southwest of Las Vegas, including portions of the eastern Mojave Desert of California. The Chemehuevi lived along the Lower Colorado River, although only within the last few hundred years. Their traditional territory was the largest of any tribe in California speaking the same dialect. They occupied a huge portion of the eastern Mojave Desert, ranging from the Old Woman Mountains in eastern San Bernardino County, west to an undefined point in the middle of the Mojave Desert where Serrano territory began, and as far south as the Riverside/Imperial County line. The Spanish missionary explorer Francisco Garcés in 1775–1776 suggested that the northern Chuckwalla Valley was in the territory of the Chemehuevi.

The Chemehuevi living in the deserts practiced a relatively nomadic hunting/gathering way of life, with larger settlements near reliable water sources, but no permanent villages. Groups moved with the rhythm of the seasons, arriving to harvest plant foods as they matured and hunting primarily small game. Hunting parties also traveled to the San Bernardino Mountains and visited with their allies the Northern Serrano, or Vayume. Owing to the impermanence of most desert encampments, housing was typically of brush erected to protect inhabitants from the harsh sun and wind. Several foods, including dried meats, dried melon and squash, agave hearts, and various seeds, were stored in specially prepared baskets, earth pits, and caves. Chemehuevi groups did not live permanently with their food caches, though, and the stealing of cached food was apparently a grave issue, one that could incite war and inflict spiritual harm.

Until their expansion into the lower Colorado River region, the Chemehuevi did not use pottery, but relied instead on a variety of woven baskets and implements, often with painted designs. Chemehuevi hunters were known for their recurved, sinew-backed bows, which, though shorter than comparable Mohave bows, were nonetheless accurate, powerful, and well-suited to hunting deer and other big game. Those groups that settled along the Colorado River adopted agriculture, more substantial wooden dwellings, pottery, and a number of other cultural features from their riverine neighbors. They are known to have constructed hand-dug wells.

Despite an underlying friction, the Chemehuevi were traditional allies of the Mohave, and after the Halchidoma were driven from the Colorado River area in the early nineteenth century, the Chemehuevi moved into the Parker/Blythe area vacated by the Halchidoma. Some Chemehuevi families moved to the Mara Oasis, near what now is the city of Twenty-nine Palms. Some scholars suggest that the Chemehuevi may have settled in the Palo Verde Valley vicinity before the expulsion of the Halchidoma. According to Mohave tradition the Chemehuevi were invited to come to the Colorado River after 1830. Chemehuevi sources, though, suggest that the Chemehuevi Valley and Cottonwood Island along the Colorado River were part of the Chemehuevi traditional territory prior to the 1800s. This continues to be a point of disagreement between scholars and between the descendants of the historical Mohave and Chemehuevi.

In the Protohistoric and Historical periods, the Chemehuevi traveled extensively through the deserts and as far west as the Pacific coast simply for exploration purposes, and to exchange goods and obtain marine shell ornaments and raw materials. Periodically, small groups of Chemehuevi and Las Vegas Southern Paiute would travel together to the Hopi villages in Arizona, although those trips were described as purely social visits involving gift exchanges, not trading expeditions.

Desert Cahuilla

The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Cupan subfamily of the Takic branch of the Uto-Aztecan linguistic family. Territory traditionally claimed by the Cahuilla stretches from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near the City of Riverside and the eastern slopes of Palomar Mountain to the west.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Villages were connected by trail networks used for hunting, trading, and social visiting. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

The Cahuilla had access to an immense variety of plant resources present within a diverse suite of habitats. Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines. Hunting and meat processing were done by men. Game included deer, mountain sheep, pronghorn, rabbits, rodents, and birds. These were pursued by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts with fire drives sometimes occurred.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

Historic Setting

In California, the Historic Era is generally divided into three periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present). Although Europeans did pass through the Projects' area during the Mission and Mexican Periods, all the resources identified in the Projects' area are associated with the American Period. As such the following discussion emphasizes the American Period. The history of the area relates to themes involving the development of the west and the Colorado Desert, mining and homesteading activities, military desert training, and agribusiness in the late twentieth century. The areas of regional development, transportation, mining, water conveyance, military training activities, and agriculture and ranching are briefly described below.

Regional Development

In the early 1800s, prospectors were some of the only Euro-Americans traveling in the California deserts, and they frequently came into conflict with Native American groups. In the 1820s, limited placer mining began in the eastern Colorado Desert. Regionally, mining and prospecting activities were most intense in the mountains and high deserts of the Mojave, but small-scale mining has been a consistent feature of the Colorado Desert from the 1800s to the present day.

After the Treaty of Guadalupe-Hidalgo in 1848, the United States took control of the Southwest and established a series of camps and forts throughout the Arizona, Nevada, and California deserts. The U.S. Cavalry was used to protect settlers and immigrants from the often-hostile tribes whose territories they were invading. Following the discovery of gold at Sutter's Mill the same year, mining camps were established in the desert beginning with Salt Creek in the Armargosa Desert. In the 1850s, some would-be miners tried their luck in the eastern Colorado Desert but found very little gold. Most miners simply passed through the desert on their way to the larger strikes to the west and north.

As part of an effort to establish a railroad route from St. Louis to the Pacific Ocean, the U.S. government conducted a series of surveys from 1853 to 1855 to identify feasible routes. Lieutenant Amiel Weeks Whipple, a topographical engineer in the U.S. Army, was assigned the task of determining the westernmost section of the route from Arkansas to Los Angeles. Whipple passed through Mojave territory in 1854, crossing the Colorado River near present-day Needles. The railroad surveys recorded the terrain and geology of the Colorado Desert. The land that includes the study area was included in the survey in 1853.

Along the eastern bank of the Colorado River, the town of La Paz, Arizona, developed when gold was discovered nearby. The subsequent gold rush made La Paz an instant boomtown whose population peaked at 1,500 in the 1860s. By 1863, between 2,500 and 3,000 Americans and Mexicans were on the river between Palo Verde Valley and El Dorado Canyon, most of them engaged in mining. Along the stage line between San Bernardino and the Colorado River, La Paz was an important stop, serving as the county seat for Yuma County until 1870. The La Paz mining district yielded placer gold for only a short period, and by the end of the nineteenth century, La Paz passed from boomtown to ghost town.

Significant economic development of the Colorado Desert region began in the 1870s and came to fruition in the early part of the twentieth century. Development was dependent largely on two things: water and transportation. Development of transportation came in 1872 with the construction of the Southern Pacific Railroad from Los Angeles to present-day Indio and, eventually, Yuma. The early townsite of Indio, the mid-point between Los Angeles and Yuma, was created to provide living quarters for train crews and railroad workers. A nearby Native American reservation provided some of the labor force for the construction of those living quarters. The first trains ran on May 29, 1876. The Southern Pacific Railroad reached Yuma on September 30, 1877. Railroad stops were built at Walters (now called Mecca), Woodspur (Coachella), and Thermal, among others. The second transcontinental railroad was completed when the Southern Pacific and the Atchison, Topeka, and Santa Fe Railroads were linked at Deming in New Mexico Territory on March 8, 1881, providing settlers relatively quick and easy access to the region.

The railroad was the single most important boost to mining in the southeastern Colorado Desert, offering convenient transportation of heavy mining equipment, supplies, personnel, and bullion. By 1880, the Southern Pacific Railroad was providing regional access to gold and silver ore deposits in the Chocolate Mountains, Cargo Muchachos, and Palo Verde Mountains. When mines opened up near the turn of the twentieth century, stamp mills and small tracks leading from the mines to the stamp mills were built. Mining productivity in the southeastern Colorado Desert was greatest between 1890 and 1910, with a brief resurgence in the 1930s.

A further boost to regional development in the Colorado Desert was the rail rate war of 1887, when fares from Missouri River to California were slashed to \$1. Advertising programs were developed to attract settlers to the west. With the railroad to transport crops and the consistently warm climate, areas in the desert were attractive places for prospective farmers of the time. Besides settlers, others were attracted to sanitariums that took advantage of the warm climate and desert hot springs at Palm Springs for health reasons.

Transportation

William D. Bradshaw blazed the first road through what is now Riverside County in 1862 as an overland stage route beginning at San Bernardino, California, and ending at La Paz (now Ehrenberg), Arizona. Early in the 1860s, Hank Brown and John Frink independently developed routes to access the gold mines in the vicinity of La Paz. Frink's route was an east–west road established as an alternative to the more southern Butterfield Stage route. This was apparently the first Anglo development across the Palo Verde Mesa, although it has since all but disappeared. Bradshaw's route, later known eponymously as the Bradshaw Trail, crossed the desert to the La Paz mining district. Bradshaw also operated a ferry across the Colorado River near Providence Point, opposite a small community that would become Ehrenberg, Arizona.

Bradshaw developed his road partly along Brown's and Frink's previous routes, although Bradshaw's trail headed more directly east from Salt Creek Pass to the north slopes of the Chocolate Mountains. Bradshaw, like the majority of early trailblazers, used Native American routes that predated Spanish exploration. Part of Bradshaw's trail may have been the Coco-Maricopa Trail, which intersected the Colorado River near Blythe and may have passed south of the Projects. The Bradshaw Trail is near Corn Spring. The Bradshaw Trail, like many other cross-country routes, became largely obsolete with the arrival of rail service in the desert and the depletion of the La Paz gold fields in the late 1870s. The railroads reoriented the development of trails and wagon roads that connected new mining communities to major routes of transportation. Railroad stops became destinations for wagon roads, allowing points of access for development of the remote desert interior. Bradshaw's trail has been largely obliterated and is now a 65-mile-long graded road that traverses mostly public land south of the Chuckwalla Mountains.

The early highway system in the United States developed out of a patchwork of trails that later became unimproved roads and eventually were connected into an integrated system of paved routes. Often, early roads in the United States followed prehistoric trails. One of the earliest transportation corridors through the Chuckwalla Valley included U.S. Highways 60 and 70, currently known as Chuckwalla Valley Road. As late as 1926, portions of Chuckwalla Valley Road were still unpaved.

Today, Interstate (I) 10 is the major transportation corridor through the Chuckwalla Valley and the major connector between Los Angeles and Phoenix. The road was completed in 1968 and has become a major east–west corridor for travelers and commercial traffic.

Mining

Riverside County was known historically for its sporadic, small-scale mining of gold, silver, lead, copper, uranium, fluorite, and manganese. Large numbers of prospectors were attracted to the region during the gold boom in La Paz (in western Arizona, 6 miles north of present Ehrenberg) in 1862. Not long after, miners and prospectors began combing the mountains on either side of the Chuckwalla Valley. Gold was being mined as early as 1865 in the Eagle Mountain District. Much later, in the late 1940s, Kaiser Steel began a large-scale iron ore mining operation in the Eagle Mountains. In the 1950s, the Blythe-Eagle transmission line was constructed. It was a 161-kilovolt transmission line that connected a substation in Blythe to a substation near Eagle Mountain for the purpose of providing power to the mine and the community of mine workers.

In the Granite Mountains to the north-northwest, there was a short stint of gold mining beginning in 1894, followed by a resurgence in the late 1920s by the Chuckwalla Mining and Milling Corporation. Copper mining occurred in the Palen Mountains to the northwest during the 1910s, by the Fluor Spar Group, Homestake Group, Crescent Copper Group, Orphan Boy, and Ophir mines. Most of these mines were abandoned only a few years later.

The short-lived Pacific Mining District in the Chuckwalla Mountains was established in 1887, following gold and silver discoveries that caused the most substantial rush to Riverside County in its history. Sixty claims were filed by the end of the year, but the boom fizzled by 1890 because the owners never had enough capital to work them properly. In about 1898, some 40 claims in the area were taken up by the Red Cloud Mining Company. In 1901, a force of 50 men worked there. The company installed a new hoist and a 30-ton mill and was raising money through stock offerings to construct a tram from the mine to the mill. The company changed hands some time before 1915, however, and folded soon after. Just prior to this, six prospectors began working the Chuckwalla Placer Diggings near Chuckwalla Springs. This lasted about 15 years. The Red Cloud Mine was resurrected in 1931, when a small amalgamation plant was built and continued operations until 1945.

With the onset of World War II, the demand for steel increased. However, the iron ore in the Eagle Mountain claims was protected as part of the Joshua Tree National Monument, established in 1936. Henry J. Kaiser had a steel mill at Fontana and the Vulcan iron mine near Kelso that supplied materials for his west coast shipyards. Kaiser purchased the Eagle Mountain mine and succeeded in having the boundaries of Joshua Tree Monument shifted to exclude Eagle Mountain. Kaiser constructed a rail line that connected to the Southern Pacific Railroad, and ore mining commenced in 1948. By 1971, the Eagle Mountain Mine produced 90% of California's iron.

At its height, the mine employed more than 4,000 people, making it the largest employer in Riverside County. The town of Eagle Mountain included schools, fire and police departments, 416 rental houses, 185 trailers, 383 dormitories, and 32 apartments. Kaiser Steel needed to provide medical care for the residents of Eagle Mountain, and medical care provided by the company eventually became what is today Kaiser Permanente. The mine closed in 1983 because of economic factors and competition from abroad.

Water Conveyance

The Colorado River Aqueduct (CRA) is a water conveyance system operated by the Metropolitan Water District of Southern California. Construction began in 1933 and water first flowed through the system in 1941. The CRA system carries Colorado River water, impounded at Lake Havasu on the California-Arizona border, through, over, and across mountains and desert to the coastal and inland valleys of Southern California. The CRA stretches 242 miles from Parker Dam to Lake Mathews (formerly known as Cajalco Reservoir). Water from Lake Mathews is then distributed to local water districts in the Los Angeles basin and lower Santa Ana River drainage. The system is composed of two reservoirs, five pumping plants, 63 miles of canals, 92 miles of tunnels, 84 miles of buried conduit and siphons, and a filtration plant at La Verne, California. The nearest of these pump stations to the Projects' area is the Eagle Mountain Pump Lift, located 7 miles north of Desert Center.

Construction of the CRA involved ingenious engineering solutions and newly introduced equipment at the time of its construction. It also employed over 35,000 people during an 8-year span of construction, and as many as 10,000 people at one time, making it Southern California's single largest work opportunity during the Great Depression. Prior to beginning construction, little to no infrastructure was present in the desert. Roadways, power lines, telephones, and water sources had to be built to accommodate the work effort required. Due to its many engineering merits, the CRA has been named a National Historic Civil Engineering Landmark by the American Society of Civil Engineers. Today, it is one of the principal water supply systems for Southern California.

Military Training Activities

Evidence of military training is present across the Colorado Desert. George Patton's Desert Training Center/California-Arizona Maneuvers Area (DTC/CAMA) and Operation Desert Strike have left many artifacts, features, and sites across the region. The DTC/CAMA was established in the 1940s to prepare U.S. troops for possible deployment to North Africa. The Projects' area is near the western edge of where this training took place.

Desert Training Center/California-Arizona Maneuver Area

In 1942, during World War II, General George S. Patton, Jr., established the DTC/CAMA in a sparsely populated region of southeastern California, Arizona, and Nevada. Its purpose was to prepare tank, infantry, and air units for the harsh conditions of North Africa, practicing maneuvers, developing tactics, and field-testing equipment. The installation was in operation for 2 years and covered 16,000 square miles. It was the first simulated theater of operations in the United States. Its location was chosen for its unforgiving desert heat, rugged terrain, available telephone communications system, and accessibility by established railroads and highways.

Recent renewable energy projects in the region have identified many DTC/CAMA-related sites, artifacts and features. These resources were understood to be pieces of a larger historic district that represents an important piece of the military history of the nation. The DTC/CAMA was the largest training facility and the only one of its kind in American military history, eventually encompassing more than 16,000 square miles. The tactical, strategic, and logistical doctrines developed and refined during the facility's life were applied overseas and undoubtedly helped to win World War II.

DTC/CAMA resource types include maneuver areas, divisional camps, small unit training areas, air facilities and crash sites, bivouacs, campsites, ranges, supply depots and railroad sidings, and hospitals and medical centers. Based on the proximity of Desert Center, sites within the Projects' area could be related to most of these property types. The following is a summary of properties known to be present in the vicinity of Desert Center.

Maneuver Areas: The Chuckwalla Valley. The greater Chuckwalla Valley was considered a maneuver area, consisting of 11,520 acres, and was considered "contaminated" immediately after the war. Units moved across this valley in many of the maneuvers, and bivouacs and defensive positions were established in many locations. Several passes adjacent to this valley also served as good training grounds for movement, attack, and defense.

Desert Center Airport. The Desert Center Army Airfield was first known as the Desert Center Airdrome and was operational beginning sometime in the winter of 1942–1943. The airfield was a sub-base of Thermal Army Airfield, as a support base for the Air Technical Services Command. The airport contained two paved runways, each measuring 5,000 by 150 feet, along with taxiways and a parking apron. More than 40 buildings were constructed at the airfield, including an operations building, power house, control tower, pump house and well, and a 10,000-gallon water tower. Several crash sites are known to exist in the DTC/CAMA, particularly in those areas close to air facilities.

Air-to-ground ranges are also considered a part of air facilities. For the most part, air-to-ground gunnery practice focused on the toe of mountains. Bombs and .50-caliber shell casings from these activities have been found in the years following the Army's departure from the area. There were likely range markers established on these facilities, along with targets for the aircraft to fire upon.

Desert Center Observer's Camp. A camp was established immediately north of the small town of Desert Center, along the road to Camps Coxcomb and Iron Mountain. It was here that the maneuvers were evaluated and deficiencies pointed out. The camp contained 112 tents, 5 shower buildings, and 8 latrines. The camp was also supplied with water through a well and pump along with a 4,000-gallon storage tank.

18th Ordnance Battalion Campsite. Located 5 miles east of Desert Center, this camp appears to encompass a watering point. The only structures reported included a capped well, a 50,000-gallon water tank, and a wooden tower. Tent stakes and other refuse have been found in an area that relate to this camp.

Small Arms Range – Desert Center. A small arms range was established southeast of the town of Desert Center on the north end of the Chuckwalla Mountains. Neither the type of weapons used here nor the units that used it are known.

Desert Center Supply Depot. A quartermaster truck site was established near the small community of Desert Center. A rock alignment for the 496th Medium Ordnance Company remains northeast of the town. The rock alignment spells out "496 MEDCO." An ammunition depot was established northeast of Desert Center, although its location has not been examined or confirmed.

Desert Center Evacuation Hospital. An evacuation hospital was established near the town of Desert Center on both sides of the road to Eagle Mountain. The hospital site remains in good condition today and retains its basic design and layout. Many rock-lined walkways, roads, symbols, tent sites, and other activity areas remain in place. Artifacts are dispersed across the site as well as in dumps.

Desert Strike

One brief military training exercise, known as Desert Strike, took place in the desert maneuver area in May 1964. Amidst the nuclear arms race, the U.S. Strike Command conducted the joint Army and Air Force field training exercise for the major combat organizations and their support units in employing tactical nuclear and conventional weapons. Army and Air Force troop units were trained in passive and active tactics, as well as concepts and procedures for joint operations.

The exercise was a two-sided enactment, with fictitious world powers "Calonia" and "Nezona" sharing a common border at the Colorado River. The premise of the conflict between these two entities, each led by a Joint Task Force, was a dispute over water rights. Major tactical operations during the exercise included deep armor thrusts, defensive operations along natural barriers, counterattacks including airmobile and airborne assaults, and the simulated use of nuclear weapons. The Air Force provided fighter, air defense, interdiction, counterair reconnaissance, and troop carrier operations in support of both joint task forces.

Agriculture/Ranching

Agriculture became an important industry, second only to mining, by the late 1850s. Homesteading formed the foundation for California's agricultural economy in the nineteenth century, and the official passage of the Homestead Act in 1862 opened vast areas of the public domain to private citizens. The Desert Land Act of 1877 also promoted the acquisition of open tracts of land, with an entitlement to 640 acres for each applicant, who were primarily speculators. Generally, lands that fell under this act were marginal for sustained agriculture. Transforming arid land into productive farming and grazing lands was a key factor in development. Although agriculture became an important industry in the Palo Verde Valley near Blythe and the Colorado River, significant agricultural development did not take place near the study area until the late twentieth century

The federal government and the State of California decided to invest in the cultivation of the jojoba plant as an alternative to sperm whale oil. A tax-break was given to private growers, and speculators began

buying up acreage in the deserts of California, including the Chuckwalla Valley. In the late 1970s and early 1980s, farmers purchased land in Chuckwalla Valley and began commercially growing jojoba. Hundreds of farms were established in the 1980s by private farmers hoping to make a large profit. Approximately 6,000 acres of jojoba was planted, by seed, in Chuckwalla Valley.

However, the boom was short lived because the jojoba plant grows slowly, and it takes years for plants to produce oil. Many jojoba farms were converted to other crops, including asparagus. Currently there is only one active jojoba farm in the Chuckwalla Valley, La Ronna Jojoba Company Farm. La Ronna Jojoba Company Farm is a research/mother block of a variety of cultivars.

Records Searches

Previous Studies

Arica Solar Project. The records search results indicate that at least 21 previous investigations have been conducted and documented within 1 mile of the Arica Solar Project site since 1977. Of these, 16 studies appear to include portions of or intersect the Arica Solar Project site. The most recent studies were conducted for the nearby Palen Solar Project. The only portion of the Palen Solar Project site that intersects the Arica Solar Project site is within the portion of the gen-tie corridor, which connects the Palen Solar Project to SCE's Red Bluff Substation.

Victory Pass Solar Project. Like the results for the Arica Solar footprint, the records search results indicate that at least 24 previous investigations have been conducted and documented within 1 mile of the Victory Pass Solar Project site since 1977. Of these, 12 studies appear to include portions of or intersect the Victory Pass Solar Project site. The most recent studies were conducted for the nearby Palen Solar Project. The only portion of the Palen Solar Project site that intersects the Victory Pass Solar Project site is within the portion of the gen-tie corridor, which connects the Palen Solar Project to SCE's Red Bluff Substation.

Previously Identified Resources

Arica Solar Project. The records search results indicated that 85 cultural resources have been previously recorded within the Arica Solar Project site and buffer areas. These resources include 4 prehistoric archaeological sites, 28 historic period archaeological sites, 2 multicomponent sites, 5 prehistoric isolated artifacts, 43 historic period isolated artifacts, and 3 historic period built-environment resources. Of these previously recorded resources, 33 are mapped within the direct effects area. These include 9 historic period archaeological sites, 1 multicomponent site (ceramic scatter with historic period refuse deposit), 2 prehistoric isolated artifacts (single flake and ceramic sherd), 23 historic period isolated artifacts (metal cans, rock pile, glass bottle fragments), and 3 historic period built-environment resources (Blythe-Eagle Transmission Line, U.S. Highway 60/70, and Mecca-Blythe Highway). Additionally, the technical studies conducted for Desert Harvest Solar Project identified several resources around the shared access road. The Arica Solar Project site is also within the Prehistoric Trails Network Cultural Landscape/Historic District (PTNCL).

Seven previously recorded sites that have been determined eligible or are listed on the NRHP fall within a 1-mile buffer surrounding the Arica Solar Project footprint. These sites could be indirectly affected by construction of the Arica Solar Project. The seven sites include San Pasqual Well Traditional Cultural Property (TCP), North Chuckwalla Petroglyph District, Coco-Maricopa Trail Segment D, Palen Dunes/Palen Dry Lake TCP, U.S. Highway 60/70, 18th Ordinance Battalion Campsite, and AE-3752-064H which includes 42 distinct DTC/CAMA features. These sites are briefly described below.

San Pasqual Well TCP. Historical documents indicate that the well was visited during the Romero-Estudio expedition in 1823–1824 while attempting to establish a route for Euro-Americans to cross the Colorado Desert and more efficiently connect the Los Angeles area to the Tucson region.

North Chuckwalla Petroglyph District (CA-RIV-01383). This district is comprised of extensive petroglyph panels, rock rings, trail segments, lithic scatters, milling features, and ceramic scatters. Representing several thousand years of habitation, and with one area potentially dating to the Late Prehistoric Period (A.D. 1000-post A.D. 1500), the area provides significant information about Native American resource procurement, food processing, art, and spiritual beliefs.

Coco-Maricopa Trail Segment D (CA-RIV-00053T). The historic property was originally recorded in the 1950s as a system of trails that cross from the Colorado River near Blythe in the direction of the California coastal plain. Additional segments of trail have been documented since the initial recording. This site is part of a long-distance trade/exchange network that connected the region's tribes with a much wider area. Segment D of the Coco-Maricopa Trail consists of a 1,010-meter-long cleared and compacted trail with an average width of 37 centimeters and a depth of 22 centimeters or less. The trail runs in a roughly northwest-to-southeast direction traversing the alluvial fans, desert pavements, and rocky pediments along the northwestern margin of the Chuckwalla Mountains.

Palen Dunes/Palen Dry Lake TCP (CA-RIV-1515). The Palen Dunes/Palen Dry Lake TCP encompasses the entire Palen Dry Lake and surrounding areas. Palen Dry Lake is situated on the floor of the Chuckwalla Valley west of the Palen Mountains and southeast of the Coxcomb Mountains. In prehistoric times, it was an area that held ephemeral sources of water after significant rainfall events. This habitat provided a place for Native American peoples to periodically obtain water and food resources, and evidence of their occupation of this lake habitat is indicated by several archaeological sites that have been documented along the shoreline of the lake, especially in the dunes.

U.S. Highway 60/70. Historic U.S. Highway 60/70 is known as I-10. The current alignment of the route appears on historical maps by 1926, when it served as a connection between Indio and Blythe.

18th Ordinance Battalion Campsite. Measuring 115 feet by 98 feet in area, the site contains four features, along with two concentrations of historical refuse. Features include a grid of foundation piers that once supported a building, a concrete block, a capped well casing, and a fire ring. Sites like this were integral to the larger DTC/CAMA training and provided combat support for staging materials and ordnances and provided vehicles maintenance services.

AE-3752-064H. This resource is located on private land within and extending beyond the boundaries of the proposed solar facility. An expansive 985,824-square-foot area containing 42 distinct World War II-era DTC/CAMA features, including at least 36 small one- to two-person foxholes and seven larger mechanically dug fighting positions. The site is likely associated with a tank maneuver area (AE-3752-200H Locus 2).

Prehistoric Trails Network Cultural Landscape/Historic District. The PTNCL is a historic district that incorporates prehistoric archaeological sites associated with the Halchidoma (or Coco-Maricopa) Trail (CA-RIV-00053T). The PTNCL consists of important destinations in the Colorado Desert near Blythe, California, the network of trails that tie them together, and the features and sites associated with the trails. The boundary extends along the length of the historically known route of the Halchidoma Trail, from where it begins near Blythe at the Colorado River, continuing to the west through the Chuckwalla Valley towards modern Los Angeles, with a width of 10 miles. The PTNCL site types are divided into three categories: destinations, trails, and trail-associated sites or features. Destinations primarily include water sources, but also include residential, religious, and resource-collection sites. Trails can either be created by the movement of traveling feet or formal construction. They average 30 centimeters in width and can

be traced for many kilometers, interrupted only by gullies and washes. Trail-associated sites or features could include concentrations of ceramics/pot drops, cleared circles, rock rings, rock clusters, rock cairns, rock alignments, petroglyphs, and geoglyphs. When the trail itself is not preserved, its route can be approximately traced by distinctive patterns of trail-associated sites and features. The period of significance is the entire prehistoric and early historic periods. The thematic associations include travel, trade, ritual, and resource exploitation, particularly the collection of stone tool and groundstone raw materials. The PTNCL was determined a historic district eligible for the CRHR as part of the Palen Solar Power Project. The boundaries encompass the entire Arica Solar Project site, with a previously recorded segment of CA-RIV-00053T present in the Arica study area.

Victory Pass Solar Project. The records search results indicated that 162 cultural resources have been previously recorded within the direct effects Project site and buffer areas. These resources include 10 prehistoric archaeological sites, 62 historic period archaeological sites, 3 multicomponent sites, 16 prehistoric isolated artifacts, 66 historic period isolated artifacts, and 5 historic period built-environment resources. Of these previously recorded resources, 42 are mapped within the direct effects APE. These include 4 prehistoric archaeological sites (lithic scatters and a low earthen berm), 15 historic period archaeological sites (refuse scatters and military-related sites), 20 historic period isolated artifacts (metal cans, glass bottle fragments, a wash basin), and 3 historic period built-environment resources (Blythe-Eagle Transmission Line, U.S. Highway 60/70, and Mecca-Blythe Highway). Additionally, the technical studies conducted for Desert Harvest Solar Project identified several resources within the shared access road. The Victory Pass Solar Project site is also within the PTNCL.

Five previously recorded sites that have been previously determined eligible or are listed on the NRHP fall within a 1-mile buffer surrounding the Victory Pass Solar Project footprint. These sites could be indirectly affected by construction of the Victory Pass Solar Project. The five sites include North Chuckwalla Petroglyph District, Coco-Maricopa Trail Segment D, U.S. Highway 60/70, 18th Ordinance Battalion Campsite, and AE-3752-064H which includes 42 distinct DTC/CAMA features. These resources have been briefly described above.

Archaeological Survey

The archaeological survey took place between May 25, 2020, and June 19, 2020. Survey crews performed an intensive field survey of the Project sites by walking over the ground using parallel transects spaced 10 to 15 meters apart. Crews carefully inspected all landforms likely to possess archaeological resources including areas with any unusual contours, soil changes, distinctive vegetation patterns, surface features (e.g., road cuts, ditches, and stream cuts), and/or potential cultural markers. All resources previously documented within the Project sites were attempted to be relocated and site records were updated as necessary.

Arica Solar Project. Of the 38 previously recorded archaeological resources, the survey crews re-identified and updated DPR forms for 13 resources (7 sites and 6 isolates). The remaining resources were not relocated and all consisted of isolated occurrences, which were generally composed of single or small numbers of historic period artifacts (e.g., metal cans, shell casings, and bottle glass) or prehistoric lithics or ceramic sherds.

In addition to re-identifying 13 previously documented archaeological resources, the survey crew also documented 44 new archaeological resources within the Arica Solar Project fenceline. These include 12 archaeological sites and 33 isolated occurrences (Table 3.5-1). Only one resource, P-33-017766, that was previously determined NRHP eligible with concurrence from the SHPO (therefore eligible for the CRHR) was identified within the gen-tie corridor and could be impacted by construction. This resource is briefly

described below. All other resources were determined ineligible for listing on the NRHP or CRHR. A discussion of the eligibility justifications follows Table 3.5-1.

Site P-33-017766 is historic U.S. Highway 60/70, also known as I-10. The current alignment of the route appears on historical maps by 1926, when it served as a connection between Indio and Blythe. On a 1926 Rand McNally map the road is labeled the “Atlantic & Pacific Hwy.” No changes were noted on historical maps between 1936 and 1955. The route was abandoned sometime between 1955 and 1978 when I-10 was completed; however, portions of the original route were incorporated into the freeway. This is the case within the vicinity of the Project sites, where I-10 is also referred to as the Christopher Columbus Transcontinental Highway. The survey crews identified an approximately 350-foot-wide portion of this resource intersecting the proposed gen-tie route.

Arica Solar Project NRHP/CRHR Eligibility Determinations. The following discussion presents the eligibility justifications for the newly discovered resources listed in Table 3.5-1 for the Arica Solar Project. Isolated resources generally demonstrate the continued use of an area over time; however, isolated resources lack archaeological association and research potential and are therefore not eligible for the NRHP or CRHR and are not discussed further for archaeological values.

Of the 12 newly documented archaeological sites, 3 were identified as prehistoric archaeological sites (19-386-KJ-011, 19-386-KJ-055, 19-386-WH-001); there were also two historic period refuse deposits that also contained prehistoric materials (CA-RIV-9907/H, 19-386-WH-009/H). The three prehistoric archaeological sites each consisted of lithic flaking debris left over from reducing cobbles from the desert pavement for the production of stone tools or raw material masses for transport elsewhere. This kind of opportunistic quarrying behavior is a common theme in the deserts of Southern California where aboriginal people would take advantage of the exposed tool stone while traveling between areas or foraging. As such, these sites are not considered unique or representative of important events, do not reflect specialized tool production, and are not eligible for listing in the NRHP or CRHR under any significance criteria. The two historic period sites with prehistoric archaeological materials consist of three brownware ceramic sherds (CA-RIV-9907/H), one piece of debitage, and one Chione marine shell. As with reduced cobbles, brownware ceramic sherds are common constituents of the desert landscape representing the remains of containers or cooking vessels that were dropped, left in place, or discarded at the end of their useful life. The Chione marine shell is interesting and reflects either direct acquisition of the item from the coast of the Gulf of Mexico or California’s Pacific coastline, trade with groups in those areas, or scavenging from another archaeological site. Nevertheless, a single Chione shell, with only weak association with a single piece of debitage, is not enough to convey important prehistoric or aboriginal values. For these reasons, neither prehistoric component of the historic refuse deposits is eligible for NRHP or CRHR listing under any significance criteria.

Table 3.5-1. Archaeological Sites Within the Arica Solar Project APE

Primary No.	Trinomial No.	Age	Description	Within Solar Array APE	Within Gen-Tie APE	NRHP/CRHR Eligibility Determination
33-018307		Historic	Rock pile, no other associations		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-018788		Historic	Refuse scatter; sparse can and glass scatter; no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1); or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-019468	CA-RIV-9907/H	Multi-component	Prehistoric component: 3 brownware ceramic sherds Historic Component: military associated sparse scatter of ceramic sherds and cans	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-019469	CA-RIV-9908H	Historic	Military refuse scatter; sparse scatter of cans	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-019470	CA-RIV-9909H	Historic	Military refuse scatter containing eight cans and one piece of milled lumber		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not

Table 3.5-1. Archaeological Sites Within the Arica Solar Project APE

Primary No.	Trinomial No.	Age	Description	Within Solar Array APE	Within Gen-Tie APE	NRHP/CRHR Eligibility Determination
33-019472	CA-RIV-9911H	Historic	Military refuse scatter containing sparse amount of cans with some modern cans		X	unique/work of a master (C/3); no information potential (D/4) NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-023777	CA-RIV-11679	Historic	Refuse scatter; can and glass sherd scatter	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-028514	CA-RIV-12850H	Historic	Military refuse scatter; two concentrations of cans and tank tracks	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
AE-3752-200H		Historic	Tank tracks on desert pavement		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
AE-3752-C3-06H		Historic	Military fighting positions/foxholes		X	NRHP: Not eligible; CRHR: Not eligible;

Table 3.5-1. Archaeological Sites Within the Arica Solar Project APE

Primary No.	Trinomial No.	Age	Description	Within Solar Array APE	Within Gen-Tie APE	NRHP/CRHR Eligibility Determination
						Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-KJ-002H		Historic	Military refuse scatter	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-KJ-005H		Historic	Military refuse scatter containing 39 cans, 1902 Indian Head penny, and segment of iron chain	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-KJ-006H		Historic	Military refuse scatter containing cans and smoke grenade cannisters	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-KJ-007H		Historic	Military refuse scatter containing food and fuel cans	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master

Table 3.5-1. Archaeological Sites Within the Arica Solar Project APE

Primary No.	Trinomial No.	Age	Description	Within Solar Array APE	Within Gen-Tie APE	NRHP/CRHR Eligibility Determination
19-386-KJ-008H		Historic	Refuse scatter containing fragmented glass and ceramics, miscellaneous metal, and a boot	X		(C/3); no information potential (D/4) NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-KJ-011		Prehistoric	Lithic scatter; 28 lithic artifacts in a single concentration representing a single cobble reduction	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-KJ-055		Prehistoric	Lithic scatter; 100 pieces of quartz lithic debris in a single concentration representing a single cobble reduction		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1); significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-WH-001		Prehistoric	Lithic scatter; 5 lithic artifacts in a single concentration	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)

Table 3.5-1. Archaeological Sites Within the Arica Solar Project APE

Primary No.	Trinomial No.	Age	Description	Within Solar Array APE	Within Gen-Tie APE	NRHP/CRHR Eligibility Determination
19-386-WH-004H		Historic	Refuse scatter; 5 metal cans and fragments; no clear associations	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-WH-005H		Historic	Fence remnant; two metal posts	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-WH-006H		Historic	Refuse scatter; sparse glass and can scatter, early 20th Century	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-WH-008H		Historic	Refuse scatter; sparse glass and can scatter, early 20th Century	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1); significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
19-386-WH-009/H		Multi-component	Prehistoric component: 1 piece of debitage and 1 Chione shell Historic Component: military refuse scatter and possible hearth	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not

Table 3.5-1. Archaeological Sites Within the Arica Solar Project APE

Primary No.	Trinomial No.	Age	Description	Within Solar Array APE	Within Gen-Tie APE	NRHP/CRHR Eligibility Determination
19-386-WH-063H		Historic	Refuse scatter; sparse can scatter with possible civilian or military association		X	unique/work of a master (C/3); no information potential (D/4) NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)

Of the 12 newly documented archaeological sites, 9 are historic-era refuse scatters, 5 (19-386-KJ-002H through 19-386-KJ-008H) of which contain military refuse. These military items and features are the remnants of military training in the broader region relating to war preparation. However, none of the artifacts, features, or sites can be directly associated with historically important individuals, such as General George Patton and General Alvan Gillem, or the decisions they made. All of the artifacts identified at sites associated with the DTC/CAMA district are common, such as c-ration food cans, basic military hardware, or the remnants of campsites without unique design or layout. Thus, while the historical themes that define the DTC/CAMA historical landscape certainly provide associative context for the archaeological sites in the Projects' area, none of these sites display attributes that are character defining or unique such that they add value beyond basic association. For these reasons, none of the military associated historic period archaeological sites are eligible for listing in the NRHP or CRHR under any of the significance criteria (see Table 3.5-1). Likewise, none of the other historic period refuse scatters could be clearly associated with the DTC/CAMA or to other important historical figures or events and none have unique properties. Instead, all other historic period refuse deposits consist of common consumable containers, such as food and beverage cans and bottles, and miscellaneous items common to the late nineteenth and early twentieth centuries, such as milled lumber, oil cans, sheet metal, and other items. As is common with historic period artifacts, many identified at historic period refuse deposits could be ascribed an age of manufacture and hence, a broad age range for consumption, but none are unique, providing no new information on historical consumption and disposal trends. For these reasons, none of the historic period archaeological sites unaffiliated with the DTC/CAMA are eligible for listing in the NRHP or CRHR under any significance criteria.

Victory Pass Solar Project. Of the 42 previously recorded archaeological resources, the survey crew re-identified 14 resources (12 sites and 2 isolated artifacts). The survey crew also documented 33 new archaeological resources within the Victory Pass Solar Project fence line. These include 10 archaeological sites and 23 isolated occurrences (Table 3.5-2). One previously documented resource, P-33-017766, was previously determined NRHP eligible with concurrence from the SHPO (therefore eligible for the CRHR). This resource is located within the gen-tie corridor and could be impacted by construction (described above). All other resource were determined ineligible for listing on the NRHP or CRHR.

Victory Pass Solar Project NRHP/CRHR Eligibility Determinations

The two lithic scatters identified in the direct effects APE (P-33-013647 and 19-386-KJ-055) each consist of a single cobble that was reduced for tool production, leaving cores, core fragments, and debitage scattered in a small area. These single event archaeological sites are common throughout Southern California, especially on deflated desert pavement surfaces where cobble prospecting was made easier by the visibility of toolstone exposed on the surface. Single reduction loci, such as these, are widely known, and absent any associated temporally diagnostic artifacts, no new information on regional trends of aboriginal stone quarrying can be obtained. For these reasons, the two prehistoric lithic scatters in the Victory Pass Solar Project direct effects APE are not eligible for NRHP or CRHR listing under any significance criteria.

Many historic period archaeological sites are directly associated with DTC/CAMA military training activities, belied by the presence of military c-ration cans, military issue items, and, in some cases, tent stakes and tank tracks. These items and features are what remain from military training in the Chuckwalla Valley Maneuver Area, an important set of events in United States war preparation. However, none of the artifacts, features, or sites can be directly associated with historically important individuals, such as General George Patton and General Alvan Gillem, or the decisions they made. All of the artifacts identified at sites associated with the DTC/CAMA district are common, such as c-ration food cans, basic military hardware, or the remnants of campsites without unique design or layout. Thus, while the historical

themes that define the DTC/CAMA historical landscape certainly provide associative context for the archaeological sites in the Projects' area, none of these sites displays attributes that are character defining or unique such that they add value beyond basic association. For these reasons, none of the military associated historic period archaeological sites are eligible for listing in the NRHP or CRHR under any of the significance criteria (see Table 3.5-2). Likewise, none of the other historic period refuse scatters could be clearly associated with the DTC/CAMA or to other important historical figures or events and none have unique properties. Instead, all other historic period refuse deposits consist of common consumable containers, such as food and beverage cans and bottles and miscellaneous items common to the late nineteenth and early twentieth centuries, such as milled lumber, oil cans, sheet metal, and other items. As is common with historic period artifacts, many identified at historic period refuse deposits could be ascribed an age of manufacture and hence, a broad age range for consumption, but none are unique, providing no new information on historical consumption and disposal trends. For these reasons, none of the historic period archaeological sites unaffiliated with the DTC/CAMA are eligible for listing in the NRHP or CRHR under any significance criteria.

3.5.3 Impact Analysis

Methodology

A review of existing data acquired for the surrounding projects, including the Palen Solar Project, Desert Harvest Solar Farm Project, Desert Sunlight Solar Farm Project, Devers to Palo Verde, and Athos Renewable Energy Project, along with the BLM Cultural Resources Database, was completed for the proposed Project sites and the associated gen-tie corridor. The review included a 1-mile buffer around the proposed solar arrays with a 0.5-mile buffer for the gen-tie corridor. A supplemental records search was conducted on November 7, 12, and 13, 2019, at the Eastern Information Center, located at the University of California, Riverside, to fill in any data gaps within the Projects' area or buffer areas.

Additional sources were examined during the cultural resource literature review and records search, including the NRHP, the CRHR, the Office of Historic Preservation Archaeological Determinations of Eligibility, and the Office of Historic Preservation Directory of Properties in the Historic Property Data File.

For easier separation, the following record search and survey results sections have been broken down by individual project name. Those resources that fall within the gen-tie corridor are included in the totals for the Arica Solar Project footprint.

Criteria for Determining Significance

The significance criteria used to evaluate the Projects' impacts to cultural resources are based on Appendix G of the CEQA Guidelines. Under CEQA, the Project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource, an archeological resource as defined under CCR, Title 14, Chapter 3, Section 15064.5.

The Projects would have a significant impact on these cultural resources if they would:

- Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations, Section 15064.5 (see Impact C-1)
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations, Section 15064.5 (see Impact C-2)
- Disturb any human remains, including those interred outside of formal cemeteries (see Impact C-3)

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
33-013647	—	Prehistoric	Lithic scatter; includes porphyry cores and 10 debitage	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-018307	—	Historical	Rock pile		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
33-018818	—	Historical	Refuse scatter including clear glass bottles and food cans	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
CA-RIV-9875H	—	Historical	U.S. Highway 60/70		X	Eligible, Criterion A; avoided
P-033-019415	CA-RIV-9854H	Historical	Blythe-Eagle Mountain Transmission Line	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-019419	CA-RIV-9858H	Historical	Mecca-Blythe Highway	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
P-33-019463	CA-RIV-9902H	Historical	Refuse scatter; contains 4 metal sanitary cans	X		unique/work of a master (C/3); no information potential (D/4) NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-019464	CA-RIV-9903H	Historical	Military refuse scatter; contains five metal sanitary cans, a .50 caliber bullet shell, and a shot gun shell, with one set of tank tracks	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-019470	CA-RIV-9909H	Historical	Military refuse scatter; contains eight cans and two milled wood fragments		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-019472	CA-RIV-9911H	Historical	Military refuse scatter; contains diffuse can scatter mixed with modern cans.		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-20268	CA-RIV-10248H	Historical	Refuse scatter; contains five concentrations of food and beverage cans, and other refuse.	X		NRHP: Not eligible; CRHR: Not eligible;

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
						Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-20269/20270	CA-RIV-10249H/ CA-RIV-10250H	Historical	Earthen ramp, asphalt road, and quarry site associated with construction of Interstate 10	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-028510	CA-RIV12846H	Historical	Military field training location	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-028511	CA-RIV-12847H	Historical	Refuse scatter; contains cans redeposited through alluvial processes	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
P-33-028512	CA-RIV-12848H	Historical	Refuse scatter; contains six food and beverage cans	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
—	AE-3752-200H	Historical	Military tank tracks, campsite, and refuse scatters containing food and beverage cans	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	AE-3752-C3-06H	Historical	Military fighting positions/ foxholes		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KJ-010H	Historical	Military refuse scatter containing six amber colored glass bottles and eight cans.	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KJ-016H	Historical	Refuse scatter; contains six cans with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KJ-017H	Historical	Refuse scatter; contains one amber medicine bottle and four cans with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
—	19-386-KJ-019H	Historical	Military tank tracks	X		(C/3); no information potential (D/4) NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KJ-025H	Historical	Refuse scatter; contains various cans and metal hardware, and a rectangular enclosure consisting of 11 ironwood fence posts with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KJ-045H	Historical	Refuse scatter; contains 100-200 miscellaneous bottles, cans and metal items with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KJ-055	Prehistoric	Lithic scatter; contains 100 quartz debitage in a small area		X	NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-KM-001H	Historical	Prospect pit	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
—	19-386-KM-002H	Historical	Refuse scatter; contains 31 rotary opened sanitary cans with no clear association	X		significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-010H	Historical	Military refuse scatter; contains food and beverage cans and miscellaneous items	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-011H	Historical	Refuse scatter; contains small amount of food and beverage cans with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-012H	Historical	Refuse scatter; contains 14 cans with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
—	19-386-WH-013H	Historical	Refuse scatter; contains five cans with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-017H	Historical	Refuse scatter; consists of five cans of various uses with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-031H	Historical	Refuse scatter; contains three cans and one amber colored glass bottle with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-063H	Historical	Refuse scatter; contains 12 cans and one glass bottle with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)

Table 3.5-2. Archaeological Sites Within the Victory Pass Solar Project APE

Primary	Trinomial	Age	Site Description	Within Solar Array	Within Gen-Tie	NRHP/CRHR Eligibility Determination
—	19-386-WH-070H	Historical	Refuse scatter; contains 11 food and beverage cans and one glass whiskey flask	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)
—	19-386-WH-071H	Historical	Refuse scatter; contains 11 metal cans of various uses and one metal bowl with no clear association	X		NRHP: Not eligible; CRHR: Not eligible; Not associated with significant events (A/1) or significant persons (B/2); not unique/work of a master (C/3); no information potential (D/4)

Under all of these criteria, adverse changes and impacts are the following:

- Physical, visual, or audible disturbances resulting from construction and development that would affect the integrity of a resource or the qualities that make it eligible for the CRHR
- Exposure of resources to vandalism or unauthorized collecting
- A substantial increase in the potential for erosion or other natural processes that could affect resources
- Neglect of a resource that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to a Native American tribe
- Transfer, lease, or sale of a resource out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resource's historic significance

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to cultural resources, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM CUL-1 Retain a Qualified Archaeologist. Prior to the start of construction, a Project Cultural Resources Specialist (CRS) whose training and background conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, Part 61, shall be retained to supervise monitoring of construction excavations and to prepare a Cultural Resources Monitoring Plan for the approved Projects. The CRS's qualifications shall be appropriate to the needs of the Projects, specifically an archaeologist with demonstrated prior experience in the Southern California desert and previous experience working with Southern California Tribal Nations. A copy of the CRS's qualifications shall be provided to the California Department of Fish and Wildlife and the Bureau of Land Management for review and approval.

APM CUL-2 Develop and Implement Cultural Resources Environmental Awareness Training. Prior to issuance of a Notice to Proceed by the Bureau of Land Management (BLM) and for the duration of ground disturbance (as defined in APM CUL-4), the Applicants shall provide Worker Environmental Awareness Program (WEAP) training to all workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the Cultural Resources Specialist (CRS), may be conducted by any member of the archaeological team, and may be presented in the form of a video. Tribal representatives will be given the opportunity to participate in the WEAP training. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed if ground disturbance resumes. Training shall include the following:

- a discussion of applicable laws and penalties under the law
- samples or visuals of artifacts that might be found in the project vicinity
- a brief review of the cultural sensitivity of the Projects and the surrounding area
- a discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed

- a discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits
- instruction that only the CRS, alternate CRS, and supervisory cultural resource field staff have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS
- instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or supervisory cultural resource field staff, and that redirection of work would be determined by the construction supervisor and the CRS
- an informational brochure that identifies reporting procedures in the event of a discovery
- an acknowledgement form signed by each worker indicating that they have received the training
- a sticker that shall be placed on hard hats indicating that environmental training has been completed

This is a mandatory training, and all construction personnel must attend prior to beginning work on the Project sites. A copy of the sign-in sheet shall be kept ensuring compliance with this measure. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the BLM.

APM CUL-3

Cultural Resources Monitoring and Treatment Plan. Prior to start of construction, the Cultural Resources Specialist (CRS) shall develop a Cultural Resource Monitoring and Treatment Plan (CRMTP) that addresses the details of all activities and provides procedures that must be followed to reduce the potential impacts to undiscovered buried archaeological resources associated with the proposed Projects.

The CRMTP shall describe a program for avoiding and monitoring undiscovered National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) eligible cultural resources that can be avoided during Project construction. The CRMTP may require that protective fencing or other markers, at the discretion of the Bureau of Land Management (BLM), be erected and maintained to protect these resources from inadvertent adverse effects during construction. The CRMTP shall also include maps and narrative discussion of areas considered to be of high sensitivity for discovery of buried archaeological resources, if any. The CRMTP shall detail provisions for monitoring construction activities in these high-sensitivity areas. It shall also detail the methods, consultation procedures, and timelines for addressing all post-review discoveries.

The CRMTP shall identify person(s) expected to perform any monitoring tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team. It shall also specify monitoring reporting and what forms/documentation needs to be completed daily during monitoring.

The CRS shall manage all monitoring, mitigation, curation, and reporting activities under the CRMTP. The CRS shall have a BLM California cultural resource use permit and all supervisory cultural resource field staff (principal investigators and field directors or crew chiefs) shall be listed on that permit and otherwise meet the requirements outlined in

BLM Manual 8150. The Applicants shall ensure that the CRS makes recommendations regarding the eligibility for listing in the NRHP and CRHR of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

The CRMTP shall address the authority to halt ground disturbance during construction. If a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by BLM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting shall continue during the Projects' ground-disturbing activities elsewhere. Additional procedures regarding halting ground disturbance to address a post-review discovery or unanticipated effects shall be described in the CRMTP.

The CRMTP shall include, but not be limited to, the following elements, and shall be consistent with all other mitigation measures contained in this document:

- Preparation and implementation of a data recovery plan to be used to guide the data recovery and disposition of the tribal cultural resources (as defined under the California Environmental Quality Act) that cannot be avoided, and any other tribal cultural resources that may be encountered during construction. The data recovery plan shall include, minimally, a regional cultural setting, appropriate regional research questions, field and laboratory methods for the data recovery effort, and analysis and reporting requirements. The data recovery plan shall include treatment measures that focus on recovering information related to tribal values as they are conveyed through archaeological data. The treatment measures shall be developed through consultation among the California Department of Fish and Wildlife (CDFW), the Native American Heritage Commission-listed traditionally culturally affiliated tribes, and BLM as the landowner. Treatment measures may include detailed resource documentation, preparation of interpretative or educational materials, reburial of artifacts that convey tribal values, or other measures identified in coordination with the tribes and, as needed, authorized by BLM.

Following implementation of data recovery and other treatment protocols, a report documenting the methods and results of the data recovery and treatment program shall be prepared by a Secretary of the Interior-qualified archaeologist and shall be submitted to CDFW for review and approval.

Materials that are archaeological resources under the Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act (NAGPRA) materials, and historic properties under the NHPA are subject to the processes and procedures set forth in the applicable laws and regulations. In accordance with Title 43 Code of Federal Regulations Section 7.33, the BLM land manager may determine that certain materials (excluding those regulated by NAGPRA) are not or are no longer of archaeological interest and therefore not considered archaeological resources. For materials determined not to be archaeological resources under Title 43 Code of Federal Regulations Section 7.33, the BLM land manager may determine appropriate conservation measures, including, but not limited to, avoidance, leaving materials in situ or relocation to the nearest discovery locale as practicable, reburial, curation, or any other measure as the BLM land manager deems appropriate under applicable laws, regulations, and BLM policies related to such activity.

- APM CUL-4** **Archaeological Monitoring.** A qualified archaeological monitor that meets the Secretary of the Interior’s Professional Qualifications Standards (as defined in Title 36 Code of Federal Regulations Part 61), shall be present for initial grading activities in undisturbed soil. The archaeological monitor shall complete daily monitoring forms. The archaeological monitor will have the authority to increase or decrease the monitoring effort should the monitoring results indicate that a change is warranted.
- APM CUL-5** **Unanticipated Discovery.** In the event that previously unknown cultural resources (sites, features, or artifacts) are exposed during grading or other construction activities, all construction work occurring within 50 feet of the find shall immediately stop until a qualified archaeologist can evaluate the significance of the find and determine (in consultation with the California Department of Fish and Wildlife and the Bureau of Land Management) whether or not additional study is warranted, consistent with the rules and stipulations detailed in the Cultural Resource Monitoring and Treatment Plan (APM CUL-3). Depending upon the significance of the find, the archaeologist may record the find and allow work to continue. If the discovery proves significant under the California Environmental Quality Act, specific resource documentation or recovery shall be implemented, including preparation of an archaeological treatment plan, testing, or data recovery. During the assessment and recovery time, construction work may proceed in other areas.
- APM CUL-6** **Treatment of Human Remains.** In accordance with state law (California Health and Safety Code Section 7050.5; California Public Resources Code, Section 5097.98), if human remains are found, all ground-disturbing activities shall halt within 165 feet (50 meters) of the discovery. The Bureau of Land Management and County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the discovery or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined whether the remains are subject to his or her authority. The County Coroner must make this determination within 2 working days of notification of the discovery (pursuant to California Health and Safety Code Section 7050.5[b]). If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are, or are believed to be Native American, the Coroner must notify the Native American Heritage Commission by telephone within 24 hours, which must in turn immediately notify those persons it believes to be the most likely descendant (MLD) of the deceased Native American. The MLD shall complete its inspection and make recommendations within 48 hours of being granted access to the site. The MLD may recommend means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods.
- APM CUL-7** **Monitoring Report.** Within 6 months of finishing construction of the Projects, a Cultural Resources Monitoring Report shall be prepared and provided to the Bureau of Land Management and the California Department of Fish and Wildlife. The report shall include evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting(s) and evidence that any artifacts have been treated in accordance with procedures stipulated in the Cultural Resources Monitoring Plan.
- APM CUL-8** **DTC/CAMA Feature Recording.** To address cumulative impacts to the Desert Training Center California Arizona Maneuvers Area (DTC/CAMA), the projects owner shall retain cultural resources specialists who are qualified to obtain a Cultural Resources Use Permit

and Fieldwork Authorization from the Bureau of Land Management (BLM) to record a DTC/CAMA feature within the Projects APE. The specific feature and type of recordation required will be determined in consultation with the BLM.

APM CUL-9 Prehistoric Trails. To address cumulative and indirect visual impacts to the Prehistoric Trails Network Cultural Landscape/Historic District (PTNCL) prior to ground disturbance, the Applicants shall either draft a summary report of the region or contribute direct funding to non-profit groups approved by the Bureau of Land Management (BLM) to implement actions to preserve pre-construction evidence of PTNCL sites for future generations. The amount of direct funding would be determined under consultation with the BLM taking into consideration the indirect impacts to the resource.

The summary report would be drafted by a cultural resources specialist with prior experience working with prehistoric resources in the Blythe and/or Desert Center vicinity. These specialists shall review and synthesize the information contained in DPR forms and previously prepared reports regarding prehistoric trails and associated artifacts and features in the Chuckwalla Valley. Ethnographic documentation and reports describing local landscapes will also be reviewed to provide interpretive context. The results shall be summarized in a report and district DPR form, if appropriate, for the Desert Center vicinity. The report and DPR forms shall be submitted to BLM for review prior to completion of the proposed Projects. Within 30 days after BLM review and approval, the report and DPR forms shall be submitted to the California Historical Resources Information System Eastern Information Center.

Environmental Impacts

This section analyzes impacts to historical resources identified within the Projects' fenceline footprints, focusing on those that may be eligible for inclusion in the CRHR.

This analysis considers both direct and indirect impacts to cultural resources.

- **Direct impacts** to cultural resources are those associated with project development, construction, operations and maintenance (O&M), future decommissioning, and co-existence. Construction usually entails surface and subsurface ground disturbance, and direct impacts to cultural resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historical built-environment resources when those buildings or structures must be removed to make way for new buildings or structures or when the vibrations of construction impair the stability of historical buildings or structures nearby. New buildings or structures can have direct impacts on historical built environment resources when the new buildings or structures are stylistically incompatible with their neighbors and the setting, or when the new buildings or structures produce a harmful effect to the materials or structural integrity of the historical built environment resources, such as emissions or vibrations.
- **Indirect impacts** to cultural resources are those that may result from increased erosion due to site clearance and preparation or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historical built environment resources can suffer indirect impacts when project construction creates potentially damaging noise and vibration, improved accessibility and vandalism, or greater weather exposure. The long-term presence of solar panels, transmission lines, or towers also has the potential to result in indirect visual impacts to significant cultural resources where setting is a key contributor to the property's importance.

Additionally, unknown and potentially significant buried resources could be inadvertently unearthed during ground-disturbing activities associated with the proposed Projects. Destruction of potentially significant cultural resources could be a significant impact.

Impact C-1. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

LESS THAN SIGNIFICANT.

Direct Effects. As described in the Archaeology Survey section above, the surveys for both Projects resulted in the identification of one CRHR eligible resource, U.S. Highway 60/70 (P-33-017766), within the 230-kilovolt gen-tie line corridor that could be directly impacted by construction, operations, and future decommissioning of the Projects. Based on the current design of the Projects, the gen-tie corridor will span the historical resource; therefore, P-33-017766 will not be directly impacted by the Projects, and no mitigation is required for known historical resources. Additionally, the shared access road runs through several resources identified during the Desert Harvest Solar Project NEPA and CEQA review. The road is currently in use and requires avoidance of any environmentally sensitive areas outside the road boundaries, thereby avoiding direct impacts to these resources.

Indirect Effects. As described in the Previously Identified Resources section above, seven historical resources were identified within the Arica Solar Project indirect effects area, and five historical resources were identified within the Victory Pass Solar Project indirect effects area. All these identified resources are subject to indirect effects from construction, operations, and future decommissioning of the Projects.

An indirect effects assessment was conducted for both Projects, utilizing key observation points, onto which a simulation of the Projects' design was added (Knabb et al. 2020a, 2020b). The indirect effects assessment focused on indirect visual impacts, since auditory and atmospheric impacts are limited to the construction phase and are only temporary.

The assessment found that no significant indirect visual impacts would occur to any of the historical resources identified in the indirect effects area of the Projects because construction of the Projects would add in-kind intrusions (solar infrastructure and transmission lines) to an already highly developed and modified setting along the I-10 corridor that crosses the valley floor, and/or setting is not a critical element of the integrity of the resources. Therefore, no significant indirect impacts would occur, and no mitigation is required.

Unanticipated Buried Resources. There is the potential for unknown buried resources to be encountered during ground-disturbing activity that would be required for construction of the Projects. Inadvertent disturbance or destruction of an unidentified cultural resource could damage or destroy the resource or change its context. Furthermore, increased awareness of the cultural resources and increased public access could result in direct damage through vandalism or inadvertent damage. Avoidance of direct impacts is the preferred measure for resolving adverse effects on CRHR-eligible or -listed resources, and can be accomplished by preventing any direct ground disturbance of the resource through Project design, establishment of protective fencing, worker training, monitoring, and other measures. If avoidance is not feasible, the Applicants have developed APMs that are incorporated into the project that would minimize significant impacts. Most impacts are expected to occur during construction, since operation and future decommissioning activities would generally be confined to the same areas impacted by construction. However, operation and decommissioning impacts, and impacts resulting from public visitation and vandalism, are possible, particularly to unknown resources or through inadvertent and unanticipated damage to known resources. APMs CUL-1 through CUL-7 require retention of a qualified archaeologist (APM CUL-1) to evaluate unanticipated artifacts or features and provide training to the crews, provision

of cultural sensitivity training to all workers (APM CUL-2), preparation and incorporation of a cultural resources monitoring and treatment plan (APM CUL-3), incorporation of archaeological monitoring (APM CUL-4), proper treatment of unanticipated discoveries (APM CUL-5) and human remains (APM CUL-6), and documentation of all monitoring activities and resource treatment in a final report (APM CUL-7). Effective incorporation of these APMs would ensure a less-than-significant impact on cultural resources. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect historical resources impacts.

Impact C-2. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

LESS THAN SIGNIFICANT. Direct and indirect impacts of solar facilities and gen-tie construction, O&M, and future decommissioning on known archaeological resources would not occur because no known archaeological resources eligible for, or listed in, the CRHR have been identified as a result of the record search or surveys. However, discovery of unknown buried resources could occur from ground-disturbing activity associated with the Projects. Incorporation of APM CUL-1 through APM CUL-7 would reduce potential impacts to a less-than-significant level. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect archaeological resources impacts.

Impact C-3. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

LESS THAN SIGNIFICANT. A review of the archaeological record search and results of recent surveys did not identify any human remains in the Projects' area. However, previously unidentified human remains could be found and potentially indirectly impacted by the Projects' construction. If human remains or related resources are discovered, such resources shall be treated in accordance with state and local regulations and guidelines that govern the disclosure, recovery, relocation, and preservation of human remains (14 CCR 15064.5[e]). APM CUL-6 provides protection for any human remains under the applicable codes for the treatment of human remains encountered during Project construction, operation, and future decommissioning. It is supplemented by APM CUL-1 through APM CUL-5 and APM CUL-7, which provide for archaeological monitoring and resource treatment. With incorporation of these APMs into the Projects, impacts on human remains would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect human remains impacts.

Cumulative Impacts

Geographic Scope. The geographic area for the cumulative analysis is eastern Riverside County and includes the projects identified in Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario. This geographic scope is appropriate because the archaeological and historical resources within this area are expected to be similar to those that occur on the Project sites because of their proximity and because similar environments, landforms, and hydrology would result in similar land use and, thus, site types. Numerous significant archaeological and historical resources have been previously discovered within this broader geographical area. Cumulative projects in Tables 3.1-1 and 3.1-2 include 14 large-scale solar energy projects, 2 electrical substation projects, 5 transmission line projects, 1 energy corridor project, and 1 energy storage project. These projects all involved or will involve grading or other excavation that has the potential to impact cultural resources.

Cumulative Impacts. An analysis of cumulative impacts takes into consideration the entirety of impacts that both proposed Projects could have on cultural resources in conjunction with any effects that could occur as a result of the past, present, and reasonably foreseeable projects considered in the cumulative scenario (refer to Tables 3.1-1 and 3.1-2). This includes consideration of historical resources, archaeological resources, and human remains, as defined under CEQA. Cumulative impacts on cultural resources could occur if other projects, in conjunction with the proposed Projects, have or would have impacts on cultural resources that, when considered together, would be significant. Given the number of completed solar projects in the geographic study area, the Projects, when combined with the completed projects, would have a significant impact on cultural resources. This analysis considers whether the contribution of impacts of the proposed Projects is significant.

Under CEQA, the analysis considers the historical resources, unique archaeological resources, and human remains that could be encountered during construction, O&M, or future decommissioning of the proposed Projects. As discussed above, the record search and intensive pedestrian survey of both Project sites did not identify any unique archaeological resources or human remains. One historical resource was identified within the shared gen-tie corridor, which is not subject to direct impacts by the proposed construction, O&M, or future decommissioning of the Projects. With incorporation of APM CUL-1 through APM CUL-7 as part of the whole of the action under CEQA, and compliance with relevant state and federal law, the Projects' incremental contribution to impacts caused by other past, present, and probable future projects to historical resources, unique archaeological resources, and human would not be cumulatively considerable and, therefore, less than significant.

Approximately 34 historic-era resources were identified within the APEs of the proposed Projects that are associated, or thought to be associated, with DTC/CAMA, a historic district. While these resources are not eligible for listing on the NRHP or CRHR individually, their destruction due to the Projects contributes in a small but measurable way to impacts to the DTC/CAMA. Cumulative impacts to the DTC/CAMA would be addressed through APM CUL-8 (DTC/CAMA Feature Recording). With incorporation of this APM into the Projects, the Projects' incremental contribution to cumulative impacts to the DTC/CAMA would not be cumulatively considerable and, therefore, less than significant.

Several prehistoric isolates and sites are within the Projects' fencelines. These resources are potentially associated with the greater PTNCL. These prehistoric archaeological resources are not eligible for listing on the NRHP or CRHR individually. Cumulative impacts to the PTNCL would be addressed through APM CUL-3 (Cultural Resources Monitoring and Treatment Plan), which allows for the potential for leaving materials in situ or relocating them to the nearest discovery locale as practicable; reburial; and APM CUL-9 (Prehistoric Trails). Incorporation of these APMs would reduce cumulative impacts to less than significant. Therefore, the Projects' incremental contribution to the cumulative direct impacts to the DTC/CAMA and PTNCL resources, in combination with other past, present, and probable future projects, would not be cumulatively considerable and significant.

Three sensitive prehistoric archaeological resources are present in the indirect effects study area. These include prehistoric site CA-RIV-1515, North Chuckwalla Petroglyph National Register District (CA-RIV-1383), and Coco-Maricopa Trail (CA-RIV-53T) segments (c) and (d). These prehistoric archaeological resources are contributors to the PTNCL. While these resources may not be indirectly affected individually by the Projects, the addition of more industrial components to the Chuckwalla Valley contributes in a small but measurable way to a visual intrusion upon the setting of the PTNCL, a defining characteristic of the prehistoric archaeological resource under NRHP/CRHR Criterion A/1. This visual intrusion compromises the integrity of the resource. Cumulative impacts to the prehistoric archaeological value of the PTNCL as a result of visual intrusion would be reduced with incorporation of APM CUL-9 (Prehistoric

Trails). However, even with incorporation of APM CUL-9, the Projects' incremental contribution to the cumulative indirect effects to the prehistoric archaeological value of the PTNCL, in combination with other past, present, and probable future projects, would be cumulatively considerable and significant.

3.5.4 Mitigation Measures

In addition to APMs, no other potentially feasible measures were identified to further avoid or substantially lessen impacts to cultural resources.

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3.6 Energy

This section evaluates the environmental impacts related to energy that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects related to energy for both of the proposed Projects as the whole of the action. The section includes a description of applicable plans, policies, and regulations; presents the environmental setting with respect to energy consumption and generation for the proposed Projects; identifies the criteria used for determining the significance of energy impacts; and lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible. The analysis of energy includes evaluating the Projects' use of energy during construction, operation, and future decommissioning, as well as evaluating the Projects' consistency with federal, state, or local plans for renewable energy and energy efficiency.

During the scoping effort, no party identified any public concerns related to potential energy impacts.

3.6.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan (DRECP) is a landscape-scale renewable energy and conservation planning effort covering more than 22 million acres in the California desert. The Project sites are within the California Desert Conservation Area, which is amended by the Bureau of Land Management (BLM) DRECP Land Use Plan Amendment. The Project sites are located within an area designated as a Development Focus Area (DFA). DFAs are locations where renewable energy generation is an allowable use, incentivized, and could be streamlined for approval under the DRECP.

Federal Renewable Energy Mandates

- **Executive Order 13783** (March 28, 2017) promoted “clean and safe development of our Nation’s vast energy resources, while at the same time avoiding regulatory burdens that unnecessarily encumber energy production, constrain economic growth, and prevent job creation.”
- **Executive Order 13212** (May 18, 2001) mandated that “agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.”
- **Executive Order 13807** (August 15, 2017) and **Secretary’s Order 3355** (August 31, 2017) established policy to prioritize infrastructure projects and streamline the environmental review process.
- **Energy Policy Act of 2005, Section 211**, established a goal for the Department of the Interior to approve non-hydropower renewable energy projects on public lands with at least 10,000 megawatts of capacity by 2015. BLM has now authorized more than 17,000 megawatts of non-hydropower renewable energy projects. BLM continues to prioritize renewable energy development on public lands.

State Laws, Regulations, and Policies

Assembly Bill 32. Assembly Bill 32, also known as the California Global Warming Solutions Act of 2006, requires a reduction of greenhouse gas emissions to 1990 levels by 2020. The California Air Resources

Board is required to adopt regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions. Assembly Bill 32 is the first program in the United States to take a long-term approach to address climate change.

Energy Action Plan and Loading Order. California has mandated and implemented aggressive energy-use reduction programs for electricity and other resources. In 2003, California’s first Energy Action Plan established a high-level, coherent approach to meeting California’s electricity and natural gas needs and set forth the “loading order” to address California’s future energy needs. The “loading order” established that the state, in meeting its energy needs, would invest first in energy efficiency and demand-side resources, followed by renewable resources, and only then in clean conventional electricity supply. Since that time, the California Public Utilities Commission and California Energy Commission have overseen the plans, policies, and programs for prioritizing the preferred resources, including energy efficiency and renewable energy.

State of California Renewable Energy Mandates

- **Renewables Portfolio Standard (RPS) Senate Bill (SB) 1078**, passed in September 2002, set the RPS of 20% total renewables generation by 2020.
- **SB 107**, passed in September 2006, accelerated achievement of the 20% RPS to 2010.
- **SB X1-2**, signed in April 2011, raised the RPS goal to 33% in 2020.
- **SB 350**, signed in 2015, increased the RPS goal to 50% in 2030.
- **SB 100**, signed into law in September 2018, revised the RPS goal to 60% by 2030 and set a long-term target of 100% carbon-free energy by December 31, 2045.

CEQA Guidelines. The California Natural Resources Agency adopted certain amendments to the California Environmental Quality Act (CEQA) Guidelines effective in 2019, to change how CEQA lead agencies consider the environmental impacts of energy use. The CEQA Guidelines, Section 15126.2(b) requires analysis of a project’s energy use, to assure that energy implications are considered in project decisions. CEQA requires a discussion of the potential environmental effects of energy resources used by projects, with particular emphasis on avoiding or reducing the “wasteful, inefficient, and unnecessary consumption of energy” (refer to California Public Resources Code, Section 21100[b][3]).

Local

County of Riverside General Plan

Chapter 3, Land Use Element. Land Use Element Policy 17.2 encourages the development of renewable energy resources and related infrastructure, including but not limited to, the development of solar power plants in the County of Riverside (County of Riverside 2020).

3.6.2 Environmental Setting

The proposed Projects would develop renewable energy resources to provide a total of 465 megawatts of generating capacity and up to 400 megawatts of battery storage. As calculated in Section 3.8, Greenhouse Gas Emissions, the proposed Projects combined would produce overall about 1.2 million megawatt-hours each year for end-use by California’s customers. The power produced by the Projects would be conveyed to the statewide power grid via a 3.2-mile shared overhead 230 kilovolt gen-tie transmission line interconnecting from a shared switchyard to the existing Southern California Edison Red Bluff Substation, located south of Interstate 10. The Projects are located on land allocated as the Riverside

East Solar Energy Zone of BLM's Western Solar Plan (also known as the Solar Energy Program) and as a DFA under the DRECP. The BLM's Western Solar Plan supports federal renewable energy goals and objectives for solar energy development. The Western Solar Plan and DRECP allow for the development of solar energy generation and ancillary facilities on public lands in this area under the California Desert Conservation Area Plan. A portion of the gen-tie line would also be sited within the Section 368 Federal Energy Corridor, as established by the West-wide Energy Corridor Final Programmatic Environmental Impact Statement and Record of Decision. South of Interstate 10, the gen-tie line would cross the Chuckwalla Area of Critical Environmental Concern and Special Recreation Management Area, within an existing overhead transmission corridor.

3.6.3 Impact Analysis

The Projects' potential impacts to energy consumption are evaluated in this section. This section includes a description of the methodology of the impact analysis, criteria for determining the significance of the Projects' impacts and cumulative impacts, and Applicant Proposed Measures (APMs) to reduce potentially significant impacts.

Methodology

All construction-, operation-, and decommissioning-related activities would involve use of energy-consuming equipment and processes. This analysis presents a qualitative discussion of the Projects' energy use for all phases and components, based on the quantitative analysis presented in Section 3.8, Greenhouse Gas Emissions. As set forth in the CEQA Guidelines, Appendix F, Energy Conservation, the goal of conserving energy implies the wise and efficient use of energy including:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, and oil; and
- Increasing reliance on renewable energy sources.

Lead agency actions that are consistent with these goals would not be likely to cause an energy-related impact. The energy impact analysis emphasizes avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy resources. It also considers whether a project would result in a potentially significant environmental impact due to inefficient, wasteful, and unnecessary consumption of energy.

Examples of energy conservation measures that may be relevant to addressing energy are provided in Appendix F, Energy Conservation, within the CEQA Guidelines.

Criteria for Determining Significance

The criteria used to determine the significance of the Projects' energy impacts are based on the criteria identified in the CEQA Guidelines, Appendix G. Project-related impacts would be considered significant if they would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation (see Impact E-1).
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency (see Impact E-2).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to energy, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM AIR-2 **Control On-Site Off-Road Equipment Emissions.** *Refer to full text in Section 3.3, Air Quality.*

APM TRA-2 **Employee Carpool Incentives.** *Refer to full text in Section 3.16, Transportation.*

Environmental Impacts

Impact E-1. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

LESS THAN SIGNIFICANT. Construction of both Projects is anticipated to occur concurrently and last for a total of approximately 18 months. During construction, motorized equipment and vehicles would consume energy resources in the form of fossil fuels (i.e., diesel fuel and gasoline). Additionally, construction would require the manufacture and delivery of new equipment and materials, which would also require energy use. An estimate of the energy that would be used is presented in Section 3.8, Greenhouse Gas Emissions. Energy used during construction of both Projects would be reduced by best management practices and APMs that would reduce construction equipment activity to levels that are necessary and not wasteful. Examples of APMs incorporated into the Projects that would reduce wasteful, inefficient, or unnecessary consumption of energy resources include APM TRA-2, which would offer incentives to employees who carpool, thereby reducing fuel consumption. APM AIR-2 is incorporated into the Projects and would require use of modern equipment or vehicles, and Tier 4 California Emission Standards for Off-Road Compression-Ignition Engines (where feasible), which would reduce energy use. APM AIR-2 would also require equipment be properly maintained and limit construction equipment idling.

Although construction of the Projects would require the temporary use of energy resources, the Projects would not result in significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources. Construction impacts would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Once operational, both Projects would require minimal activity, as the solar modules would automatically generate power from solar energy. The switchyard and gen-tie line would carry electricity to the existing Southern California Edison Red Bluff Substation. During operations, up to 6 workers per Project would perform daily visual inspections and minor repairs. Potable water may be trucked to the site once a week from Blythe, which would most likely require gasoline for the truck. Maintenance of both Projects would include road maintenance; vegetation restoration and management; maintenance of inverters, transformers, and other electrical equipment; and occasional replacement of faulty equipment. Up to 15 workers may be required intermittently for repairs, replacement of equipment, and panel cleaning. However, on average, a minimal workforce and maintenance activities are anticipated. Operation and maintenance would result in minimal energy use due to the small workforce needed and the limited number of vehicles required to commute to the site and transport materials. The Projects would generate renewable energy, reducing the use of fossil fuel for electrical generation by conventional power plants. While the Projects would require the use of some energy for the battery storage system or other uses, the energy generated would be many times greater than the amount used. As such, operation of the Projects would result in a less-than-significant impact with respect to the inefficient consumption of

energy. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Future decommissioning impacts are anticipated to be similar to the construction impacts and would also use energy; however, the types and amount of energy that would be used in 35–50 years is uncertain. Mitigation and existing regulations at that time would ensure that the Projects would not result in significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact E-2. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

NO IMPACT. The Projects would provide a total of 465 megawatts of renewable energy generating capacity and would annually produce about 1.2 million megawatt-hours. Electricity from the Projects would be used to serve the needs of California customers and would facilitate compliance with California's RPS. They would assist the state achieve its energy objectives under Senate Bills 100 and 350, and greenhouse gas emissions–reduction goals under Assembly Bill 32. The Projects would advance the goals of both the state and County guidelines to reduce use of fossil fuels and increase the availability of electricity from solar energy, which is eligible for compliance with the RPS. The project would be consistent with the County General Plan, which recognizes solar energy development and acknowledges the essential role solar energy plays in generating power for the region (County of Riverside 2020).

The Projects would be located on land allocated as the Riverside East Solar Energy Zone in BLM's Western Solar Plan and as a DFA under the DRECP. The Projects would be consistent with federal goals for the construction of renewable energy infrastructure and generation of renewable energy and would make the best use of public lands to generate, store, and transmit affordable renewable solar electricity for distribution to the state. Therefore, the Projects would directly support federal, state, and local plans for renewable energy development. Accordingly, the project would not conflict with or obstruct a state or local plan for renewable energy. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in no impact.

Cumulative Impacts

The geographic scope of the cumulative analysis for energy consumption would be eastern Riverside County, which includes all the cumulative projects identified in Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario. This geographic area was selected because all cumulative projects have the potential to use energy resources temporarily or permanently, or have the potential to conflict with plans and policies related to increasing renewable energy and energy efficiency.

As discussed above, construction of the Projects would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources (Impact E-1). Energy use during construction would be reduced by best management practices and APMs (including APM TRA-2 and APM AIR-2) that would minimize construction equipment activity, limit the idling of equipment, encourage carpooling, and reduce temporary traffic delays. The limited use of fossil fuel by operational worker commutes and use of vehicles and equipment during maintenance is not considered to be wasteful, inefficient, or unnecessary. Operation of the Projects would increase the use of renewable energy, thus reducing the use of fossil fuel for electrical generation by conventional power plants. Most of the cumulative projects identified in Tables 3.1-1 and 3.1-2 are renewable energy facilities and the remainder are energy infrastructure such as a storage project or transmission lines and substations.

Although construction activities associated with cumulative projects identified in Tables 3.1-1 and 3.1-2 would require the use of fossil fuels, it is expected that each project would initiate best management practices and comply with applicable policies and regulations as part of project approval to reduce wasteful, inefficient, or unnecessary use of energy resources. Most of the cumulative projects would also contribute renewable energy to the California electrical utility system, reducing the use of fossil fuels. Accordingly, the Projects' incremental contribution to the cumulative energy impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant, and most of the projects would have a beneficial cumulative contribution related to directly supporting federal, state, and local plans for renewable energy development. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to energy.

3.6.4 Mitigation Measures

In addition to APMs, no other potentially feasible measures were identified to further avoid or substantially lessen impacts to energy.

3.7 Geology and Soils

This section evaluates the environmental impacts related to geology, soils, and paleontological resources that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on geology, soils, and paleontological resources from both of the proposed Projects as the whole of the action. The section includes a description of the existing regional and local geology, soil conditions, and paleontological resources and the regulatory framework for these resources. The section also identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and evaluates the Projects' potential impacts on geology, soils, and paleontological resources.

The information in this section is based on the Arica and Victory Pass Solar Projects Sand Transport Corridor Review Memorandum (Sand Transport Memo) prepared by Aspen Environmental Group, the Stage 1 Report, Red Bluff Solar Projects – Victory Pass and Arica, Desert Center, California prepared by Terracon Consultants Inc. (Geologic Report), and the Arica and Victory Pass Solar Projects, Paleontology Survey Technical Report prepared by Aspen Environmental Group (Aspen 2020 [Confidential]) (Paleontology Report). The Sand Transport Memo and Geologic Report are provided in Appendices F-1 and F-2 of this Draft EIR, respectively.

Issues raised during scoping related to geology and soils included the potential for disruption of desert pavement/cryptobiotic soil crusts and limiting soils disruption to minimize impacts to these sensitive soils to limit erosion.

3.7.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Paleontological Resources Preservation Act (PRPA) of 2009. The PRPA was signed into law as part of the Omnibus Public Lands Management Act (OPLMA) of 2009. The OPLMA-PRPA requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise and requires federal agencies to develop appropriate plans for inventorying, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. Where possible, these plans should emphasize interagency coordination and collaborative efforts with non-federal partners, the scientific community, and the general public. The OPLMA-PRPA is the authority for federal land managing agencies for permits to collect paleontological resources, as well as curation of these resources in an approved repository. It provides authority for the protection of significant paleontological resources on federal lands including criminal and civil penalties for fossil theft and vandalism.

Antiquities Act of 1906. The Antiquities Act was the first law enacted to specifically establish that archaeological sites on public lands are important public resources, and it obligated federal agencies that manage public lands to preserve the scientific, commemorative, and cultural values of such sites. This act does not refer to paleontological resources specifically; however, the act does provide for the protection of "objects of antiquity" (understood to include paleontological resources) by various federal agencies not covered by the OPLMA-PRPA.

National Environmental Policy Act (NEPA) of 1969. NEPA (42 USC 4321 et seq.; Title 40 Code of Federal Regulations Section 1502.25), as amended, directs federal agencies to "Preserve important historic,

cultural, and natural aspects of our national heritage” (Section 101[b][4]). The current interpretation of this language has included scientifically important paleontological resources among those resources that may require preservation.

Federal Earthquake Hazards Reduction Act. In 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes, through the establishment and maintenance of an effective earthquake hazards and reduction program. To accomplish this, the act established the National Earthquake Hazards Reduction Program. The agencies responsible for coordinating this program are the Federal Emergency Management Agency, the National Institute of Standards and Technology, the National Science Foundation, and the U.S Geological Survey. In 1990, the National Earthquake Hazards Reduction Program was amended by the National Earthquake Hazards Reduction Program Act, which refined the description of the agency responsibilities, program goals, and objectives. The four goals of this act are (1) develop effective practices and policies for earthquake loss-reduction and accelerate their implementation, (2) improve techniques to reduce seismic vulnerability of facilities and systems, (3) improve seismic hazards identification and risk-assessment methods and their use, and (4) improve the understanding of earthquakes and their effects.

International Building Code (IBC). Published by the International Code Council, the purpose of the IBC is to establish minimum structural requirements to provide a reasonable level of safety, public health, and general welfare, through structural strength, and safety to life and property from fire and other hazards attributed to the built environment. The provisions of the IBC apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of buildings or structures, as well as any appurtenances connected to applicable buildings or structures. The IBC also incorporates the requirements and regulations set forth in several other International Code Council codes, including the International Energy Conservation Code, the International Existing Building Code, the International Fire Code, and the International Fuel Gas Code. The IBC is in use or adopted in all 50 states of the United States and is updated every 3 years to ensure that new construction methods and technologies are incorporated into existing codes. The IBC has replaced the Uniform Building Code as the basis for the California Building Code (CBC).

Clean Water Act. The Clean Water Act (33 USC 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of waters of the United States. The Clean Water Act requires states to set standards to protect, maintain, and restore water quality through the regulation of point-source and certain non-point-source discharges to surface water. Section 402 of the Clean Water Act establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate point-source and non-point-source discharges of pollutants into waters of the United States. Discharges or construction activities that disturb 1 or more acres—including the proposed Projects—are regulated under the NPDES stormwater program and are required to obtain coverage under an NPDES Construction General Permit. The Construction General Permit establishes limits and other requirements, such as the implementation of a Stormwater Pollution Prevention Plan (SWPPP), which would further specify best management practices and other measures designed to avoid or eliminate pollution discharges in waters of the United States. The NPDES Program is a federal program which has been delegated to the State of California for implementation through the State Water Resources Control Board and the nine Regional Water Quality Control Boards. The State Water Resources Control Board and Regional Water Quality Control Boards have the responsibility of granting NPDES permits and setting waste discharge requirements for stormwater runoff from construction sites. The Project sites are located within the Colorado River Regional Water Quality Control Board jurisdiction.

Institute of Electrical and Electronics Engineers (IEEE) 693. IEEE 693, Recommended Practices for Seismic Design of Substations, was developed by the Substations Committee of the IEEE Power Engineering Society and approved by the American National Standards Institute and the IEEE-SA Standards Board. This document provides seismic design recommendations for substations and equipment, consisting of seismic criteria, qualification methods and levels, structural capacities, performance requirements for equipment operation, installation methods, and documentation. This recommended practice emphasizes the qualification of electrical equipment. IEEE 693 is intended to establish standard methods of providing and validating the seismic withstand capability of electrical substation equipment. This document provides detailed test and analysis methods for each type of major equipment or component utilized in electrical substations. This recommended practice is intended to assist the substation user or operator in providing substation equipment that will have a high probability of withstanding seismic events to predefined ground acceleration levels. In addition, this document establishes standard methods of verifying seismic withstand capability, which gives the substation designer the ability to select equipment from various manufacturers, knowing that the seismic withstand rating of each manufacturer's equipment is an equivalent measure. Although most damaging seismic activity occurs in limited areas, many additional areas could experience an earthquake with forces capable of causing great damage. This recommended practice should be used in all areas that may experience earthquakes.

State Laws, Regulations, and Policies

California Building Code. The CBC is promulgated under Title 24, Parts 1 through 12, of the California Code of Regulations (also known as the California Building Standards Code) and is administered by the California Building Standards Commission. The Projects are subject to the applicable sections of the CBC. The Riverside County Building Department is responsible for implementing the CBC for the Projects, which would comply with applicable seismic design and construction criteria of the most recent CBC.

The earthquake design requirements consider the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project, as described in Chapter 16 of the CBC. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC F (very high seismic vulnerability and near a major fault). For SDCs D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. Chapter 18 also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures.

California Fire Code. Chapter 12, Section 1206 of the 2019 California Fire Code provides provisions related to the installation, operation, and maintenance of electrical energy storage systems. Subsection 1206.2.4, Seismic and Structural Design, states that "Stationary storage battery systems shall comply with the seismic design requirements in Chapter 16 of the California Building Code and shall not exceed the floor-loading limitation of the building."

Alquist-Priolo Earthquake Fault Zoning Act. The Alquist-Priolo Earthquake Fault Zoning Act of 1972, California Public Resources Code, Sections 2621–2630 (formerly the Special Studies Zoning Act), regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While this act does not specifically regulate components not intended for human occupancy, it does help define areas where fault rupture, and thus related damage, is most likely to occur. This act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults

are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be “sufficiently active” and “well defined” by detailed site-specific geologic explorations to determine whether building setbacks should be established. Cities and counties affected by the zones must regulate certain development projects within the zones. Jurisdictions must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting.

Seismic Hazards Mapping Act. The Seismic Hazards Mapping Act of 1990 (California Public Resources Code, Sections 2690–2699) was established to reduce the threat to public health and safety and to minimize the loss of life and property, by identifying and mitigating seismic hazards. The act directs the California Department of Conservation, Division of Mines and Geology (now called California Geological Survey [CGS]) to delineate Seismic Hazard Zones or Zones of Required Investigation. Zones of Required Investigation, referred to as “Seismic Hazard Zones” in Title 14 California Code of Regulations Section 3722, are areas shown on Seismic Hazard Zone Maps where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements. A geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design before development permits may be granted. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones. However, to date, seismic hazard mapping has not been completed by the State Geologist for the Projects’ area. Therefore, this act does not apply to the proposed Projects.

Local Laws, Regulations, and Policies

Riverside County Department of Environmental Health. The Environmental Health Department oversees on-site wastewater treatment system permits and projects, and reviews and approves septic system plans. To obtain a construction permit for the installation of a new septic system, a building permit is required from the local building and safety agency. A Land Use Application (On-Site Wastewater Treatment System Construction Application) must be submitted, along with supporting documentation and fees, at the Downtown Riverside or Indio Office, depending on the location of your project. After submission and evaluation, additional information may be required. Supporting documentation includes the following:

- A percolation report, including three sets of detailed plans, signed by a Professional of Record registered with the Department of Environmental Health
- A floor plan, drawn to scale, of the dwellings or structures that the septic system will service
- Documentation of water service, such as a will-serve letter or water bill. If an existing water well will be used to supply potable water, a well evaluation may be required. If a new well will be constructed, a Riverside County Environmental Health Permit for construction, reconstruction, or destruction of the well is required throughout the county.

County of Riverside General Plan Safety Element. The Safety Element of the General Plan addresses seismic hazards related to fault rupture and seismically induced liquefaction, landslides and rockfalls, as well as slope and soil instability hazards related to subsidence, expansive and collapsible soils, wind erosion, landslides, rockfalls, and debris flows.

3.7.2 Environmental Setting

Geologic Setting and Physiography

The elevations of both Projects, including the gen-tie line, range from approximately 500 feet above mean sea level (amsl) on the north boundary to 800 feet amsl at the Red Bluff Substation. The elevation of the access roads range from approximately 900 feet amsl in Desert Center to approximately 540 feet amsl at the eastern terminus of the road. The Project sites are located near the northeast corner of the Colorado Desert geomorphic province, which is bounded to the east by the Colorado River, to the south by the Mexican border, and to the west by the Peninsular Ranges. The northern border extends approximately along the southern edge of the eastern Transverse Ranges and the San Bernardino–Riverside County line (Norris and Webb 1976). Except for a narrow band along the Colorado River and the northwestern portion of Imperial County, drainage in the Colorado Desert is internal. In eastern Riverside County, much of the drainage terminates in the Chuckwalla Valley.

The Project sites are located within the Chuckwalla Valley, situated between the Chuckwalla Mountains to the south and the Palen and Coxcomb Mountains to the north. Alluvial divides reaching up to 1,500 feet amsl serve as boundaries between the mountain ranges to the north and west of the valley, which is dominated by up to 1,200 feet of sand, gravel, and clay derived from the surrounding highlands and contains numerous dry lake beds that are separated by sand dunes. The surrounding mountains reach 2,000 to 4,000 feet above amsl and the lowest point of the valley is Ford Dry Lake, located southeast of the Project sites at an elevation of approximately 360 feet amsl. Most of the area consists of broad alluvial fans characterized by bar and swale topography, interrupted by larger drainages that are locally heavily vegetated (Aspen 2020). Sand dunes occur in some regions of the Chuckwalla Valley.

Geology

The sites are situated on the western end of the Chuckwalla Valley and receive outwash from the Chuckwalla Mountains to the south. The geology of the area is dominated by alluvial fans and basin deposits. The Geologic Report (Appendix F-2) indicates that the area is underlain by Holocene to Pleistocene, unconsolidated and semi-consolidated, marine and nonmarine sedimentary rocks, consisting of alluvium, lake, playa, and terrace deposits. More detailed geologic mapping of the area is provided on the Eolian System Map of the East Riverside Area (CGS 2014), which indicates the Project sites, including the gen-tie line and access roads, are underlain by Quaternary alluvial and eolian deposits, ranging from Recent (active) to Holocene (less than 11,700 years before present [BP]) to Pleistocene (11,700 to 2.58 million years BP) in age. The units underlying the Project sites are shown on Figure 3.7-1 and described below (CGS 2014).

Active Eolian Deposits (Qe). This geologic unit consists of active windblown deposits of dunes and sand sheets, typically greater than 5 feet in thickness. These deposits consist predominantly of very pale to pale brown, fine- to medium-grained sand. The dune forms include transverse, crescentic, parabolic, and barchan, as well as coppice dunes and amorphous sand hummocks. This unit is found in the northeastern and eastern portions of the Arica Project site.

Active Alluvial Wash Deposits (Qw) Active alluvial wash deposits consist of unconsolidated fine- to coarse-grained sand and sandy gravel, with minor fine sand and silt, which exhibit bar and swale morphology. Active alluvial wash deposits traverse the eastern portion of both Project sites in a southwest–northeast direction.

Alluvial Fan Deposits (Qyf). Alluvial fan deposits of Holocene to latest Pleistocene age consist of unconsolidated to slightly consolidated, poorly to moderately sorted, fine- to coarse-grained sand and gravel.

The gravel includes pebbles, cobbles, and boulders. This unit is broadly distributed throughout the Chuckwalla Valley and locally contains active alluvial fans and washes that serve as sources of eolian sediment. This unit underlies most of both Project sites, as well as most of the gen-tie line and access roads.

Older Alluvium (Qoa). Older alluvial deposits of Pleistocene age, comprised of alluvial fan, alluvial valley, and alluvial terrace deposits, are present along the western boundary and in the southwest corner of the Victory Pass Project site. These deposits also underlie portions of the gen-tie line and access roads. In general, these deposits are capped by a gravel lag or desert pavement with moderately to strongly developed desert varnish.

Geomorphology

Geomorphology is the study of the landforms and relief patterns that make up the earth's surface. Eolian (wind-blown) dune systems are driven by the interactions of three main factors: sediment supply, sediment availability (i.e., its ability to be transported by the wind), and wind transport capacity. Sand dune transport systems form where winds are consistently strong enough to lift and push fine sand grains across the dune surface, especially where there is little or no vegetation to stabilize the loose soil. Sandy alluvium (unconsolidated sediment deposited by flowing water in streams or sheets) in dry washes and alluvial fans are examples of sources for these materials, and strong winds generally transport the sands to areas with topographic irregularity, such as at the mountain front, where decreasing winds deposit sand. Active washes are large contributors of eolian sands in desert landscapes, transporting sand from upslope to the valley axis where most dune systems exist (areas of strongest prevailing winds). Except in high-force winds, wind does not typically suspend and transport sand high into the air (BLM 2015).

The Project sites are located within the Palen Sand Dunes system of the Chuckwalla Valley, a region of active eolian sand migration and deposition. Eolian processes play a major role in the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley (Appendix F-1). Regional eolian system studies in the Chuckwalla Valley indicate that the prevailing wind responsible for sand transport is from the northwest toward the southeast and locally controlled by topography (mountain ranges) (BLM 2018). The dominant sand migration direction within the corridors is toward the east and south. Sand delivered from upwind is deposited, replenishing sand that has been lost downwind.

Recent studies performed by Miles Kenney at Kenney GeoScience (BLM 2019a, 2019b) included a review of the sand corridor throughout the Chuckwalla Valley and concluded that the sand transport system relies on local sand systems, rather than systems that cross the entire Chuckwalla Valley. Within the Palen Sand Dunes system, active eolian sand migration occurs in migration corridors, such as the Palen Lake sand migration zone, immediately north of the Arica Project site. The sand migration appears to be driven primarily by winter/Pacific Ocean oriented winds, which generally blow from the north-northwest (BLM 2018).

The sand migration corridor where the Projects are sited can be divided into discrete eolian geomorphic zones (Zones A through C) that characterize differing rates of sand transport from strong to weak. Zone A has the greatest rate of sand transport and Zone C the lowest sand migration rate. Neither Project site is located within zones with strong or moderate to strong sand migration rate (Zones A and AB). These areas are predominantly covered by active sand sheets and dunes (Appendix F-1).

The Arica Project site has several differing eolian geomorphic zones across the northern and eastern portions of the site, including Zone B, Zone BW, Zone BC, and Zone C, as shown in Figure 3.7-2. A very small amount of Zones B and BW are located along the northern boundary and are areas of moderate and moderate to weak migration rate, with older mostly stable and/or eroding dune deposits covering less than 50% of the area. Areas of low to moderate sand migration (Zone BC) with minor active sand sheet and coppice dunes and older stabilized degraded dune mounds, which generally exhibit a mix of eolian and fluvial/playa

surfaces, are along the northeast and eastern boundaries of the Arica Project site. Fluvially dominated low sand migration rate (Zone C) eolian geomorphic zones, identified as areas of minor, very thin, and sparse sand sheets and coppice dunes, are located throughout the northern and eastern portions of the Arica Project site. Eolian deposits mapped outside the sand migration zones are present along and primarily outside of the northern boundary. Active washes that cross the eastern portion of the Arica Project site are an eolian sand source and provide stabilizing moisture (Appendix F-1).

Active eolian sand was not observed within the Victory Pass Project site by biological resources survey crews in October 2019, which is consistent with analyses conducted by Kenney GeoScience (BLM 2019a). While the Victory Pass Project site is not mapped within an eolian geomorphic zone (Figure 3.7-2), an active desert wash, which is an eolian sand source, crosses the eastern part of the site primarily in a dry desert wash woodland. Active washes in this area are important for eolian systems as a sand source, sand transport, and stabilizing moisture. The washes in the western portion of the Victory Pass Project site are farther from the Palen Lake sand migration zone and have not been mapped as eolian sand sources (Appendix F-1).

The remainder of the sites and gen-tie lines are not located on any eolian geomorphic zones.

Slope Stability

Important factors that affect the slope stability of an area include the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium.¹ The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. Another indication of unstable slopes is the presence of old or recent landslides or debris flows. The Project sites, including the gen-tie line and access roads, are relatively flat with a slight descending slope to the northeast (Appendix F-2). The Riverside County General Plan maps the Project areas as having no potential for seismically induced slope instability and as having slope grades of less than 15% (County of Riverside 2019). The potential for slope failure does not exist at either Project site, the gen-tie line, or the access roads.

Soils

The soils underlying the Project sites reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. Potential hazards/impacts from soils include erosion, shrink-swell (expansive soils), and corrosion. The National Resource Conservation Service Soil Survey Geographic Soil Web Survey was reviewed to identify soil units and characteristics underlying the Project sites; however, no Soil Survey Geographic soil data were available for the area (NRCS 2021) and so national level State Soil Geographic soil data for California were reviewed (NRCS 2016). The State Soil Geographic data indicated that the Projects' area is underlain by two soil associations, the Rositas-Dune land-Carsitas and the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni associations. The Arica Project site is underlain by both associations with the Rositas-Dune land-Carsitas underlying the northeastern half of the site and the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni underlying the southwestern half. The Victory Pass Project site, gen-tie line, and access roads are fully underlain by the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni soil association. The Rositas-Dune land-Carsitas soils generally consist of very deep excessively drained soils of gravelly sand and sand formed in alluvium and sandy eolian material (NRCS 2020). The Vaiva-Quilotosa-Hyder-Cipriano-Cherioni soils typically consist of very shallow to shallow, somewhat

¹ Colluvium is poorly sorted, primarily gravity deposited sediment (a mixture of clay, silt, sand, and gravel) that has accumulated on and at the base of slopes.

excessively drained, gravelly to sandy loam (loam is approximately equal amounts of sand, silt, and clay) formed in alluvium over shallow bedrock or hardpan (NRCS 2020).

The Geologic Report indicates that soft, loose, granular soils in the area may be susceptible to hydro-collapse settlement, are likely corrosive, and not likely to be expansive (Appendix F-2). Potential soil erosion hazards vary depending on the use, conditions, and textures of the soils. Soils containing high percentages of fine sands and silt and that are low in density are generally the most erodible. As the clay and organic matter content of soils increases, the potential for erosion decreases. Clays act as a binder to soil particles, thus reducing the potential for erosion. The County of Riverside General Plan Safety Element (County of Riverside 2019) maps the Projects' area as having moderate to high wind erosion susceptibility.

Small, isolated areas of desert pavement were noted during the biological survey for the Projects. Desert pavement is a desert surface that is covered with closely packed, interlocking angular or rounded rock fragments of pebble and cobble size. Desert pavement forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. Desert pavement typically protects the finer grained underlying material from further erosion. The rocks that make up the desert pavement commonly are coated by desert varnish on their exposed surfaces. Desert varnish is the thin red to black coating found on exposed rock surfaces in arid regions. Varnish is composed of clay minerals, oxides, and hydroxides of manganese and/or iron. Both desert pavement and desert varnish take thousands of years to form. Desert pavement generally overlies older alluvium (BLM 2015), which has been mapped near the west and southwest edges of the Victory Pass Project site, and underlying portions of the proposed access roads and gen-tie line. Some of the surface soils in the area have been disturbed by past activities, including agricultural uses, grading of roads, use as a World War II maneuver area, and use as a borrow pit in the southern portion of the Victory Pass Project site (refer to Section 3.9, Hazards and Hazardous Materials). These activities may have disrupted and significantly reduced the amount of desert pavement in the area.

Seismicity

The Project sites are in Southern California, a seismically active area. The type and magnitude of seismic hazards affecting the sites are dependent on the distance to active faults, the intensity and the magnitude of the seismic event, distance from the earthquake epicenter, and geologic conditions underlying and surrounding the area.

Fault Rupture

Fault rupture is the surface displacement that occurs when movement on a fault breaks through to the surface. The sites are not crossed by any known active faults (Appendix F-2) and are not located within an Alquist-Priolo Earthquake Fault Zone, as shown on the State Fault Hazard Maps (CGS 2021). The closest Quaternary faults to the sites are the Aztec Mine Wash fault, approximately 13 miles south of the Victory Pass Project site; the Blue Cut fault, located approximately 15 miles north of the Arica Project site; and the Salton Creek fault, approximately 15 miles southwest of the Victory Pass Project site (Appendix F-2). All three are considered undifferentiated Quaternary in age and therefore potentially active (USGS 2021a). The Blue Cut fault is within a County of Riverside Earthquake Fault Study Zone on Figure S-2 of the Riverside County General Plan Safety Element (County of Riverside 2019).

Ground Shaking

The Projects' area will be subject to ground shaking associated with earthquakes on faults of the San Andreas fault system. Active faults of the San Andreas system are predominantly strike-slip faults accommodating translational movement. Several factors influence how ground motion interacts with

structures, making the impact hazard of ground shaking difficult to predict. What is normally felt during an earthquake are the vibrations caused by the seismic waves propagating through the earth's crust. These waves can vibrate in any direction at many different frequencies, depending on the frequency content of the earthquake, its rupture mechanism, the distance from the seismic epicenter, and the path and material through which the waves are propagating. Ground shaking due to nearby and distant earthquakes should be anticipated during the life of the Projects. Appendix F-2 indicates moderate to severe ground shaking should be anticipated at the Project sites.

Liquefaction

Liquefaction occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking, or more specifically, the transformation of granular material from a solid state into a liquefied state as a consequence of increased pore-water pressure. Liquefaction usually occurs in areas with saturated unconsolidated sediments, with groundwater depths of 50 feet or less below ground surface. Excess water pressure can be vented upward through fissures and soil cracks as a result of liquefaction, resulting in a water-soil slurry flowing onto the ground surface. Liquefaction-related effects include loss of bearing strength, ground oscillations, lateral spreading, and flow failures or slumping (County of Riverside 2019). The Riverside County General Plan Safety Element maps most of the Projects area in a moderate zone of liquefaction susceptibility, with small areas of low susceptibility (County of Riverside 2019). The Projects' area has not been mapped by the CGS Seismic Hazards Program. The Geologic Report (Appendix F-2) estimates groundwater depth to be greater than 70 feet below ground surface and concludes that potential for liquefaction is low at the Project sites.

Subsidence

Land subsidence is a gradual settling or sudden sinking of the ground surface due to removal or displacement of subsurface earth materials. The principal causes include compaction associated with withdrawal of fluids such as groundwater or petroleum, compaction of organic soils, underground mining, or natural compaction or collapse, such as with sinkholes or thawing permafrost. In California, subsidence is typically caused by human withdrawal of fluids. Subsidence can also occur through earthquake induced ground failure, as well as the settling and compaction of unconsolidated sediments during liquefaction. The compaction of susceptible aquifer systems (i.e., fine-grained clays and silts) caused by excessive groundwater pumping is the single largest cause of subsidence in California. When groundwater levels decline to historically low levels, these fine sediments are susceptible to becoming compressed and having less space to store water. The General Plan Safety Element maps the Projects' area as susceptible to subsidence; however, no areas with documented subsidence are mapped underlying the Project sites (County of Riverside 2019). Additionally, the U.S Geological Survey has not mapped subsidence areas in the vicinity of the Project sites (USGS 2021b).

Paleontological Resources

Paleontological Resource Classifications

Due to the nature of the fossil record, paleontologists cannot know either the quality or the quantity of fossils present in a geologic unit prior to natural erosion or human-caused exposure. Therefore, in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce scientifically significant fossils elsewhere within the same geologic unit (both within and outside of the study area) or a unit representative of the same depositional environment.

Potential Fossil Yield Classification (PFYC). BLM uses the PFYC system for paleontological resource assessment system. The PFYC system classifies geologic units based on the relative abundance of

vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. BLM uses the PFYC system to assess the potential for discovery of significant paleontological resources or the impact of surface-disturbing activities to such resources by using a five class ranking system (BLM 2016).

Class 1 – Very Low. Geologic units that are not likely to contain recognizable fossil remains. This class usually includes units that are igneous or metamorphic, excluding reworked volcanic ash units; or units that are Precambrian in age or older. Management concern for paleontological resources in Class 1 units is usually negligible or not applicable.

Class 2 – Low. Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. This class typically includes vertebrate or significant invertebrate or plant fossils not present or very rare, units that are generally younger than 10,000 years before present, recent eolian deposits, and sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration).

Management concern for paleontological resources is generally low. Assessment or mitigation is usually unnecessary except in rare or isolated circumstances.

Class 3 – Moderate or Unknown. Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence, or sedimentary units of unknown fossil potential. This class is often marine in origin with sporadic known occurrences of vertebrate fossils, as well as vertebrate fossils and scientifically significant invertebrate or plant fossils known to occur intermittently. The predictability of the fossils within these units is known to be low or poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance. Class 3 is subdivided into two groups:

- **Class 3a – Moderate Potential.** Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low but is somewhat higher for common fossils.
- **Class 3b – Unknown Potential.** Units exhibit geologic features and preservation conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this class may eventually be placed in another class when sufficient survey and research is performed. The unknown potential of the units in this class should be carefully considered when developing any mitigation or management actions.

For Class 3, the management concern for paleontological resources is moderate or cannot be determined from existing data. Surface-disturbing activities may require field assessment to determine appropriate course of action. Management considerations cover a broad range of options and could include pre-disturbance surveys, monitoring, or avoidance. These units may contain areas that would be appropriate to designate as hobby collection areas due to the higher occurrence of common fossils and a lower concern about affecting significant paleontological resources.

Class 4 – High. Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented but may vary in occurrence and predictability. Surface-disturbing activities may adversely affect

paleontological resources in many cases. This class is subdivided into two groups, based primarily on the degree of soil cover.

- **Class 4a** – Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than 2 acres. Paleontological resources may be susceptible to adverse impacts from surface-disturbing actions. Illegal collecting activities may impact some areas.
- **Class 4b** – These are areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

The management concern for paleontological resources in Class 4 is moderate to high, depending on the proposed project. A field survey by a qualified paleontologist is often needed to assess local conditions. Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered.

Mitigation considerations must include assessment of the disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface-disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.

Class 5 – Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

- **Class 5a** – Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from surface disturbing actions. Unit is frequently the focus of illegal collecting activities.
- **Class 5b** – These are areas underlain by geologic units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

Management concern for paleontological resources in Class 5 areas is high to very high. A field survey by a qualified paleontologist is usually necessary prior to surface disturbing activities or land tenure adjustments. Mitigation will often be necessary before and/or during these actions. Official designation of areas of avoidance, special interest, and concern may be appropriate.

Society of Vertebrate Paleontology Criteria. The Project sites are located entirely on BLM-administered land and would use the PYFC system; however, the Society of Vertebrate Paleontology (SVP) has established professional guidelines for paleontologists and provided definitions of significant paleontological resources (SVP 2010). The SVP defines significant paleontological resources as consisting of identifiable vertebrate fossils, large or small; uncommon invertebrate, plant, and trace fossils; and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years).

Previous Research and Projects

A review of previous research in the Projects' vicinity was conducted. These efforts included a literature and record search and a review of studies associated with nearby energy projects.

A paleontological records search was conducted for the Projects' area by the Western Science Center in February 2020. The search was conducted for the sites and a buffer area of up to 10 miles from the Project sites. The Western Science Center report noted no fossil localities were identified within the sites in their records search. However, the Western Science Center records search did find records for five localities within 1 mile of the sites and numerous localities with 5 to 10 miles from the sites (associated with the Desert Sunlight Solar Project) from the same or similar sedimentary deposits as those in the Projects' area. The closest fossil locality, LACM 5977, has specimens of fossilized kangaroo rat and pocket mouse from Pleistocene-age Quaternary deposits. This locality is east-southeast of the sites, north of Interstate 10 on the southwest side of Ford Dry Lake (Aspen 2020).

There has been no previous paleontological survey of the Projects' area, except for gen-tie lines that run along one road. Unpublished paleontological resource surveys in the area include the following (Aspen 2020):

Palen Solar Power Project. The Palen Solar Power Project in Chuckwalla Valley is 1 mile east of the Arica and Victory Pass Project sites. The paleontological resources assessment for that project indicated that they found four occurrences of petrified wood and one non-significant vertebrate fossil.

Rio Mesa Solar Project. Pedestrian surveys for the Rio Mesa Solar Project, near Blythe, for paleontological resources indicated very few vertebrate fossils in the terrace deposits that constitute the Chemehuevi Formation, but numerous late Pleistocene fossils in paleosols developed upon the Chemehuevi terraces. The sediments mapped as late Holocene proved to be of late Pleistocene age based on radiocarbon dating of fossil tortoise eggshells (Stewart et al. 2012). The project was terminated prior to construction.

Sonoran West Solar Project. The Sonoran West solar thermal plant is mostly north and northwest of the Mule Mountains, near Blythe. Approximately 1057 vertebrate fossils were collected. Not all of these were paleontologically significant. The lithology was that of paleosols. No radiocarbon dates were obtained for any of these fossils, and none of the identified fauna can be demonstrated to be from extinct species. The project was terminated prior to the application for certification.

Desert Sunlight Solar Farm. The Desert Sunlight Solar Farm is located approximately 8 miles northwest of the Project sites. Thirteen vertebrate fossil localities were recorded, and 52 significant vertebrate fossils were recovered. Most of the fossils were thought to have come from Pleistocene paleosols. The analysis concluded that fossils found on the ground surface were not washed in from another area and that the discovery of multiple Pleistocene-age fossils in sediments that are currently mapped as Holocene-age alluvium (Qa) suggests that the distribution of both Holocene alluvium and Pleistocene non-marine alluvium (Qc) is inaccurate as mapped by Jennings (1967). No radiocarbon dates were reported.

Crimson Solar Project. This project is located north and northwest of the Mule Mountains, near Blythe, and although this is the same area surveyed the Sonoran West Project, no parcels were surveyed twice. An estimated 548 recorded localities containing potentially significant fossils were in paleosol deposits. PFYC Class 4a–High was assigned to mapped Holocene alluvial fan/valley sediments because the fossils found showed that this unit was of Pleistocene age. Holocene and Pleistocene alluvial fan deposits (Qa3) were found to contain paleosols of Pleistocene age, therefore the fossils found there indicated a PFYC rating of Class 4a–High.

There are only two pertinent published accounts of fossils found within the area.

Raum et al. (as described in Aspen 2020) published an account of fossils collected during construction of the Desert Sunlight Solar Farm. They listed *Anaxyrus boreas*, colubrid snake, *Dipsosaurus* sp., *Gopherus agassizii*, Lacertilia, *Phrynosoma* sp., *Sceloporus* sp., Aves, Fringillidae, *Perognathus* or *Chaetodipus*, *Dipodomys* sp., *Reithrodontomys* sp., *Spermophilus* cf. *S. tereticaudus*, *Spermophilus* sp., *Thomomys* sp., cf. *Hemiauchenia*, *Camelops* sp., Cervidae, *Smilodon* sp. and *Vulpes macrotis*. No radiocarbon date was reported, but *Smilodon*, *Hemiauchenia*, and *Camelops* went extinct at the end of the Pleistocene epoch. They noted that the *Smilodon* remains were collected at or just below the surface of sediments mapped by Jennings (1967) as Quaternary alluvium (Qa). These authors stated that many of the fossils came from paleosols, and that the *Smilodon* fossils might also have been from a paleosol despite the Qa assignment by Jennings (1967).

Stewart et al. (2012) published some generalizations about the nature of vertebrate fossils found on desert floors and why they should not necessarily be regarded as nonsignificant fossils. They demonstrated that Pleistocene paleosols usually underlie these fossils, and that similar fossils come out of the paleosols. One illustrative specimen was a tortoise fossil that had the upper few inches of the shell planed off by deflation (strong wind removing sediment) but leaving an otherwise complete shell below the surface.

Field Survey

The Paleontology Report (Aspen 2020) used the CGS 1:250,000 scale Geologic Map of California, Salton Sea Sheet (Jennings 1967) to identify the geology underlying the Project sites and identified three geologic units: Recent dune sand (Qs), Recent alluvium (Qal), and Pleistocene nonmarine sedimentary deposits (Qc), as shown on Figure 3.7-3. The designation “Recent” is understood to mean Holocene aged (less than 11,700 years BP) for these units (Jennings 1967). Areas mapped as Recent alluvium (Qal) were excluded from the survey area. It is important to note that paleosols (fossil soils) usually are not mapped on geologic maps and that paleontologists and geologists need to survey project areas to determine if they are present in mapped Quaternary units. The guidelines of the SVP (2010) specifically call out paleosols as a facies in which to expect vertebrate fossils.

A pedestrian survey for the Projects’ was conducted in June and July 2020 (Aspen 2020). The survey recovered 16 identifiable vertebrate fossils that are certainly of Pleistocene age, and 138 identifiable vertebrate fossils that are of early Holocene or Pleistocene age. The total is 154 significant fossils, as defined by SVP (2010). Specifically, the survey identified 13 specimen sites that produced fossils of Pleistocene age, and 47 specimen sites that produced fossils that are at least of early Holocene age and might be of Pleistocene age.

The significant paleontological resources from this survey are dominated by rodents, rabbits, reptiles, tortoises, and snakes. Almost all the fossils collected were single elements. The exception is snake vertebrae. Many fossils collected were not significant in that the type of animal that produced them cannot be determined. But they do provide information regarding what parts of the Project sites are likely to contain paleontological resources (Aspen 2020).

High concentrations of fossils were found in two areas within the Arica Project site with sand dunes. The specimens tend to be between the dunes at the north edge of the Arica Project site boundaries. One of these areas will likely be avoided due to sensitive plants. Two areas that were not surveyed also have sand dunes, although geological mapping does not indicate it. One of those areas will likely be avoided. It is possible that these dune-covered areas are related to Palen Lake. A cormorant fossil was found near one of the Project dune areas and its presence in the desert is inexplicable, apart from a prehistoric lake (Aspen 2020).

Paleontological Sensitivity

The three geologic units underlying the Project sites—Recent dune sand, Recent alluvium, and Pleistocene nonmarine sedimentary deposits—and their paleontological significance as determined in the Paleontology Report (Aspen 2020) are discussed below.

Recent Dune Sand (Qs). The paleontological records search and specific locality information from the Western Science Center indicated that several fossil localities are known from this dune field, particularly in blowouts. Additionally, as noted above, fossils were found in two areas with sand dunes at the northern edge of the Arica Project site boundary. Recent dune sand would usually be assigned a PYFC rating of Class 2 because of young age. But because of the older sediment exposed in the blowouts and the presence of fossils in the dune fields, it is assigned a PYFC rating of Class 4. The only part of the Project sites mapped as having Qs sediments is the northeastern corner of the Arica Project site.

Recent Alluvium (Qal). This unit is described as alluvial sand, silt, clay, and gravel, including locally some older alluvium. Although Jennings (1967) assigned this unit to the Holocene, pedestrian surveys for other projects in the area found fossils in the unit and determined that Jennings' mapping was inaccurate in age assignment in some areas. However, it would be an over generalization to suggest that all areas Jennings mapped as Qal will produce vertebrate fossils. Brief reconnaissance in the Projects' area did not detect fossil bone fragments or signs of paleosols in this unit. Therefore, the Qal sediments in this area were rated as PYFC Class 2, low. This unit is mapped as underlying most of the Project sites.

Pleistocene Nonmarine Sedimentary Deposits (Qc). This unit is described by Jennings (1967) as older alluvium and fanglomerate, mostly dissected or with well-developed desert pavement and desert varnish. The sediments mapped as Qc have been found to be Pleistocene paleosols and have produced Pleistocene vertebrate fossils. Preliminary reconnaissance in the Projects' area indicates that an extensive paleosol lies just below areas of desert pavement that Jennings mapped as Qc. The paleosol includes a well-developed calcium carbonate-rich (Bk) buried (B) soil horizon. Caliche is the most visible type of calcium carbonate in the present context. Where erosion had created a ravine through this unit, 36 to 61 centimeters of paleosol could be observed. Similar paleosols in localities in the Chuckwalla Valley both east and west of the Projects' area have produced identifiable Pleistocene vertebrate fossils and a radiocarbon date with a 2-sigma result of 13,620 to 13,790 calendar years BP (Aspen 2020). Fossils were identified in this unit within the Victory Pass Project site during the field survey (Aspen 2020). Therefore, the Qc sediments in the Victory Pass Project site should be rated as PYFC Class 4 with the notation that the paleosol beneath the desert pavement will be the most fossiliferous part. There may be fossils in the surficial lag deposit which the desert pavement constitutes. This unit is mapped near the western and southwestern boundaries of the Victory Pass Project site.

3.7.3 Impact Analysis

The Projects' potential impacts to geology, soils, and paleontological resources are evaluated in this section. As a result of *Ballona Wetlands v. City of L.A.* (Court of Appeal, Second District, Division 3, California, March 21, 2012), California Environmental Quality Act (CEQA) Guidelines do not require an evaluation of environmental hazards on a given project. Rather, impact evaluations should be restricted to impacts of the project on the environment. While potential geologic impacts on the environment are evaluated in this section, seismic hazards that could potentially affect structures associated with the Projects are also identified, to assist decision makers in addressing regulatory concerns. Each Project area relevant to the analysis of geology, soils, geologic hazards, and paleontological resources is the physical footprint of Project's construction, operations and maintenance (O&M), and future decommissioning activities. The study area for

faulting and seismic hazards includes the larger Southern California region, because distant faults can produce ground shaking and secondary seismic hazards in the Projects' area.

Methodology

Geology

Evaluation of potential geologic and soil-related impacts is based on the Geotechnical Report prepared for the Projects (Appendix F-2) and other readily available U.S Geological Survey and CGS data. It is assumed that geotechnical considerations for future structures would be designed in accordance with applicable requirements of the CBC, County of Riverside Building and Safety Department, and any applicable building and seismic codes in effect at the time the grading plans and design are approved. It is also assumed that the Applicants would include a design-level geotechnical report, as recommended in the Geotechnical Report (Appendix F-2). The following assesses impacts to soils and geologic hazards based on the preliminary project design.

Paleontological Resources

Due to the nature of the fossil record, paleontologists cannot know either the quality or the quantity of fossils present in a geologic unit prior to natural erosion or human-caused exposure. Therefore, in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce scientifically significant fossils elsewhere within the same geologic unit (both within and outside of the study area) or a unit representative of the same depositional environment. The paleontological resources assessment is based on the paleontological sensitivity of the underlying geologic units as determined by (1) a records search from the Western Science Center, (2) a review of the relevant scientific literature and previous area projects, and (3) a field survey of the Project sites, as detailed in the Paleontology Report (Aspen 2020). Areas with high potential for paleontological resources are evaluated for the amount and type of disturbance and activities that would result in impacts to paleontological resources.

Criteria for Determining Significance

The criteria used to determine the significance of potential geology, soils, and paleontological resources impacts are based on Appendix G of the CEQA Guidelines. The Projects would result in a significant impact under CEQA related to geology, soils, and paleontological resources if they would:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death, involving:
 - Strong Seismic ground shaking (see Impact GS-1); or
 - Seismic-related ground failure, including liquefaction (see Impact GS-1);
- Result in substantial soil erosion or the loss of topsoil (see Impact GS-2);
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse (see Impact GS-3);
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) [Section 1803.5.3 of the California Building Code (2019)], creating substantial direct or indirect risks to life and property (see Impact GS-4);

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater (see Impact GS-5); or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Impact GS-6).

The following CEQA significance criteria from Appendix G were not included in the analysis and are not discussed further beyond the following summaries:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death, involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.

No known active faults or Alquist-Priolo Earthquake Fault Zones or County of Riverside Fault Study Zones cross or are in the immediate vicinity of the Arica or Victory Pass Solar Project sites. Therefore, there would be no impact related to fault rupture.

- Landslides

The Arica and Victory Pass Solar Projects sites are relatively flat to gently sloping with no potential for landslides or seismically induced landslides (Appendix F-2; County of Riverside 2019). Therefore, there would be no potential for loss, injury, or damage due to landslides or seismically induced landslides.

Applicant Proposed Measures

The Applicants identified and have committed to implementing the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to geology, soils, and paleontological resources, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM AIR-1 Fugitive Dust Control Plan. *Refer to full text in Section 3.3, Air Quality.*

APM HWQ-1 Drainage Erosion and Sedimentation Control Plan [DESCP]. *Refer to full text in Section 3.10, Hydrology and Water Quality.*

APM HWQ-3 Project Drainage Plan. *Refer to full text in Section 3.10, Hydrology and Water Quality.*

APM GS-1 Desert Pavement Avoidance. Prior to final Project design, the Applicants shall retain a Bureau of Land Management (BLM) approved geologist, geomorphologist, or biologist, if not already completed during the CEQA review, to identify areas of desert pavement in areas of proposed ground disturbance, in the southwest portion of the Victory Pass Project site. A map shall be prepared delineating these areas of desert pavement. Based on the map, the final Project design shall be completed such that desert pavement is avoided to the maximum extent possible and/or practical. These areas of desert pavement shall also be avoided during grading and construction to the maximum extent possible and/or practical. A geologist, geomorphologist, or biologist shall monitor grading and construction near the areas of desert pavement to ensure that areas of desert pavement are not disturbed to the extent feasible

APM GS-2 An on-site septic system and leach field will meet all specifications of the applicable governmental jurisdictions.

APM GS-3 Paleontological Resource Monitoring and Mitigation Plan. Prior to the start of any Project-related construction activities, the Applicants shall retain a Bureau of Land Management (BLM) approved paleontologist (Project Paleontologist) to prepare and implement a Project-specific Paleontological Resource Monitoring and Mitigation Plan (PRMMP) to be approved by BLM. The Project Paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work and field monitoring. Information to be contained in the PRMMP, at a minimum and in addition to other information required by industry, Society of Vertebrate Paleontology, and BLM paleontology standards, are as follows:

- Description of the Project sites and planned earthwork and excavation.
- Description of the level and intensity of monitoring required in various areas of the Projects where construction activities require earthwork and excavation.
- Directions for sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates.
- Identification of personnel with authority and responsibility to temporarily halt or divert earthmoving equipment to allow for recovery of large specimens.

The PRMMP shall be submitted to BLM for review 60 days prior to start of Project construction.

APM GS-4 Pre-construction Resource Survey and Collection. Prior to the initiation of any ground-disturbing activities, including geotechnical work, grubbing, or grading, all scientifically significant specimens will be collected from the surface of the Projects' sites by the Project Paleontologist and other qualified personnel. This includes the specimens noted but not collected during prior surveys by Aspen (2020), as well as any previously undiscovered localities that may have been exposed by erosion in the interim. Additional areas, as identified by Aspen (2020), to be surveyed prior to construction shall include:

- The southwest quarter of section 13, in proposed disturbance areas, to verify whether it has a dune area that produces abundant vertebrate fossils.
- Reconnaissance surveys of the east half of sections 23 and 26, in proposed disturbance areas, should be completed to see whether the fossils in this area are as dense as the surveyed areas just west them. If they are as dense, the remainder of the sections 24 and 26 in the Project disturbance areas should be surveyed.

The Project Paleontologist will work with the Bureau of Land Management (BLM) to develop project-specific significance definitions, sampling protocols, and procedures for screening the sites. After completion of the geotechnical investigation the Project Paleontologist will use the findings to determine whether there are paleosols of multiple ages or whether there is a single paleosol and conduct a testing program designed to test each paleosol for microvertebrate fossils prior to construction. If microvertebrates are present, this information should be incorporated into the Paleontological Resource Monitoring and Mitigation Plan as monitoring activities are different from those for larger fossils.

Collection activities shall be conducted in accordance with BLM guidelines and the Paleontological Preservation Act of 2009 and carried out by BLM-approved paleontological staff. Any paleontological fieldwork occurring on lands administered by BLM will require a Paleontological Resources Use Permit issued by the BLM state office. All specimens collected shall be curated with a BLM-approved repository.

- APM GS-5 Worker Environmental Awareness Program (WEAP).** Prior to the start of Project-related construction activities, a WEAP shall be developed by the Project Paleontologist. The WEAP shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities. The WEAP may be combined with other environmental training programs for the Project.
- APM GS-6 Paleontological Construction Measures and Monitoring.** The Paleontological Resource Monitoring and Mitigation Plan shall identify monitoring frequency and intensity of all areas the Projects' sites. Areas identified as having High paleontological resource potential (PYFC Class 4) or higher, by Aspen (2020) or during the Pre-construction Resource Survey required in APM GS-3 shall be monitored full time by a Bureau of Land Management approved paleontological monitor during ground-disturbing activities. The Project Paleontologist will have the authority to reduce monitoring in specific Project areas or for the remainder of the site once he/she determines the probability of encountering any additional fossils in those areas has dropped below an acceptable level.
- APM GS-7 Paleontological Resources Monitoring Report.** The Applicants shall ensure preparation of a paleontological resources monitoring report by the Project Paleontologist. The report shall be prepared following completion of ground-disturbing or earthmoving construction activities. The contents of the report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; proof of accession of fossil materials into the pre-approved museum or other repository, and a statement by the project Paleontologist that Project impacts to paleontological resources have been mitigated. In addition, all appropriate fossil location information shall be submitted to the Western Science Center, the San Bernardino County Museum, and the Los Angeles County Museum of Natural History, at a minimum, for incorporation into their Regional Locality Inventories.

Environmental Impacts

Impact GS-1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

Strong seismic ground shaking?

LESS THAN SIGNIFICANT. Although no known active or potentially active faults underlie the area, seismically induced ground shaking along the active faults in the region could occur. Ground shaking at the sites could range from moderate to severe (Appendix F-2) and could result in damage to the Projects' structures, including the photovoltaic solar panels, inverters/transformers, interior collection lines, on-site substations, O&M building, and gen-tie lines, which could result in adverse effects if not designed and engineered appropriately.

Potential impacts to the solar facilities, gen-tie lines, and associated structures related to ground shaking would be reduced through compliance with federal, state, and local regulations and standards, and established engineering procedures. Future structures would be designed in accordance with the County of Riverside Building Code, which incorporates the most recent version of the CBC. Seismic design of the

substations would be per the current IEEE 693, Recommended Practices for Seismic Design of Substations. Incorporation of these regulatory requirements into the final Projects' designs would minimize any potential impacts related to secondary seismic effects during O&M activities. A design-level geotechnical investigation and report would be required and would include recommendations regarding geotechnical and engineering design. Compliance with existing regulatory requirements and implementation of geotechnical design recommendations in the Projects' final engineering design would reduce impacts of seismically induced ground shaking. In addition, the Projects' construction, operation, and decommissioning would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. As a result, impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits would result in less-than-significant direct and indirect seismic ground shaking impacts.

Seismic-related ground failure, including liquefaction?

LESS THAN SIGNIFICANT. Liquefaction occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking. Liquefaction usually occurs in areas with young, saturated unconsolidated sediments with groundwater levels of 50 feet or less. The Project sites are in seismically active Southern California and may be subject to moderate to severe ground shaking. Although the County of Riverside has mapped the Projects' area as having primarily moderate susceptibility to liquefaction, groundwater levels in the Projects' area are expected to be greater than 70 feet below ground surface. Therefore, the potential for liquefaction is low. The solar facilities, gen-tie lines, access roads, and associated structures would be designed in compliance with state and local regulations and standards and established engineering procedures. In addition, the Projects' construction, operation, and decommissioning would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. As a result, impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect liquefaction impacts.

Impact GS-2. Would the project result in substantial soil erosion or the loss of topsoil?

LESS THAN SIGNIFICANT. Since most of the Project sites have nearly level to gently sloping topography, no mass grading would be required; however, much of the solar sites, the gen-tie line, and the access roads would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. Some of the parcels where facilities and arrays would be located would require light grubbing for leveling and trenching.

Construction would require ground disturbance for solar panel installation, substations, the O&M building, associated septic system, construction of access roads, and other features. These activities would expose soil and increase the potential for wind and water erosion. Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, indirectly causing increased turbidity and sedimentation. Portions of the Arica Project site (near the north and northeastern boundaries) are mapped for surficial deposits of active eolian deposits/dune sands (Figures 3.7-1, 3.7-2, and 3.7-3), which would be especially vulnerable to wind erosion. Such wind and water erosion could result in potentially significant impacts.

In addition, older alluvial deposits along the western boundary and in the southwest corner of the Victory Pass Project site (Figure 3.7-1) are capped by a gravel lag or desert pavement with moderately to strongly developed desert varnish. Desert pavement also overlies older alluvium in the vicinity of the proposed access roads and gen-tie line. Desert pavement and desert varnish take thousands of years to form. Prior

activities may have disrupted and significantly reduced the amount of desert pavement in the area. Additional Projects-related construction could similarly disrupt desert pavement in this area, resulting in potentially significant impacts.

With respect to wind erosion, incorporation of APM AIR-1 (Fugitive Dust Control Plan), which requires a fugitive dust abatement plan, would mitigate the dust emissions during construction by implementing a suite of effective dust control practices, such as using soil stabilizers or watering exposed areas. With respect to water erosion, APM HWQ-1 (Drainage Erosion and Sedimentation Control Plan [DESCP]) is incorporated into the Projects and would ensure proper protection of water quality and soil resources, address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. APM HWQ-3 (Project Drainage Plan) is incorporated into the Projects and would require hydrologic assessment of stormwater discharges and would demonstrate how those discharges would be conveyed through or around the sites such that erosion-induced siltation does not impact adjacent landowners or nearby water features. In addition, the construction SWPPP, required as part of the Construction General Permit, would include best management practices that would reduce potential erosion.

With respect to desert pavement impacts, APM GS-1 (Desert Pavement Avoidance) is incorporated into the Projects and would require that areas of desert pavement overlying older alluvium in the southwest portion of the Victory Pass Project site, as well as the proposed access roads and gen-tie line, be delineated on a map, considered during final Project design, and avoided during grading and construction, to the maximum extent possible and/or practical. O&M activities would include daily operations and routine maintenance activities, such as photovoltaic panel washing, up to three times per year, to optimize output. Cleaning operations would not alter the drainage patterns on site and would not lead to a substantial increase in erosion or loss of topsoil. No heavy equipment use is anticipated during normal operation activities. O&M vehicles could include trucks (pickup and flatbed) and loaders for routine and unscheduled maintenance and water trucks for solar panel washing.

At the end of Projects' operation, the solar modules, gen-tie line, and all other improvements would be dismantled and removed from the sites. Impacts related to soil erosion would be similar to those described above for construction.

With incorporation of APM AIR-1, APM HWQ-1, APM HWQ-3, and APM GS-1, the proposed Projects would not result in substantial soil erosion or the loss of topsoil during construction and future decommissioning and impacts would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Sand Transport

LESS THAN SIGNIFICANT. The northeastern and eastern portion of the Arica Project site include geomorphic zones with low to moderate sand transport importance. These areas contain small active eolian deposits of fine sand along the boundaries of the dune migration corridors. Fencing along the Project boundary where there are active eolian deposits could cause blockage of sand movement within the migration corridor. This potential impact has been reduced through the design of the solar facility, which follows the northwest to southeast trend of the mapped sand migration zone, and because of the avoidance of sensitive plant species, which eliminated development of the northernmost region and northeastern-most region. Very little of the Project sites is within eolian deposits, as most of the sand source within the Arica Project site is fluvially dominated (Zone BC, Zone C, and washes). Design of the solar facility to avoid development in some of the washes and to allow sheet flow to continue transporting water and sand sources, would reduce impacts such that the Projects would not significantly affect sand sources in the Projects' area.

The Victory Pass Project site does not include any geomorphic zones for sand transport so would not result in a loss of sand transport from changing the existing use to a solar project.

In addition, the eastern portion of both Project sites are crossed by washes that are important for eolian systems as a sand source, sand transport, and stabilizing moisture. Constructing a solar project on these sites may reduce the sand source and sand transport; however, a portion of the area would not be developed to avoid direct impacts to desert dry wash woodland. In addition, the Projects' design would allow water to flow through the Project sites and allow stabilizing moisture to reach the destination. As a result, impacts to on-site eolian systems would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact GS-3. Would the project be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

LESS THAN SIGNIFICANT. As previously discussed, the solar facility sites and shared gen-tie line are in an area that has a low landslide hazard due to the gentle slope and a low liquefaction/lateral spreading potential due to groundwater depths in excess of 50 feet. No areas of current or historic subsidence have been documented in or near to the Projects' area. Given the geologic setting, the Project sites are unlikely to become unstable as a result of these geologic hazards and result in collapse. The Geologic Report (Appendix F-2) indicates that the soils underlying the Project sites may be susceptible to hydro-collapse settlement when water is introduced to the soils; this is an indirect risk for structures supported on mat foundations. The Geotechnical Report recommends performing borings and collecting soil samples to test for collapse potential.

Overall, the Projects' area has a low risk of becoming unstable and resulting in geologic impacts. However, construction of the Projects could result in hydro-collapse settlement of area soils, potentially causing indirect damage to Project structures. The solar facilities, gen-tie lines, access roads, and associated structures would be designed in compliance with all applicable federal, state, and local regulations and standards and established engineering procedures. A geotechnical investigation and report would be required by BLM and would include recommendations regarding geotechnical and engineering design. Compliance with existing regulatory requirements and implementation of the geotechnical recommendations of the required geotechnical investigation and report during final Projects' designs would reduce impacts related to unstable geologic units or soil to less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact GS-4. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) [Section 1803.5.3 of the California Building Code (2019)], creating substantial direct or indirect risks to life or property?

LESS THAN SIGNIFICANT. Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from several factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine grained with a high to very high percentage of clay. Soils with moderate to high shrink-swell potential would be classified as expansive soils. The soils in the Projects' area contain high percentages of sand and have a low potential to be expansive. The Geologic Report (Appendix F-2) indicates that expansive soils are not anticipated on the Project sites. Therefore, the potential for expansive soils to create direct or indirect risks to life or property is low and impacts would

be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact GS-5. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

LESS THAN SIGNIFICANT. Construction and future decommissioning would require several hundred temporary employees. Aboveground portable sanitary waste facilities would be used for these activities and no permanent wastewater disposal system would be needed.

During operations, the O&M facility would include restroom facilities for on-site personnel and wastewater generated by the restroom facilities. A septic system and leach field would be located at the O&M building to serve the sanitary wastewater treatment needs. APM GS-2 requires that the on-site septic system and leach field meet all specifications of the applicable governmental jurisdictions. Soils in the Projects' area are excessively to somewhat excessively drained (i.e., permeable) and contain high percentages of sand. In addition, groundwater occurs at a depth of approximately 70 feet. These conditions are conducive to construction and operation of a septic system. Percolation testing and design of the septic system would be conducted to meet Riverside County Department of Environmental Health septic system requirements. With incorporation of APM GS-2 as a standard practice and compliance with existing regulatory requirements, impacts would be less than significant. Therefore, with incorporation of APM GS-2 as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact GS-6. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

LESS THAN SIGNIFICANT. As defined, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. Most impacts on paleontological resources are direct impacts, resulting from ground-disturbance activities that would damage or destroy resources. The result of resource recovery is scientific net gains in the discovery of previously unrecorded paleontological resources. Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from larger numbers of people in the vicinity (i.e., personnel involved in construction and operation of the facilities).

Desktop and field studies of the area indicate that sediments containing significant paleontological resources could be encountered during ground disturbance associated with the Projects' construction, operation, and decommissioning, and along the shared gen-tie line. Construction of the Projects would include grading, foundation and ditch excavation, utility trenching, and possibly drilled shafts. Ground disturbance associated with the overhead and/or underground construction and operation of the gen-tie line could also result in direct impacts to surficial and buried paleontologically sensitive geologic rock units, which could adversely impact significant non-renewable paleontological resources. These activities could damage or destroy paleontological resources. The probability of encountering paleontological resources on the ground surface is considered low in areas underlain by Holocene alluvial deposits, but the probability increases substantially as depth increases. Impacts without incorporation of APMs could be significant. Known sensitivity of some of the geological units and paleontological resources on both Projects' solar facilities necessitates the implementation of a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and worker awareness training to minimize the impact of construction-related activities. APM GS-3 through APM GS-7 are incorporated into the Projects and would require a PRMMP, pre-construction surveys and collection, paleontological awareness training, paleontological monitoring where appropriate, and monitoring reporting. With incorporation of APM GS-3 through APM GS-7,

potential adverse impacts on paleontological resources within the Projects' area during construction, operation, and decommissioning of the solar facilities would be reduced to less than significant.

Indirect effects include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from the presence of larger numbers of people in the vicinity during construction. Incorporation of APM GS-3 through APM GS-7 in addition to the installation of fencing around the perimeter of each Project facility would minimize the potential for indirect impacts from solar facility construction to paleontological resources by limiting unauthorized access to the site, putting in place a monitoring program to ensure fossil identification and recording during construction, and providing an educational program to workers so that paleontological resources are avoided or reported to qualified professionals. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect paleontological resources impacts.

Cumulative Impacts

The geographic extent for the consideration of cumulative effects to geological resources and soils is a 1,000-foot buffer around the Project sites. The buffer size is due to impacts resulting from geologic hazards being localized in nature, despite geologic hazards, such as seismic events, being felt for great distances. Impacts resulting from erosion are also localized in nature and unlikely to extend much beyond the actual Projects' boundaries and adjacent areas of other projects, unless an extreme event results in substantial downstream/downwind erosion of soil. The geographic area considered for impacts to sand transport is the Palen Lake sand migration zone because primary sources of eolian sands for the Palen Lake sand migration zone include the sand migration system along the western flank of the Coxcomb Mountains and alluvial washes moving northward from the Chuckwalla Mountains.

Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario list existing and reasonably foreseeable projects in the region. Only the Athos Renewable Energy Project would be adjacent to the proposed sites and could therefore combine with the proposed Projects and result in cumulatively considerable geologic or erosion impacts. The Oberon Project is located approximately 1,000 feet west of the westernmost boundary of the Victory Pass Project site. Existing and reasonably foreseeable projects that could impact the Palen Lake sand migration zone are the Desert Sunlight Solar Farm, the Desert Harvest Solar Project, the Athos Renewable Energy Project, and the Palen Solar Project. Because all these projects have already undergone environmental review, the environmental documents associated with these projects were reviewed for any effects to the sand transport in the area. In addition, the Easley Solar & Green Hydrogen Project would be in the Palen Lake sand migration zone. This project is currently undergoing environmental review and would be permitted under the Desert Renewable Energy Conservation Plan, which would require compliance with the Land Use Plan Amendment (LUPA) Conditional Management Actions regarding the sand transport corridor (LUPA-BIO-DUNE-1, LUPA-BIO-DUNE-2, LUPA-BIO-DUNE-3, and LUPA-BIO-DUNE-4). These LUPA Conditional Management Actions require that with implementation of projects, sediment transport can be continued and the quality and function of the sand transport corridor is maintained.

Cumulative development in eastern Riverside County in the Desert Center region of Southern California has the potential to directly or indirectly destroy paleontological resources, particularly during earth moving activities such as grading and excavation in all areas of the Chuckwalla Valley underlain by the same geologic units as the Project sites, in particular, areas of Recent dune sand (Qs) underlain by older sediments and Pleistocene nonmarine sedimentary deposits (Qc) that have a BLM PFYC of Class 4 – High paleontological sensitivity, or underlain by other geologic units with high or very high paleontological sensitivity. In addition, collection of fossil materials, dislodging of fossils from their preserved environment, and/or physical damage of fossil specimens could also adversely affect paleontological

resources. Together these potential direct and indirect impacts associated with development in the cumulative scenario could result in a cumulatively significant impact to paleontological resources.

The proposed Projects would have no impact related to fault rupture, landslides, or seismically induced landslides; therefore, the Projects could not contribute to cumulative impacts for these issue areas. Geologic hazards would be site-specific impacts for the proposed Projects and each of the past, present, and reasonably foreseeable development projects listed above for the cumulative analysis study area. While the geologic and seismic hazards could impact the Projects' infrastructure, it would be unlikely to be damaged or destroyed in a manner that would combine with the geologic and seismic impacts to the adjacent project. In addition, the cumulative projects would not cause or exacerbate the potential for geologic hazards to occur. Accordingly, the Projects' incremental contribution to the cumulative geologic and seismic impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

With respect to soil resources and the potential for erosion and loss of topsoil, impacts from the Projects could combine with the effects of other projects if they were adjacent to each other, for example if they contributed sediments to the same waterways. The proposed Projects are adjacent to one large solar project, the Athos Renewable Energy Project, which would require substantial ground disturbance. While soil disturbance from this adjacent project could result in off-site water and wind erosion, the Athos Project has or would undergo an environmental review under NEPA and CEQA and would be required to abide by existing regulations. Similar to the proposed Projects, implementation of a DESCP, Drainage Plan, and SWPPP would minimize wind- and water-induced erosion at the Athos Project. The Projects would be subject to the same regulations, would implement SWPPPs, and would incorporate measures for dust control, a DESCP, and a Drainage Plan (APM AIR-1, APM HWQ-1, and APM HWQ-3, respectively) to reduce wind and water erosion and prevent siltation of off-site water bodies. Accordingly, because disturbed soil from wind and water erosion would be confined to the Projects' sites, Projects-related erosion would not combine with the erosion from other past, present, and probable future projects to create a cumulatively considerable or significant impact.

The cumulative projects listed in Tables 3.1-1 and 3.1-2 have or could impact the Palen Lake sand migration zone through directly or indirectly impeding sand transport, reducing the amount of sand that flows through the Chuckwalla Valley, or reducing the amount of water needed for sand migration. Fencing and other infrastructure associated with the cumulative projects would impede sand transport and affect valuable habitat within the sand transport corridor, resulting in a cumulative blocking of the western boundary of the corridor. While mitigation for existing projects and Conservation Management Actions from the Desert Renewable Energy Conservation Plan Land Use Plan Amendment for future projects would reduce the effects of each individual renewable project permitted to the extent practicable, there would likely be a cumulatively significant impact. The northeastern and eastern portion of the Arica Project site includes geomorphic zones with low to moderate sand transport importance. The design of the Arica solar facility follows the northwest to southeast trend of the mapped sand migration zone and the avoidance of sensitive plant species further reduces the Arica Project's intrusion into the geomorphic zones. This design would reduce the potential for Project fences and infrastructure to impede sand transport. Because the Arica Project site design would avoid the sand migration zone near the north and northeastern Project boundaries, and because the design of both Projects would avoid development in some of the washes and allow continued sheet flow to transport water and sand sources that feed the sand migration zone, the Projects' contribution to cumulative impacts would not be cumulatively considerable or significant.

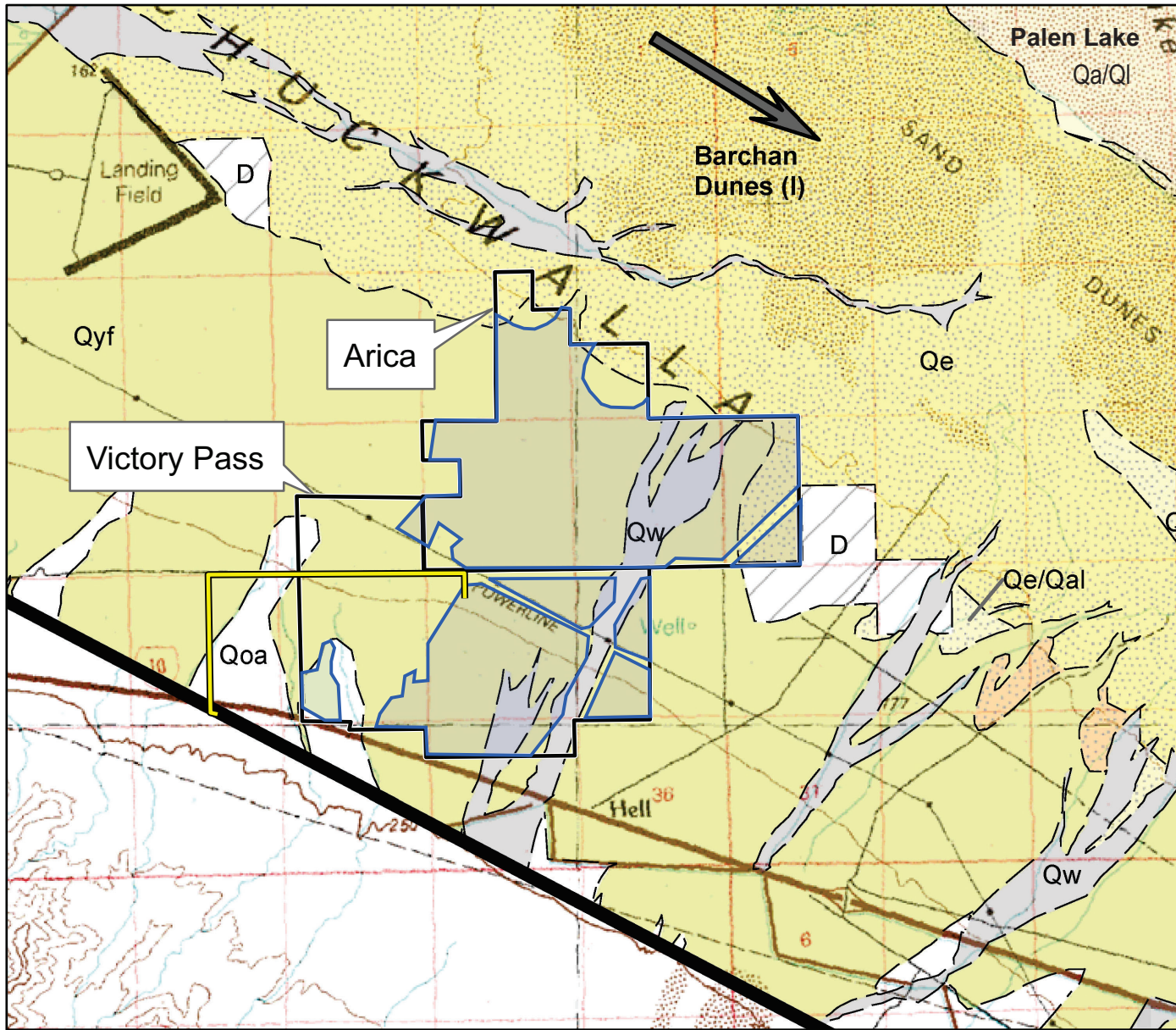
As discussed above, there is potential for paleontological resources on the Project sites to be impacted during ground-disturbing activities associated with the proposed Projects (Impact GS-6). A significant cumulative impact would occur if the impacts of multiple projects combined to result in the loss of

paleontological resources that could provide information about ancient life in the Chuckwalla Valley. The large amount of ground disturbance proposed in this region is likely to result in some loss of fossil resources, particularly if ground-disturbing projects do not implement mitigation measures to avoid or substantially reduce impacts. This would result in a significant cumulative impact. The proposed Projects would incorporate APMs, and the other solar development project would be required to provide similar mitigation for any impacts to paleontological resources in accordance with provisions of CEQA, as well as with regulations currently implemented by BLM, the PRPA, and the proposed guidelines of the SVP. Incorporation of APM GS-3 through APM GS-7 into the Projects would ensure that the Projects would avoid and minimize impacts on paleontological resources to the maximum extent feasible. Accordingly, the Projects' incremental contribution to cumulative impacts for paleontological resources would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to geology and soils.

3.7.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation were identified to further avoid or substantially lessen impacts to geology, soils, and paleontological resources.

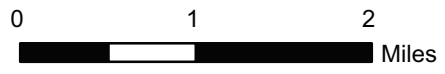
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- Active Eolian Deposits**
- Qe/Qal** Active windblown deposits consisting primarily of sand sheets and coppice dunes superimposed on alluvial deposits typically <1.5m in thickness. Sand is predominantly fine- to medium-grained. Dry color is typically very pale brown 10YR 7/4.
 - Qe** Active windblown deposits consisting of dunes and sand sheets typically >1.5m in thickness. Sand is predominantly fine- to medium-grained. Dry color is typically very pale brown 10YR 7/4. Dunes include transverse, crescentic, parabolic, and berchanforms, as well as coppice dunes and amorphous sand hummocks.
- Active Eolian Sources**
- Qw** Alluvial wash deposits consisting of unconsolidated fine- to coarse-grained sand and sandy gravel with subordinate fine sand and silt; bar and swale morphology.
 - Qyf** Alluvial fan deposits of latest Pleistocene and Holocene age. Unconsolidated to slightly consolidated sand and gravel, poorly to moderately sorted, fine- to coarse-grained; gravel includes pebbles, cobbles, and boulders. As mapped, this until is broadly distributed throughout the Chuckwalla Valley, locally containing active alluvial fans and washes that serve as sources of eolian sediment. Modification of surface drainage by the construction of training dikes for the control of storm water runoff creates downstream shadow effects, rendering parts of these alluvial fans abandoned.
 - Qa/Ql** Alluvial valley and lacustrine deposits of late Holocene age. Poorly consolidated silt, sand, and clay. Dry soil color is light yellowish brown 10YR 6/4. In the map area, these deposits comprise Palen Dry Lake. As apparent from field observations and aerial photographic review, lakebed deposits are interlayered with alluvial deposition by ephemeral sheet flow.
- Potential Eolian Sources**
- Qye/Qal** Stabilized windblown deposits consisting primarily of sand sheets and a small percentage of stabilized dunes superimposed on alluvial deposits. Sand is predominately fine- to medium-grained. Dry soil color is light yellowish brown 10YR 6/4 to pink 7.5YR 7/4. These deposits may exhibit pedogenic soil development consisting of a reddened cambic soil horizon, or carbonate filaments and coatings on pebble clasts, with carbonate morphology of Stage I to I+.
- Other Map Units**
- Qoa** Alluvial deposits of Pleistocene age (undifferentiated). This map until is comprised of alluvial fan, alluvial valley, and alluvial terrace deposits. In general, these deposits are capped by a gravel lag or desert pavement with moderately to strongly developed desert varnish.
 - D** Areas within active sand transport/deposition resulting from anthropogenic modification of the land surface. In the map area, the include farms and other land uses larger than 10 acres.



Source: Aspen, 2021; Clearway, 2020; CGS, 2014



- Proposed Gen-tie Line
- BLM Right-of-Way
- Grant Application Area
- Project Fencelines

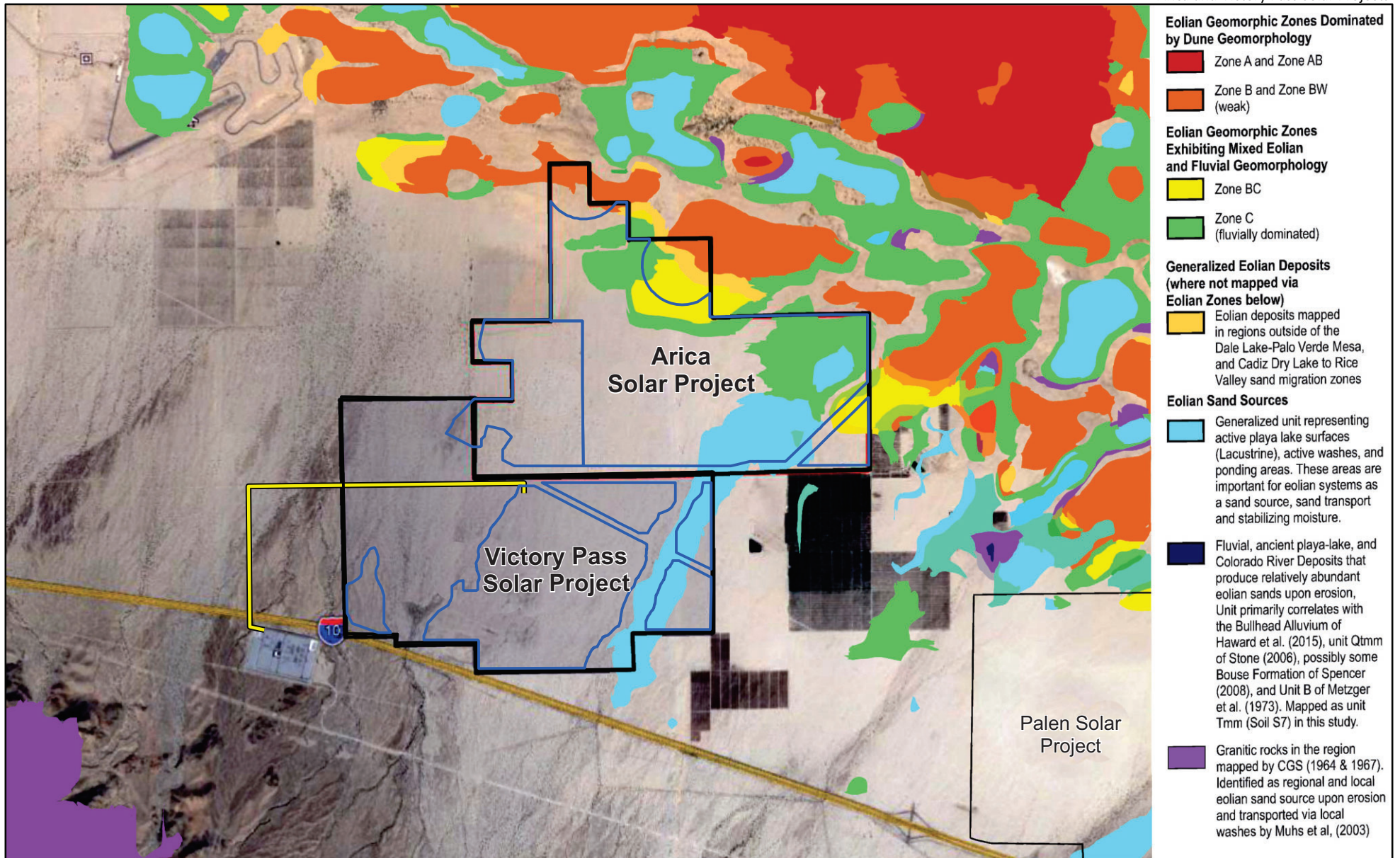


Predominant transport direction. Inferred from geomorphic interpretation of dune crest migration, sand sheets and streaks, and ventifacts. Active sand transport occurs between mapped source and active eolian deposits.

Figure 3.7-1

Geologic Units

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Sources: Aspen, 2021; Clearway, 2020; Kenney GeoScience, 2017 from BLM, 2018a; Esri, 2020

- BLM Right-of-Way Grant Application Area
- Solar Project Facilities (Project Fencelines)
- Proposed Gen-tie Line

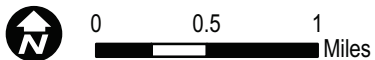
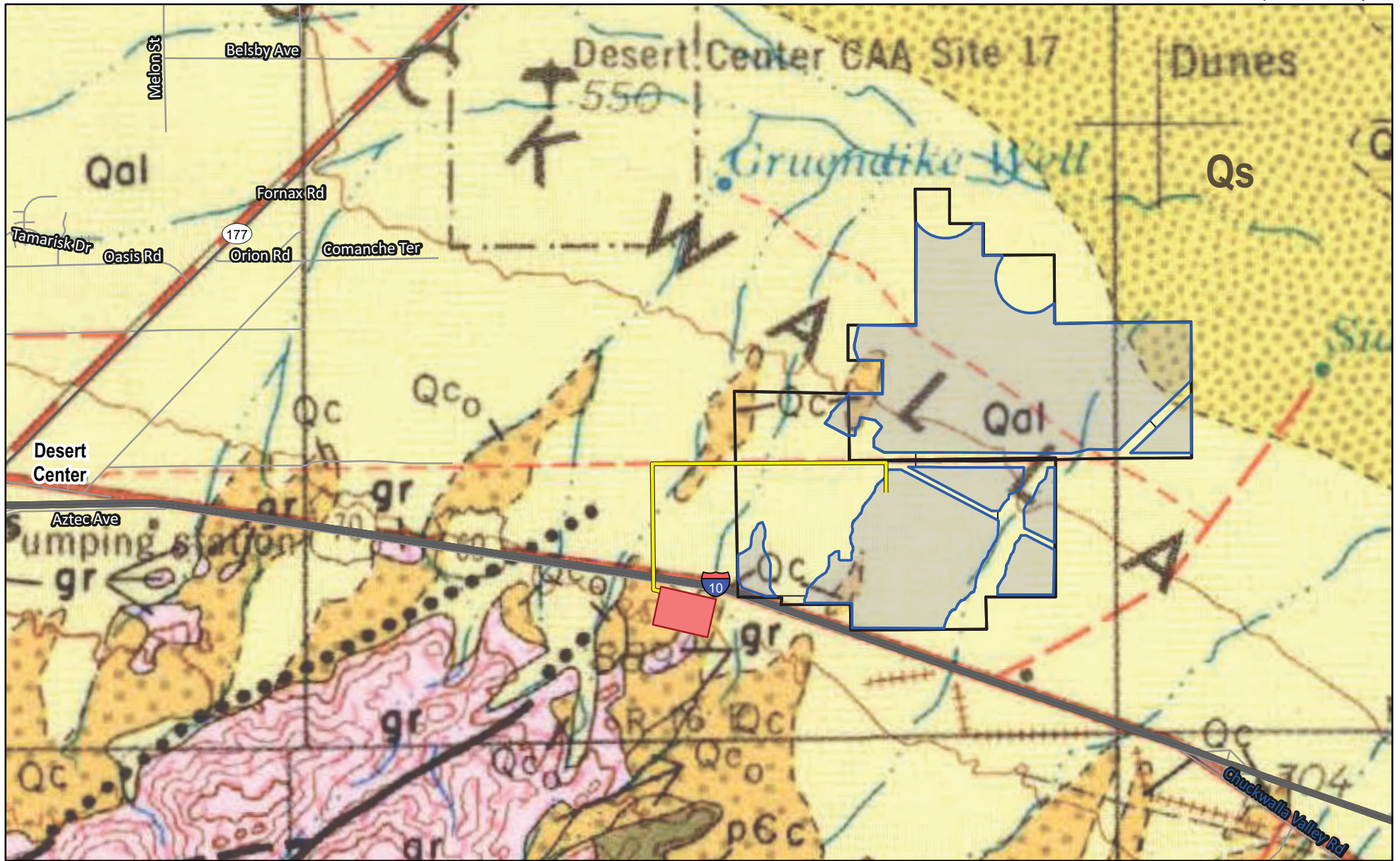


Figure 3.7-2

Eolian Geomorphic Zones

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Source: Aspen, 2021;
Clearway, 2020;
Jennings, 1967



- Proposed gen-tie
- BLM ROW Grant Application Area
- Area within fenceline Projects'
- road
- Red Bluff substation



Recent dune sand



Recent alluvium



Pleistocene nonmarine
sedimentary deposits



Mesozoic granitic rocks



Precambrian igneous and
metamorphic rock complex

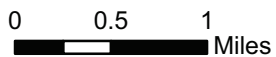


Figure 3.7-3

Geologic Units: Jennings 1967

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3.8 Greenhouse Gas Emissions

This section evaluates the environmental effects of greenhouse gas (GHG) emissions that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects related to GHGs for both of the proposed Projects as the whole of the action. The analysis in this section describes the applicable regulations and programs, presents the existing GHG effects and California GHG emissions trends, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the potential GHG impacts of the proposed Projects.

During the scoping process, public comments indicated concerns regarding the carbon sequestration provided by desert soils and the overall efficiency of the proposed energy storage component, which could require consumption of electricity for cooling the battery storage system.

3.8.1 Regulatory Framework

Federal Laws, Regulations, and Policies

There are no federal regulations, plans, or standards for GHGs that apply to the Projects.

State Laws, Regulations, and Policies

California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32). The California Global Warming Solutions Act of 2006 (AB 32) required that California's GHG emissions be reduced to 1990 levels by 2020. The reduction is being accomplished through an enforceable statewide cap on global warming emissions beginning in 2012. AB 32 directs the California Air Resources Board (CARB) to develop regulations and a mandatory reporting system to track and monitor global warming emissions levels (AB 32, Chapter 488, Statutes of 2006). The CARB Climate Change Scoping Plan, initially approved December 2008 (CARB 2008) and most recently updated by CARB in December 2017, provides the framework for achieving California's goals (CARB 2017).

In passing AB 32, the California Legislature found that:

Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

Other major Executive Orders, legislation, and regulations adopted for the purpose of reducing GHG emissions support the implementation of AB 32 and California's climate goals, as described below.

California Governor's Executive Orders on GHG Emissions. In September 2018, Executive Order B-55-18 established a new statewide goal to achieve carbon neutrality as soon as possible, no later than 2045, and to achieve and maintain net negative emissions thereafter. CARB was directed to develop the framework for implementing the goal of carbon neutrality. Executive Order B-30-15 (April 2015) established a California GHG reduction target of 40% below 1990 levels by 2030. One purpose of this interim target is to ensure

California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 (Executive Order S-3-05, June 2005). This executive order also specifically addresses the need for climate adaptation and directs state agencies to update the California Climate Adaptation Strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change. Senate Bill (SB) 32 of 2016 codified this GHG emissions target to 40% below the 1990 level by 2030.

California Renewables Portfolio Standard (RPS) Program. Electric utilities in California must procure a minimum quantity of the sales from eligible renewable energy resources as specified by RPS requirements. To integrate renewable generators on the grid, optimize the delivery of growing amounts of renewable energy production, and facilitate achieving the targeted GHG reductions, the California legislature has also authorized energy agencies to establish energy storage procurement targets.

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) established California's state policy objectives on long-term energy planning and procurement as signed into law on October 7, 2015. The 100 Percent Clean Energy Act of 2018 (SB 100) revised the RPS targets to establish the policy that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers and 100% of electricity procured to serve all state agencies by December 31, 2045. With SB 350 and SB 100, California's objectives include the following:

- To set the RPS for the procurement of California's electricity from renewable sources at 33% by 2020, 50% by 2026, and 60% by 2030
- To plan for 100% of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045
- To double the energy efficiency savings in electricity and natural gas end uses by retail customers by 2030

Cap-and-Trade Program (17 CCR 95801 to 96022). The California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation (Cap-and-Trade Program) was initially approved by CARB in 2011. The Cap-and-Trade Program applies to covered entities that fall within certain source categories, including petroleum refiners and suppliers of transportation fuels, and is triggered when facility emissions exceed 25,000 metric tons (MT) of carbon dioxide equivalent (CO_{2e}) in a year. The covered entities must hold compliance instruments sufficient to cover the actual GHG emissions, as evidenced through CARB's Mandatory Reporting Regulation requirements. This means that transportation fuel suppliers bear the GHG compliance obligation in the Cap-and-Trade Program for the GHG emissions from motor vehicle and off-road equipment fuels used by construction workforces and crews.

Emission Reductions of Sulfur Hexafluoride (SF₆) from Gas Insulated Switchgear (17 CCR 95350 to 95359). In 2010, CARB adopted a regulation for reducing or phasing-out SF₆ emissions from electric power system gas insulated switchgear. The regulation requires owners of such switchgear to (1) annually report their SF₆ emissions, (2) determine the emission rate relative to the SF₆ capacity of the switchgear, (3) provide a complete inventory of all gas insulated switchgear and their SF₆ capacities, (4) produce an SF₆ gas container inventory, and (5) keep all information current for CARB enforcement staff inspection and verification.

California Governor's Office of Planning and Research, Guidelines on GHG (SB 97). The California Natural Resources Agency originally adopted amendments to the California Environmental Quality Act (CEQA) Guidelines for reviewing the topic of GHG emissions to implement the California Legislature's directive in California Public Resources Code, Section 21083.05 (enacted as part of SB 97 [Chapter 185, Statutes, 2007]). With the amendments that became effective in March 2010, the Natural Resources Agency

developed a Final Statement of Reasons that guides the scope of GHG analyses for CEQA documents and addresses the subject of life-cycle analysis.

Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in developing a given project and infrastructure) depends on emission factors or econometric factors that are not well established for all processes. The basis of the CEQA Guidelines set forth by the Natural Resources Agency indicate that a full life-cycle analysis would be beyond the scope of a given CEQA document because of a lack of consensus guidance on life-cycle analysis methodologies.

Local Laws, Regulations, and Policies

County of Riverside Climate Action Plan (CAP). The CAP, adopted December 8, 2015, establishes goals and policies for the County of Riverside to incorporate environmental responsibility into its daily management of residential, commercial, and industrial growth. The CAP includes GHG inventories of community-wide and municipal sources based on the data available for the year 2008. Emissions within the scope of the inventories include transportation, electricity and natural gas use, landscaping, water and wastewater pumping and treatment, and treatment and decomposition of solid waste. The County's 2008 community-wide inventory amounted to 7.013 million metric tons (MMT) CO₂e for the unincorporated areas, and 226,753 MT CO₂e from municipal operations (County of Riverside 2015).

The CAP also provides an implementation tool to guide future decisions made by the County, including a guidance document in Appendix F of the CAP titled "Greenhouse Gas Emissions, Screening Tables." The procedures for evaluating GHG impacts includes a threshold level of 3,000 MT CO₂e per year that allows Riverside County to identify projects that may require a project-specific technical analysis to quantify and mitigate emissions (County of Riverside 2015).

The County's General Plan Air Quality Element includes one policy (Policy AQ 20.19) directly relevant to the proposed Projects, to facilitate development and siting of renewable energy facilities and transmission lines in appropriate locations (County of Riverside 2018).

3.8.2 Environmental Setting

The global climate depends on the presence of naturally occurring GHGs to provide what is commonly known as the "greenhouse effect," which allows heat radiated from the Earth's surface to warm the atmosphere. The greenhouse effect is driven mainly by water vapor, aerosols, carbon dioxide (CO₂), methane, nitrous oxide, and other constituents. Globally, the presence of GHG affects temperatures, precipitation, sea levels, ocean currents, wind patterns, and storm activity.

Human activity directly contributes to emissions of six primary anthropogenic GHGs: CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and SF₆. The standard definition of anthropogenic GHG includes these six substances under the 1997 Kyoto Protocol (UNFCCC 1998). The most important and widely occurring anthropogenic GHG is CO₂, primarily from the use of fossil fuels as a source of energy.

Effects of GHG Emissions. Changing temperatures, precipitation, sea levels, ocean currents, wind patterns and storm activity provide indicators and evidence of the effects of climate change. From 1950 onward, relatively comprehensive datasets of observations are available. Research by California's Office of Environmental Health Hazard Assessment documents climate change indicators by categorizing the effects as changes in California's climate; impacts to physical systems including oceans, lakes, rivers, and snowpack; and impacts to biological systems including humans, vegetation, and wildlife. The primary observed changes in California's climate include increased annual average air temperatures, more-frequent extremely hot days and nights, and increased severity of drought. Impacts to physical systems affected by warming

temperatures and changing precipitation patterns show decreasing snowmelt runoff, shrinking glaciers, and rising sea levels. Impacts to terrestrial, marine, and freshwater biological systems, with resulting changes in habitat, agriculture, and food supply are occurring in conjunction with the potential to impact human well-being (OEHHA 2018).

California GHG Emissions Trends. California first formalized a strategy to achieve GHG reductions in 2008, when California produced approximately 487 MMT CO₂e according to the official CARB inventory (CARB 2019). The state's economy-wide emissions have been declining in recent years. California's sources of GHG emitted approximately 424 MMT CO₂e in 2017 (CARB 2019), less than 10% of the U.S. GHG emissions total for 2017 of 6,457 MMT CO₂e.

3.8.3 Impact Analysis

Methodology

All construction-, operation-, and future-decommissioning-related emissions are quantified based on the best available forecast of Project activities. For each of the activities of the proposed Projects, the emissions estimates are derived from use of the California Emissions Estimator Model (CalEEMod; version 2016.3.2) software developed by the California Air Pollution Control Officers Association. The emission factors within the most recent version of the CalEEMod software rely upon mobile source emission factors from the CARB OFFROAD inventory and EMFAC2014 models. Details on the construction activity assumptions, emission factors, and resulting quantities of emissions output by CalEEMod appear in Appendix D, AQ and GHG CalEEMod Calculations, of this Environmental Impact Report. Decommissioning emissions were assumed to equal construction emissions. This is conservative as the emissions will decrease over time due to fleet turnover and technological advances.

This analysis includes an estimate of GHG emissions avoided by the ability of the proposed solar facilities to produce electricity from renewable resources. To determine the potential GHGs avoided, the overall annual energy production volume is estimated, without considering energy storage components. The amount of energy produced for the grid is assumed to displace the use of California's flexible natural gas-fired resources or electricity otherwise imported to California. The calculation considers that solar production without storage occurs during mid-day hours when California's demand for grid power is off-peak; however, the storage component would allow the solar facilities to shift delivery to peak demand hours, when higher-emitting fuel-burning resources could be displaced.

The overall quantities of direct and indirect GHG emissions are compared against the CEQA threshold of significance for GHG emissions recommended by the California local air quality management district.

Criteria for Determining Significance

The quantities of direct and indirect GHG emissions are compared against the CEQA threshold of significance for GHG emissions of 10,000 MT CO₂e per year, as recommended by the South Coast Air Quality Management District for evaluation of emissions from industrial facilities (SCAQMD 2015). Project-related GHG emissions would be considered significant if total emissions (direct and indirect effects) would exceed this threshold. Construction-phase GHG emissions arising from short-term activities may be amortized over the longer-term life of the Project, defined as 30 years, and added to the operational emissions for comparison with the threshold (SCAQMD 2008). This is conservative as the actual Projects' lives are expected to be 35–50 years.

The Projects would have significant impacts on GHG if they would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (see Impact GHG-1).
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases (see Impact GHG-2).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to GHG, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM AIR-2 Control On-Site Off-Road Equipment Emissions. *Refer to full text in Section 3.3, Air Quality.*

APM AIR-3 Construction Activity Management Plan. *Refer to full text in Section 3.3, Air Quality.*

Environmental Impacts

The scoping effort revealed public concerns related to GHG emissions and climate change in general. Concerns identified in the scoping process involved the carbon sequestration provided by desert soils and the overall efficiency of the proposed energy storage component, which could require consumption of electricity for cooling the battery storage system. The National Parks Conservation Association suggested specific literature to be reviewed regarding carbon sequestration. This analysis conservatively assumes that all carbon sequestration would be lost; however, vegetation management and preserving large portions of the site as undisturbed would help to promote continuing sequestration near natural levels. Commenters expressed concerns regarding use of battery storage in the context of high ambient temperatures and the energy needs of a battery storage system. Although the overall effects of these factors are uncertain because they would vary depending on ultimate storage system design and operation details, the analysis considers these issues.

Impact GHG-1. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

LESS THAN SIGNIFICANT. The proposed Projects would cause GHG emissions due to fossil-fuel consumption during construction, operation, and future decommissioning. The operation of the Projects would produce electricity from renewable resources that would displace the need to produce electricity from traditional (fossil-fueled) resources. Separate discussions appear for the different effects on GHG emissions: those caused by development activities over the life of the Projects, the effects of land use conversion, and indirect GHG emissions reductions due to the electricity produced from renewable energy.

Emissions from Development Activities: Construction, Operations, and Future Decommissioning.

Construction, operations, and future decommissioning activities would cause GHG emissions due to fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to and from the site. Diesel fuel or gasoline is used in mobilizing the heavy-duty construction equipment, site development and preparation, facility construction, roadway construction, and eventual decommissioning. Total GHG emissions over the duration of construction would amount to 13,810 MT CO₂e, or 460.3 MT CO₂e/year when averaged over a 30-year life of both Projects, as recommended by South Coast Air Quality Management District guidelines, including application of APM AIR-2 (Control On-Site Off-Road Equipment Emissions) and APM AIR-3 (Construction Activity Management Plan). Future decommissioning would involve activities and use of equipment like those used during construction. The

decommissioning action and final use of the sites have not yet been specified. Accordingly, GHG emissions during the future decommissioning phase are unquantifiable at this time; California’s GHG reduction policies should ensure that lower-carbon fuels would be used, ensuring that impacts would be less than those described for construction. Direct operations and maintenance activities, including off-site vehicle trips, over the 30-year life of the Projects would contribute an additional amount of 1,593.0 MT CO₂e/year, and routine testing of the standby emergency generators would cause 10.5 MT CO₂e/year, as shown in Table 3.8-1.

Table 3.8-1. Arica and Victory Pass Projects: GHG Emissions

Activity	Construction and Decommissioning (MT CO ₂ e)	Operations (MT CO ₂ e per year)	Proposed Projects’ GHG Emissions (MT CO ₂ e per year)
Total, Duration of Construction	13,810	—	—
Construction Total, 30-year Amortized	460.3	—	460.3
Total, Duration of Decommissioning	13,810	—	—
Decommissioning Total, 30-year Amortized	460.3	—	460.3
Operations, Area Sources, Motor Vehicle Trips, Water, and Solid Waste	—	1,593.0	1,593.0
Operations, Standby Generators, Routine Testing	—	10.5	10.5
Development Activities: Construction, Decommissioning, and Operations Combined			2,524
Related to Land Use Conversion			17,240
Avoided by Producing Electricity			-448,000
Total GHG, Construction and Operations			-428,236

Source: Appendix D-1 AQ/GHG Emissions Inventory; Appendix D-2, CalEEMod Output; Appendix D-3, Avoided GHG Emissions; and Appendix D-4, Operations and Maintenance Building.

Emissions Related to Land Use Conversion. Installation of the Projects would result in ground disturbance to soils and remove some vegetation that naturally provides carbon uptake. Converting a portion of the existing land would eliminate the natural sequestration of carbon because the existing soil and vegetation act as a sink by removing CO₂ from the atmosphere. Ground disturbance and vegetation removal during construction adds to the GHG impact because a portion of the soils and vegetation on site would no longer be present to sequester CO₂. The loss of carbon uptake depends on what fraction of natural vegetation on the site would be cleared for permanent installation of foundations, roads, or other on-site facilities, and on efforts to minimize soil erosion or protect existing ground cover to minimize the loss of carbon uptake. The actual amount of this loss is uncertain because it would depend on the characteristics of the site, and the available data on rates of sequestration by vegetation and soils are approximations.

The loss of natural carbon uptake would not be expected to exceed 4.31 MT CO₂e per year per acre; absent a reliable factor for the Projects’ setting, this factor is a proxy based on removing the natural sequestration capability of grassland (CAPCOA 2017). At this rate, the permanent conversion due to vegetation removal, compacted soils for access roads, and impervious areas for equipment at the site, would result in 17,240 MT CO₂e per year of sequestration capability being lost. This estimate is

conservatively high¹ because a portion of the site would retain natural conditions and some carbon sequestration capabilities would be restored within the site through revegetation efforts.

Emissions Avoided by Producing Electricity. The production of renewable power would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants.

The proposed Projects combined would produce up to about 1.2 million megawatt-hours each year for end-use by California's customers. The volume of production is based on the combined generating capacity of 465 megawatts for the Projects at a capacity factor of 30%, which is typical for a solar PV system in eastern Riverside County. The electricity produced by the Projects would displace fuel burning by California's flexible natural gas-fired resources or electricity otherwise imported to California. This would avoid GHGs that could otherwise be emitted by fuel-burning generators at a rate of approximately 448,000 MT per year, after accounting for line losses based on an avoided emissions displacement factor of 0.379 MT of CO₂ per megawatt-hour (CEC 2015, 2019).

The quantity of avoided GHGs could vary somewhat from the quantity predicted here depending on the dispatch scheduling of the storage component, battery storage round-trip losses (deliveries), and the Project sites' auxiliary energy loads. By requiring a charging cycle of the storage components before discharging, some round-trip loss of energy would occur. The inefficiency of round-trip losses occurring through charging and discharging, and other on-site auxiliary energy use of electricity for cooling the storage system, would reduce the overall net megawatt-hours produced for end users. Battery storage round-trip losses and the Project sites' auxiliary loads could consume around 15% of the megawatt-hours produced. However, the output of the storage component would be timed (dispatched) to occur during hours of peak demand for electricity. This would have the beneficial effect of shifting the types of fuel-burning generating units on the grid that could be displaced. Because storage would be likely to discharge during peak hours, the relative scale of avoided GHGs of the Projects with storage would be comparable to the amount estimated here without storage.

The combined direct and indirect effects of the emissions quantified in Table 3.8-1 indicate that the Projects would result in a net GHG reduction by avoiding over 428,000 MT CO₂e annually. This impact would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect GHG emissions impacts.

Impact GHG-2. Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

LESS THAN SIGNIFICANT. The proposed Projects would produce electricity in a manner that improves California's ability to supply renewable energy to end-use customers and to achieve statewide renewable energy goals. Electricity from the Projects would be used to serve the needs of customers and would facilitate compliance with the RPS, as set forth by California's Clean Energy and Pollution Reduction Act of 2015 (SB 350). Energy storage provided by the Projects would help optimize and integrate the delivery of renewable energy from the Projects, consistent with California's energy storage policies.

¹ The quantification of GHG emissions related to land use conversion due to vegetation removal is based on 4,000 acres, from the original right-of-way request. The acreages of the Projects have been reduced to 2,724 acres (solar facility sites, gen-tie, and access roads) to avoid sensitive biological resources. The loss of sequestration capacity included here is therefore a conservatively high quantification of GHG effects.

The GHG emissions avoided by using renewable energy to produce electricity would be consistent with and would not conflict with California's GHG emissions reduction targets. The GHG reduction goals are set forth by the California Global Warming Solutions Act of 2006 (AB 32) and SB 32 of 2016, which codifies the GHG emissions target to 40% below the 1990 level by 2030. The GHG targets are implemented through the CARB Climate Change Scoping Plan. Overall, the electricity produced by the Projects would contribute to the continued reduction of GHG emissions in California's power supply.

Other activities related to construction, future decommissioning, and operation of the Projects would either be exempt from or would be required to comply with CARB rules and regulations to reduce GHG emissions and would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

As the total GHG emissions generated during construction, future decommissioning, and operation of the Projects would be considerably less than the GHG emissions avoided, the solar power plants would lead to a net reduction in GHG emissions across the state's electricity system, which would contribute to meeting the state's GHG reduction goals under AB 32 and subsequent targets for 2030 and beyond. The Projects would not conflict with any applicable GHG management plan, policy, or regulation. Therefore, this impact would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

This impact assessment describes the proposed Projects' contribution towards global climate change through GHG emissions that occur because of the Projects. Because the direct environmental effect of GHG emissions is to influence global climate change, GHG emissions are inherently a cumulative concern with a cumulatively global scope. No single project could, by itself, result in a substantial change in climate. As the project-specific analysis for the Projects analyzes cumulative global impacts, there is no separate cumulative impacts analysis for global climate change. Virtually all of the cumulative projects would also contribute to global GHG concentrations due to the generation of short-term and/or long-term GHG emissions associated with their construction, operation, and decommissioning, if applicable. Utility-scale renewable energy development contributes relatively minor GHG emissions, generally from emissions from heavy equipment used during the construction phase and from vehicular emissions. However, utility-scale renewable energy production also reduces CO_{2e} emissions from utilities by offsetting emissions from new or existing fossil fuel energy sources. Since GHG emissions are aggregated across the global atmosphere and cumulatively contribute to climate change, it is not possible to determine the specific impact on global climate change from GHG emissions associated with the Projects or with the other cumulative projects. However, the overall cumulative effect is considered significant, and the thresholds adopted to analyze project-level impacts are based on a need to determine the severity of project-specific contributions to global atmospheric carbon concentrations.

Furthermore, the evaluation of GHG impacts presented here evaluated the contribution of the Projects to inherently address cumulative climate change effects and demonstrated that the Projects would result in a long-term net reduction of GHGs and would not conflict with federal and state GHG reduction goals. Additionally, the Projects would incorporate APM AIR-2 (Control On-Site Off-Road Equipment Emissions) and APM AIR-3 (Construction Activity Management Plan), which would contribute to GHG emission reductions. Other cumulative projects in the vicinity would also be required to follow South Coast Air Quality Management District guidelines and are expected to implement similar emission control measures. The Project-specific incremental impact on GHG emissions, combined with impacts of other past, present, and probable future projects, would therefore not be cumulatively considerable or

significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to GHG emissions.

3.8.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation were identified to further avoid or substantially lessen impacts to GHGs.

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3.9 Hazards and Hazardous Materials

This section evaluates the environmental impacts from hazards and hazardous materials that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects related to hazards and hazardous materials for both of the proposed Projects as the whole of the action. The section includes a description of the regulatory framework for hazards and hazardous materials, presents an overview of existing conditions that influence risks associated with hazards and hazardous materials, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and evaluates the Projects' potential impacts.

Issues raised during scoping related to hazards and hazardous materials include the following concerns and recommendations raised by the U.S. Environmental Protection Agency (EPA):¹

- Reasonable mitigation measures to control fugitive dust should be implemented to minimize exposure to *Coccidioides* spores and valley fever. A discussion of potential health and safety impacts of *Coccidioides* and valley fever should be included, and mitigation measures identified to prevent or reduce risk.
- Potential impacts of waste generation, including hazardous waste, from construction and operation of the Projects and of the Battery Energy Storage System (BESS) should be discussed.
- An explanation should be included regarding how generation of hazardous waste would be minimized and applicable federal hazardous waste regulations should be identified.
- If photovoltaic (PV) panel trackers will utilize hazardous materials such as refrigerants, potential impacts from accidental or unexpected releases should be discussed and evaluated.
- The issue of whether any pesticides, herbicides, or rodenticides will be used at the Project sites should be discussed.

3.9.1 Regulatory Framework

Hazardous materials are defined by federal and state regulations that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause those materials to be considered hazardous. The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). Hazardous materials are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14), and

¹ The EPA provided a scoping comment to the Bureau of Land Management for the National Environmental Policy Act review of the Projects. While this comment was not provided directly to the California Department of Fish and Wildlife for the California Environmental Quality Act review of the Projects, it was reviewed for the Environmental Impact Report where appropriate.

in the California Code of Regulations, Title 22, Chapter 11, Article 2, Section 66261, which provides the following definition:

A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.

For this analysis, soil that is excavated from a site containing hazardous materials would be considered a hazardous waste if it exceeded specific California Code of Regulations Title 22 criteria or criteria defined in CERCLA or other relevant federal regulations. Remediation (cleanup and safe removal/disposal) of hazardous wastes found at a site is required if excavation of these materials or certain other activities occur. Even if soils or groundwater at a contaminated site do not have the characteristics required to be defined as hazardous wastes, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the lead jurisdictional agency.

Federal Laws, Regulations, and Policies

EPA California Toxics Rule (40 Code of Federal Regulations [CFR] 131). In 2000, EPA promulgated numeric water quality criteria for priority toxic pollutants and other water quality standards provisions to be applied to waters in California to protect human health and the environment. Under Clean Water Act Section 303(c)(2)(B), EPA requires states to adopt numeric water quality criteria for priority toxic pollutants for which EPA has issued criteria guidance, and the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses. These federal criteria are legally applicable in California for inland surface waters, enclosed bays, and estuaries.

Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.). The RCRA authorizes EPA to control hazardous waste “from cradle to grave” (generation, transportation, treatment, storage, and disposal). RCRA Federal Hazardous and Solid Waste Amendments from 1984 include waste minimization and phasing out land disposal of hazardous waste, as well as corrective action for releases. The California Department of Toxic Substances Control (DTSC) is the lead state agency for corrective action associated with RCRA facility investigations and remediation.

Toxic Substances Control Act (15 USC 2601-2692). The Toxic Substances Control Act authorizes EPA to require reporting, record keeping, testing requirements, and restrictions related to chemical substances and/or mixtures. This act also addresses production, importation, use, and disposal of specific chemicals, such as polychlorinated biphenyls, asbestos-containing materials, lead-based paint, and petroleum.

Comprehensive Environmental Response, Compensation, and Liability Act (42 USC 9601 et seq.). CERCLA, including the Superfund program, was enacted by Congress on December 11, 1980, and is administered by EPA. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan, which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The National

Contingency Plan also established the National Priorities List. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

Clean Water Act/Spill Prevention, Control, and Countermeasure (SPCC) Rule (33 USC 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972. As part of the Clean Water Act, EPA oversees and enforces the Oil Pollution Prevention regulation contained in Title 40 of the CFR, Part 112, which is often referred to as the “SPCC Rule” because the regulations describe the requirements for facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC regulations if a single oil (or gasoline or diesel fuel) storage tank has a capacity greater than 660 gallons, the total aboveground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the “navigable waters” of the United States.

Occupational Safety and Health Administration. The Occupational Safety and Health Administration is the agency responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in Title 29 of the CFR, as authorized in the Occupational Safety and Health Act of 1970. These regulations provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. At sites known or suspected to have soil or groundwater contamination, construction workers must receive training in hazardous materials operations and a site health and safety plan must be prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

National Fire Protection Association (NFPA) 855. NFPA 855 (Standard for the Installation of Stationary Energy Storage Systems) provides minimum requirements for mitigation of hazards associated with Energy Storage Systems (ESSs). The design, construction, and installation of ESSs and related equipment shall comply with NFPA 855 Chapter 4, as supplemented or modified by the technology-specific provisions in Chapters 9 through 13. Chapter 4 includes, but is not limited to, provisions regarding gas release, testing requirements, hazard mitigation analysis, availability of operation and maintenance manuals, and staff training. ESS plans and specifications should be submitted to the jurisdictional agency. Underwriter’s Laboratory (UL) 9540 falls under NFPA 855 and addresses key issues associated with energy storage including battery system safety, functional safety, environmental performance, containment, and fire detection and suppression. The UL 9540A test is a method to evaluate thermal runaway fire propagation in BESS.

Federal Aviation Administration (FAA). The Federal Aviation Regulation (49 CFR Part 77) establishes standards and notification requirements for objects that may impact navigable airspace. Airports and navigable airspace that are not administered by the Department of Defense are under the jurisdiction of FAA. This regulation includes (a) FAA notification requirements for proposed construction, or the alteration of existing structures, that meet specific standards; (b) the standards used to determine obstructions to air navigation, and navigational and communication facilities; (c) the process for aeronautical studies of obstructions to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities, or equipment; and (d) the process to petition FAA for discretionary review of determinations, revisions, and extensions of determinations.

Federal Land Policy and Management Act of 1978 (43 USC 1701 et seq.) and Title 43 Code of Federal Regulations (43 CFR 9212.2). The Bureau of Land Management (BLM) is authorized and required to manage federal lands, which includes providing funding, resources, and regulations for prevention and protection of wildland fires. In California, BLM establishes seasonal and year-round fire prevention orders and restrictions to assist with wildland fire prevention efforts throughout federal public lands within the

California Desert District, which consists of Inyo, Imperial, Kern, Mono, Los Angeles, San Bernardino, San Diego, and Riverside Counties.

State Laws, Regulations, and Policies

California Environmental Protection Agency. The California Environmental Protection Agency (Cal EPA) was created in 1991, which unified California’s environmental authority in a single cabinet-level agency and brought the California Air Resources Board, State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), Integrated Waste Management Board, DTSC, Office of Environmental Health Hazard Assessment, and Department of Pesticide Regulation under one agency. These agencies were placed within Cal EPA for the protection of human health and the environment and to ensure the coordinated deployment of state resources. Their mission is to restore, protect, and enhance the environment, to ensure public health, environmental quality, and economic vitality.

California Hazardous Waste Control Law (HWCL). The HWCL is administered by Cal EPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until EPA approves the California program, both the state and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Department of Toxic Substance Control. DTSC is a department of Cal EPA and is the primary agency in California that regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. DTSC recently finalized revisions to its hazardous waste regulations (revisions in 22 CCR Division 4.5, sections and articles in chapters 10, 11, and 23) that will allow PV solar panels to be managed as “universal waste” beginning on January 1, 2021. By being classified as universal waste, PV solar panels will now be subject to a streamlined set of standards that are intended to ease regulatory burden and promote recycling.

California Fire Code (CFC). Chapter 12 of the CFC provides provisions related to the installation, operation, and maintenance of energy systems used for generating or storing energy to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations. Section 1206 of the 2019 CFC provides requirements for electrical ESS. BESSs greater than 600 kilowatt-hours are required by the CFC to be UL listed and have full-scale testing using the testing standard UL 9540A. UL 9540A tests a variety of fire and life safety features on the battery including thermal runaway, gas venting, and fire propagation.

Porter-Cologne Water Quality Act. The Porter-Cologne Water Quality Act is a state law that provides a comprehensive water quality management system for the protection of California waters. The act designates SWRCB as the ultimate authority over state water rights and water quality policy and established nine RWQCBs to oversee water quality on a day-to-day basis at the local and regional level. The Colorado River Basin RWQCB is responsible for protecting the beneficial uses of surface water and groundwater resources in the Projects’ area. The Colorado River Basin RWQCB adopted its Basin Plan (Water Quality Control Plan for the Colorado River Basin Region) in 1993 and amended it in 2019 (RWQCB 2019). This Basin Plan set forth implementation policies, goals, and water management practices, in accordance

with the Porter-Cologne Water Quality Control Act. The Basin Plan establishes both numerical and narrative standards and objectives for water quality aimed at protecting aquatic resources. Project discharges to surface waters are subject to the regulatory standards set forth in applicable regional basin plans, which prevent the discharge of hazardous materials into waters of the state.

National Pollutant Discharge Elimination System (NPDES). The NPDES Program is a federal program that has been delegated to the State of California for implementation through the SWRCB and the nine RWQCBs. The SWRCB and RWQCBs have the responsibility of granting NPDES permits and setting waste discharge requirements for stormwater runoff from construction sites. Section 402 of the Clean Water Act authorizes the SWRCB to issue a NPDES General Construction Storm Water Permit (Water Quality Order 2009-0009-DWQ), referred to as the “General Construction Permit.” Construction activities would comply with and be covered under the General Construction Permit if those activities include the following:

- Development and implementation of a Stormwater Pollution Prevention Plan, which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off site into receiving waters.
- Elimination or reduction of non-stormwater discharges to storm sewer systems and other waters of the United States.
- Inspections of all BMPs.

Unified Program. In 1993, the state (Cal EPA) was mandated by Senate Bill 1082 (California Health and Safety Code Chapter 6.11) to establish a “unified hazardous waste and hazardous materials management” regulatory program (Unified Program). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following six environmental and emergency response programs: Hazardous Materials Release Response Plans and Inventories (Hazardous Material Business Plan [HMBP]), California Accidental Release Prevention Program, Underground Storage Tank Program, Aboveground Petroleum Storage Act, Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs, and California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements. The Unified Program is implemented at the local level by local government agencies certified by the Secretary of Cal EPA. These agencies, known as Certified Unified Program Agencies (CUPAs), implement all the Unified Program elements and serve as a local contact for area businesses. The CUPA for the Projects’ area is the County of Riverside Department of Environmental Health (DEH) Hazardous Materials Branch. The CUPA also oversees the two Participating Agencies (Corona and Riverside Fire Departments) that implement hazardous materials programs within the County of Riverside (County).

California Public Resources Code, Sections 4292 and 4293. California Public Resources Code, Sections 4292 and 4293, specify requirements related to fire protection and prevention in transmission line corridors. California Public Resources Code, Section 4292, states that any person that owns, controls, operates, or maintains any electrical transmission or distribution line has primary responsibility for fire protection of such areas, and shall maintain around and adjacent to any pole or tower that supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such a pole or tower. California Public Resources Code, Section 4293, states that any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, or grass covered land which has primary responsibility for the fire protection of such area, shall maintain a clearance of the respective distances.

California Department of Industrial Relations, Division of Occupational Safety and Health Administration.

The California Occupational Safety and Health Administration is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. California Occupational Safety and Health Administration standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

California Fire Plan. The Strategic California Fire Plan was finalized in June 2010 and directs each California Department of Forestry and Fire Protection (CAL FIRE) Unit to prepare a locally specific Fire Management Plan for their areas of responsibility. These documents assess the fire situation within each of CAL FIRE's 21 units and six contract counties. The plans include stakeholder contributions and priorities and identify strategic areas for pre-fire planning and fuel treatment, as defined by the people who live and work with the local fire problem. The plans are required to be updated annually.

Assembly Bill 203. This bill adds Section 6709 to the Labor Code regarding occupational safety and health related to valley fever. This section applies to a construction employer with employees working at worksites in counties where valley fever is highly endemic, including, but not limited to, the Counties of Fresno, Kern, Kings, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Santa Barbara, Tulare, and Ventura, where work activities disturb the soil. This includes, but is not limited to, digging, grading, or other earth moving operations, or vehicle operation on dirt roads, or high winds. Highly endemic means that the annual incidence rate of valley fever is greater than 20 cases per 100,000 persons per year. An employer subject to this section was required to provide effective awareness training on valley fever to all employees by May 1, 2020, and annually by that date thereafter, and before an employee begins work that is reasonably anticipated to cause exposure to substantial dust disturbance. Substantial dust disturbance means visible airborne dust for a total duration of 1 hour or more on any day. The training may be included in the employer's injury and illness prevention program training or as a standalone training program. The County's valley fever incidence rates are currently not high enough to be considered highly endemic and require valley fever awareness training under Assembly Bill 203.

Local Laws, Regulations, and Policies

Riverside County General Plan. The intent of the Safety Element of the Riverside County General Plan is to reduce death, injuries, property damage, and economic and social impact from hazards. The following policies included in the Safety Element generally relate to the proposed Projects with respect to hazards and hazardous materials (County of Riverside 2019).

- **Policy S 5.1.** Develop and enforce construction and design standards that ensure that proposed development incorporates fire prevention features through the following:
 - All proposed development and construction within Fire Hazard Severity Zones shall be reviewed by the Riverside County Fire and Building and Safety departments.
 - All proposed development and construction shall meet minimum standards for fire safety as defined in the Riverside County Building or County Fire Codes, or by County zoning, or as dictated by the Building Official or the Transportation Land Management Agency based on building type, design, occupancy, and use.
 - In addition to the standards and guidelines of the California Building Code and California Fire Code fire safety provisions, continue to implement additional standards for high-risk, high occupancy, dependent, and essential facilities where appropriate under the Riverside County Fire Code (Ordinance No. 787) Protection Ordinance. These shall include assurance that structural and

nonstructural architectural elements of the building will not impede emergency egress for fire safety staffing/personnel, equipment, and apparatus; nor hinder evacuation from fire, including potential blockage of stairways or fire doors.

- Proposed development and construction in Fire Hazard Severity Zones shall provide secondary public access, in accordance with Riverside County Ordinances.
 - Proposed development and construction in Fire Hazard Severity Zones shall use single loaded roads to enhance fuel modification areas, unless otherwise determined by the Riverside County Fire Chief.
 - Proposed development and construction in Fire Hazard Severity Zones shall provide a defensible space or fuel modification zones to be located, designed, and constructed that provide adequate defensibility from wildfires.
- **Policy S 5.6.** Demonstrate that the proposed development can provide fire services that meet the minimum travel times identified in Riverside County Fire Department Fire Protection and EMS Strategic Master Plan.

County of Riverside Department of Environmental Health. DEH is responsible for protecting the health and safety of the public and the environment of the County by assuring that hazardous materials are properly handled and stored. DEH accomplishes this through inspection, emergency response, site remediation, and hazardous waste management services. DEH also acts as the CUPA for the County and is responsible for reviewing Hazardous Materials Business Plans. A CUPA is a local agency that has been certified by Cal EPA to implement state environmental programs related to hazardous materials and waste. The specific responsibilities of the DEH include the following:

- Inspecting hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations
- Implementing CUPA programs for the development of accident prevention and emergency plans; proper installation, monitoring, and closure of underground storage tanks; and the handling, storage and transportation and disposal of hazardous wastes
- Providing 24-hour response to emergency incidents involving hazardous materials or wastes in order to protect the public and the environment from accidental releases and illegal activities
- Overseeing the investigation and remediation of environmental contamination due to releases from underground storage tanks, hazardous waste containers, chemical processes, or the transportation of hazardous materials
- Conducting investigations and taking enforcement action as necessary against anyone who disposes of hazardous waste illegally or otherwise manages hazardous materials or wastes in violation of federal, state, or local laws and regulations

Riverside County Airport Land Use Compatibility Plan (RCALUCP). The RCALUCP sets forth the criteria and policies that the Riverside County Airport Land Use Commission uses in assessing the compatibility between the principal airports in the County and proposed land use development in the areas surrounding those airports. The RCALUCP primarily addresses reviews of local general plans, specific plans, zoning ordinances, and other land use documents covering broad geographic areas. Certain individual land use development proposals also may be reviewed by the Airport Land Use Commission as provided in the policies identified in the RCALUCP. The Airport Land Use Commission does not have authority over existing incompatible land uses or the operation of any airport.

The Airport Land Use Commission adopts Airport Land Use Compatibility Plans for the areas surrounding the airports within its jurisdiction. Local development approvals must be found consistent with the RCALUCP unless approved by a 4/5th supermajority vote. The RCALUCP identifies Airport Influence Areas to protect the public from the adverse effects of aircraft noise, ensure that facilities and people are not concentrated in areas susceptible to aircraft accidents, and ensure that no structures or activities adversely affect or encroach upon the use of navigable airspace. The Desert Center Airport became private in 2004. The public review draft of the Desert Center Area Plan, dated February 2015, does not include a discussion regarding the Desert Center Airport Influence Area. No compatibility plan has been prepared for the Desert Center Airport and there are no additional compatibility policies with respect to the Desert Center Airport.

3.9.2 Environmental Setting

Land Use

Existing and past land use activities are commonly used as indicators of sites or areas where hazardous material storage and use may have occurred or where potential environmental contamination may exist. For example, many historic and current industrial sites have soil or groundwater contaminated by hazardous substances. Other hazardous materials sources include leaking underground tanks in commercial and rural areas, contaminated surface runoff from polluted sites, and contaminated groundwater plumes. Current and former agricultural properties commonly have herbicide, pesticide, and/or fumigant soil contamination.

The Projects' parcels are located primarily on open space desert scrub land, on federal land in Riverside County, north of Interstate 10 and approximately 5.5 miles east and northeast of Desert Center, California. The Project sites are located entirely on BLM-administered public lands within the Riverside East Solar Energy Zone of BLM's Western Solar Plan, and within a Desert Renewable Energy Conservation Plan Development Focus Area. The surrounding area consists of primarily BLM-administered land, with some private land with scattered rural residences and farms. Existing agricultural land is located along and near the eastern boundaries of the Project sites, and a former/fallow agricultural property is located along the northwestern boundary of the Arica Project site. Several existing, under construction, and proposed solar projects are in the Desert Center area. Solar projects adjacent to the Arica and Victory Pass Projects have not been constructed yet but consist of the approved Athos Renewable Energy Project, with parcels located immediately east and west of the Project sites, and the proposed Oberon Solar Project, which is located 1,000 feet to the west of the Victory Pass Project site. The Projects' proposed gen-tie line route parallels the gen-ties associated with other existing and proposed solar projects in the area.

Formerly Used Defense Sites. There are three Formerly Used Defense Sites in the vicinity of the Project sites: Desert Training Center/California-Arizona Maneuver Area (DTC/CAMA), Desert Center Division Camp, and Desert Center Army Air Field. In 1942, as part of World War II military efforts, the DTC/CAMA facility was created for training troops in desert conditions. DTC/CAMA was the largest training grounds in military history, at approximately 18,000 square miles, and included 11 divisional camps extending from Indio, California, eastward to near Prescott, Arizona, north to Searchlight, Nevada, and south to Yuma, Arizona. Desert training of troops, armored vehicles, artillery, and military planes occurred at DTC/CAMA from 1942 to 1944. These maneuvers included weapons training, firing exercises, and laying out and removing landmine fields (Meller 1946). Three separate maneuver areas were identified within DTC/CAMA, including Areas A, B, and C. The proposed Projects are in Area A, which consisted of the portions of DTC/CAMA west of the Colorado River (BLM 1985). During the biological surveys conducted

for these Projects in October 2019, a potential unexploded ordnance (UXO) item was noted in the western part of the Arica Project site.

Desert Center Division Camp was located primarily north and west of Desert Center, California, approximately 2 miles west of the Project sites, and consisted of 34,000 acres used for maneuvers, camp sites, an evacuation hospital, and an ammunition depot for the DTC/CAMA, from 1942 to 1944. No permanent division camp was constructed at this site, only temporary structures used to house the evacuation hospital, an observer detachment, an ordnance maintenance company, a quartermaster truck unit, and Ammunition Depot. No. 1. The maneuver areas were associated with the surrounding DTC/CAMA (USACE 1996).

The Desert Center Army Airfield, located approximately 2 miles northwest of the Project sites, was located within the Desert Center Division Camp and was used in the early 1940s to aid in combat training during maneuvers at the DTC/CAMA (Military Museum 2020). The airfield included two 5,500-foot runways with associated taxiways and parking aprons and numerous support buildings. After the DTC/CAMA was closed in 1944, the airfield remained open but with greatly decreased operational activities. In 1946, the airfield was sold in a public auction. The airfield had two petroleum underground storage tanks that were removed in 1998 (USACE 2019). The airfield is currently owned and operated by the Chuckwalla Valley Raceway.

Valley Fever

Valley fever (coccidioidomycosis) is an illness caused by the inhalation of soil dwelling *Coccidioides* fungus spores, which live in the top 2 to 12 inches of soil in many parts of California, most prevalently in the Central Valley and in desert/dry areas (CDPH 2013). When soil containing this fungus is disturbed by activities such as digging or vehicular driving, or by the wind, the fungal spores become airborne and can be inhaled. Valley fever is not transmitted directly from person to person.

Valley fever can be serious and even fatal. In California more than 1,000 people are hospitalized every year and around 80 die from valley fever (CDPH 2021a). Many people who are exposed to the *Coccidioides* fungus spores never have symptoms, while others may have cold or flu-like symptoms that usually go away on their own after several weeks to months. Numerous mild cases of valley fever likely go undiagnosed. Valley fever usually infects the lungs and can cause flu-like symptoms or pneumonia. Some people with valley fever may develop severe disease, which may require hospitalization. In rare cases, the infection can spread beyond the lungs to other parts of the body (this is called disseminated valley fever) or be fatal (CDPH 2021b).

Valley fever is considered endemic in California, with cases in California increasing from less than 1,000 cases in 2000 to more than 9,000 cases in 2019 (CDPH 2020, 2021a). According to the California Department of Public Health, the number of reported incidences of valley fever in California in 2019 was the highest annual incidence reported in California since coccidioidomycosis became individually reportable in 1995. There were 9,004 cases reported in 2019, with an incidence rate of 22.5 cases per 100,000 population. This is a 159% increase of incidence of coccidioidomycosis from 2013 (3,327, or 8.7 per 100,000) (CDPH 2020). Valley Fever is considered highly endemic in counties where incidence rates are greater than 20 per 100,000 population. The number of incidences has also significantly increased in Riverside County, from 34 cases and an incidence rate of 1.5 per 100,000 in 2013 to 255 cases and an incidence rate of 10.4 per 100,000 in 2019 (CDPH 2020).

Several notable incidences of construction workers contracting valley fever have occurred during construction of solar farms in San Luis Obispo and Monterey Counties. Between October 2011 and April 2014, 44 cases of valley fever were identified among the 3,572 employees at two solar farm construction

sites in San Luis Obispo County (an incidence rate of 1.2 cases per 100 workers). Although most workers indicated they received valley fever safety training, their descriptions of the training varied widely (Wilken et al. 2015). Nine confirmed cases of Valley Fever were identified from 2,410 construction workers who worked on a solar farm project in southeastern Monterey County in 2016. This number of cases corresponded to an annualized rate of valley fever among workers of 1,095 per 100,000 population, whereas the 2016 rate for the entire County was 17.5 per 100,000 population in July 2017. At the Monterey solar site, the workers reported frequent high dust levels that were unable to be controlled by the water trucks, infrequent use of respirators or dust masks, and inadequate valley fever symptom and prevention training.

In both cases, the California Department of Public Health conducted investigations and provided similar recommendations that included improved worksite dust-control measures; using earth-moving equipment and trucks with high-efficiency particulate air filtered enclosed cabs to protect the operator; implementing and enforcing criteria for suspending work on the basis of wind and dust conditions; providing all outdoor workers access to National Institute for Occupational Safety and Health–approved respiratory protection when conducting or in close proximity to soil-disturbing work, for exposure to excessive wind-blown dust; providing clean coveralls daily to employees; encouraging workers to remove coveralls and work shoes before entering vehicles to leave the worksite; developing effective valley fever training for all employees that includes ways to reduce exposure, how to recognize symptoms, and where to seek care; and improving compliance by employers and their designated health care providers with reporting cases to local health jurisdictions, workers’ compensation carriers, and the California Occupational Safety and Health Administration.

Environmental Contamination

Nearby land uses include four existing/under construction solar facilities, including the Desert Sunlight Solar Farm, Desert Harvest Solar Project, Palen Solar Project, and Athos Solar Project as well as the Chuckwalla Valley Raceway and associated private airport (Desert Center Airport). Although several solar facilities have been proposed or approved adjacent to the Project sites, no commercial or other industrial uses are near the Project sites. A Phase I Environmental Site Assessment was completed by Terracon in May 2020 for the Projects (refer to Appendix G of this EIR). The Phase I site reconnaissance by Terracon identified the following features on the Project sites and adjoining parcels.

- A stormwater diversion mound, PVC irrigation piping with an air release valve, approximately 30 piles of crop trimmings ranging in size up to 250 square feet, two piles of PVC irrigation piping, and a 30- by 15-foot pile of irrigation hoses were observed along the western boundary of the Arica Project site.
- Two large spools containing transmission cables were observed along the service road located in the southeastern portion of the Arica Project site.
- An approximately 120-acre former borrow pit was observed near the southwest portion of the Victory Pass Project site, adjacent to Interstate 10. This borrow pit was not currently not active and water was not observed in the pit. Aerial photographs and information from topographic maps suggest the borrow pit was likely used to provide fill dirt for the development of Interstate 10.
- A non-operational irrigation water well with no associated equipment was observed on the former agricultural land adjacent to the northwest boundary of the Arica Project site.
- Palm tree groves with an associated irrigation pond and water wells were observed on the adjacent properties to the east of the Project sites. One irrigation water well was observed near the southeastern boundary of the Arica Project site. An apparent diesel motor/pump on secondary containment, with

minimal staining, and a secondary containment area likely used to store a former aboveground storage tank adjacent to the motor/pump, were also observed. The second irrigation water well in this area is located near the southeast boundary of the Arica Project site and the northeast boundary of the Victory Pass Project site. A 55-gallon drum of Valvoline Premium Motor Oil on secondary containment, with minimal staining, was observed adjacent to the irrigation well.

- A newly developed palm tree groove was observed adjacent to the southeastern corner of the Victory Pass Project site.

These features were determined by Terracon to not be recognized environmental conditions (RECs). The Phase I report did not identify any RECs, Historical RECs, or Controlled RECs, and indicated that since 1944 there are and have been no known hazardous materials uses at the sites or known environmental contamination.

Asbestos. Naturally occurring hazardous materials include asbestos, which is one of several minerals that form very thin mineral fibers and fiber bundles, such as chrysotile, tremolite, and actinolite. Asbestos is considered a hazardous material because when inhaled, the fibrous mineral strands embed in the lungs and have been known to cause development of lung cancer or mesothelioma. Naturally occurring asbestos minerals have not been identified near the proposed Project sites (USGS and CGS 2011).

Wildland Fires

The Project sites are located entirely in areas designated as Federal Responsibility Areas, with some adjacent Local Responsibility Areas, according to the CAL FIRE Fire Hazard Severity Zones (FHSZ) Map and County of Riverside General Plan Safety Element (CAL FIRE 2021; County of Riverside 2019). Based on these maps, the Project sites would be in a Moderate Fire Hazard Severity Zone. According to the Wildfire Susceptibility Map, Figure S-11 in the Riverside County General Plan Safety Element, Very High and High Fire Hazard Severity Zones in Local, State, and Federal Responsibility Areas are concentrated in the western portions of Riverside County. Because the Projects are not located in a State Responsibility Area, CAL FIRE would not be responsible for fire management or suppression activities in this area. Agencies that are likely to provide wildfire protection to the Projects would be Riverside County Fire Department and the BLM Fire and Aviation Program. The potential for wildfire on the Project sites is limited due to sparse vegetation. The Project sites are not located adjacent to developed areas. (Refer to Section 3.19, Wildfire, for a more detailed discussion regarding wildfire hazards.)

Schools

There are no schools or learning centers located within a 0.25-mile radius of the Project sites. As discussed in Section 3.14, Public Services, the closest school to the Project sites is the Eagle Mountain School, located approximately 13 miles northwest of the sites.

Airports and Airstrips

The private Desert Center Airport is located approximately 2.1 and 3.0 miles northwest of the Arica and Victory Pass Project sites, respectively. The private airport is part of the Chuckwalla Valley Raceway and is available for daily use for airplane, helicopter, and skydiving operations. A private airstrip, Julian Hinds Pump Plant Airstrip, is located about 19 miles west of the Project sites.

Electromagnetic Fields

Electric voltage and electric current from transmission lines create electromagnetic fields (EMF). Possible health effects associated with exposure to EMF have been the subject of scientific investigation since the

1970s, and there continues to be public concern about the health effects of EMF exposure. However, EMF is not addressed here as an environmental impact under the California Environmental Quality Act (CEQA). EMF has repeatedly been recognized as not an environmental impact to be analyzed in the context of CEQA because (1) there is no agreement among scientists that EMF creates a potential health risk and (2) there are no defined or adopted CEQA standards for defining health risks from EMF.

3.9.3 Impact Analysis

The Projects' potential impacts associated with hazards and hazardous materials are evaluated in this section. This section includes a description of the methodology of the impact analysis and identifies criteria for determining the significance of the Projects' impacts and cumulative impacts and presents any necessary APMs to avoid or reduce potentially significant impacts.

Methodology

The hazardous materials analyzed include those potentially existing on the Project sites and those that would be used as part of construction, operations and maintenance (O&M), and future decommissioning. Potential existing hazards were assessed based on review of state hazard databases and maps for the parcels comprising the area.

Some hazardous materials would be used on a short-term basis during construction and future decommissioning, whereas other hazardous materials would be stored on site for use during O&M. Therefore, this analysis was conducted by evaluating the proposed chemical types, quantities, transport, storage, use, and disposal.

Criteria for Determining Significance

Consistent with Appendix G, Environmental Checklist of the CEQA Guidelines, the proposed Projects would have a significant impact related to hazards and hazardous materials if they would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (see Impact HAZ-1).
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (see Impact HAZ-2).
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment (see Impact HAZ-3).
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (see Impact HAZ-4).
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires (see Impact HAZ-5).

The following CEQA significance criteria from Appendix G were not included in the analysis and are not discussed further beyond the following summaries:

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

No schools are located within 0.25 miles of the Project sites. The proposed Projects would not use acutely hazardous materials and the limited amounts of hazardous materials (such as fuels and greases)

used during construction and O&M would be used, stored, transported, and disposed of following all applicable laws and regulations. Therefore, the Projects would not result in hazardous materials impacts to existing or proposed schools.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.

The Project sites are not located within 2 miles of a public or public use airport. The closest airport to the Project sites is the Desert Center Airport, located approximately 2.1 miles northwest of the Project sites at its closest point. Additionally, the Desert Center Airport is a private airport and is not part of an airport land use plan. Therefore, there would be no safety hazard or excessive noise for people residing or working in the area related to proximity to an airport (refer to Section 3.12, Noise, for further discussions of noise impacts).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts from hazards and hazardous materials, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

- APM AIR-1** **Fugitive Dust Control Plan.** *Refer to full text in Section 3.3, Air Quality.*
- APM AIR-3** **Construction Activity Management Plan.** *Refer to full text in Section 3.3, Air Quality.*
- APM BIO-12** *Refer to full text in Section 3.4, Biological Resources.*
- APM BIO-21** *Refer to full text in Section 3.4, Biological Resources.*
- APM USS-1** **Waste Recycling Plan.** *Refer to full text in Section 3.18, Utilities and Service Systems.*
- APM FIRE-1** **County Fire Department Technical Policy (T) 15-002 Compliance.** *Refer to full text in Section 3.19, Wildfire.*
- APM FIRE-2** **Water Tank Installation - Riverside County Fire Department Compliance.** *Refer to full text in Section 3.19, Wildfire.*
- APM FIRE-3** **Maintenance Truck Equipment.** *Refer to full text in Section 3.19, Wildfire.*
- APM FIRE-4** **Occupational Safety and Health Administration and California Code of Regulations Compliance.** *Refer to full text in Section 3.19, Wildfire.*
- APM FIRE-5** **Fire Safety Plan.** *Refer to full text in Section 3.19, Wildfire.*
- APM HAZ-1** **Hazardous Materials Management Plan.** A Hazardous Materials Management Plan will be prepared, and all construction crews, contractors, and operations crews will be briefed on the plan prior to starting work on the Project. All fuels, fluids, components with hazardous materials/wastes will be handled in accordance with applicable regulations. All such materials will be kept in segregated storage with secondary containment as necessary. Projects will maintain all records of storage and inspection and will provide for proper off-site disposal.
- APM HAZ-2** **Environmental Inspection and Compliance Monitoring Program and Plan.** An Environmental Inspection and Compliance Monitoring program and plan for construction and operation will be developed and implemented to ensure that hazardous materials

are properly stored, and potentially hazardous waste is properly disposed. A Project Environmental Manager will be designated to oversee the program and plan. All contractors and employees will be educated about hazardous materials storage, waste sorting, appropriate recycling storage areas, and reduction of landfill waste.

APM HAZ-3 UXO Identification, Training, and Reporting Plan. Where ground disturbance work is involved, contractor(s) shall be Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response trained, in accordance with Title 29 Code of Federal Regulations 1910.120, and hold a current certification. The Applicants shall prepare an Unexploded Ordnance (UXO) Identification, Training, and Reporting Plan to properly train all site workers in the recognition, avoidance, and reporting of military debris and ordnance that will meet all applicable requirements. The Applicants shall submit the plan to the California Department of Fish and Wildlife and U.S. Bureau of Land Management for review 60 days prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of the training program outline and materials and the qualifications of the trainers
- Notification and avoidance requirements when potential UXO or munitions debris are noted by site workers
- Identification of available trained experts and appropriate agencies that will respond to notification of discovery of any munitions debris or ordnance (unexploded or not)
- Work plan to recover and remove discovered ordnance and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near-surface, or buried ordnance in all proposed land disturbance areas

APM HAZ-4 Health, Safety, and Noise Plan. A Health, Safety, and Noise Plan shall be prepared, and all construction crews and contractors shall be briefed on the plan prior to starting work on the Project. The plan shall address health and safety issues associated with normal and unusual (emergency) conditions and shall include a respiratory protection program. The plan shall include, but not be limited to, the following information and guidance:

- Environmental health and safety protocol (including, but not limited to, hazards of valley fever, including the symptoms, proper work procedures, when and how to use personal protective equipment, and informing supervisors of suspected symptoms of work-related valley fever)
- An emergency response plan
- Worker Education and Awareness Program training, which would include environmental, cultural, health, and safety training
- Noise/ear protection protocol
- First aid training
- Fire protection and extinguisher maintenance, guidance, and documentation

Disposal of hazardous materials and waste guidance in accordance with local, state, and federal regulations.

Environmental Impacts

Impact HAZ-1. Would the projects create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

LESS THAN SIGNIFICANT. The use, storage, transport, and disposal of hazardous materials used in construction of the facilities will be carried out in accordance with federal, state, and County regulations. No extremely hazardous substances (i.e., those governed pursuant to 40 CFR Part 335) are anticipated to be produced, used, stored, transported, or disposed of as a result of the Projects' construction. Material Safety Data Sheets for all applicable materials present on site would be made readily available to on-site personnel.

Construction of the Projects would involve the use of small amounts of hazardous materials, such as fuels and greases, to fuel and service construction equipment. Such substances may be stored in temporary aboveground storage tanks or sheds located on the sites. The fuels stored on site would be in a locked container within a fenced and secure temporary staging area. The small quantities of chemicals to be stored at the sites during construction would be stored in appropriate containers in an enclosed and secured location, such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable chemical storage cabinets may be moved to different locations around the sites as construction activity locations shift. If quantities exceed regulatory thresholds, the Projects' contractor would ensure that storage is undertaken in compliance with the SPCC Rule and an HMBP, which would be developed prior to construction.

The use, storage, transport, and disposal of hazardous materials used in construction of each facility would be completed in accordance with federal, state, and County regulations. In addition, APM HAZ-1 specifies that all hazardous materials would be kept in segregated storage with secondary containment, as necessary, and that all records of hazardous materials storage and inspection would be maintained and provided for proper off-site disposal. APM BIO-21 specifies that all uses of hazardous materials should observe label and other restrictions mandated by EPA, California Department of Food and Agriculture, and other state and federal legislation. Construction of the Projects is not anticipated to produce, use, store, transport, or dispose of extremely hazardous substances (i.e., those governed pursuant to 40 CFR 335). Material Safety Data Sheets for all applicable materials present on site would be made readily available to on-site personnel.

The Projects may use a variety of PV technologies including, but not limited to, cadmium telluride panels, crystalline silicon panels, or copper indium gallium diselenide panels. None of the panels being considered contain materials that are classified as hazardous wastes because the chemicals within PV modules are highly stable and would not be available for release to and interaction with the environment. If a panel is broken during construction or operation, the pieces would be cleaned up completely and returned to the manufacturer for recycling. During future decommissioning, the solar panels would be removed, placed in secure transport containers for storage, and transported to another facility for reuse, material recycling, or disposal in accordance with regulations in effect at the time of closure.

Throughout construction, waste materials would be sorted on site and transported to appropriate waste management facilities. Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at municipal county landfills. Hazardous waste and electronic waste would not be placed in a landfill but would be transported to a hazardous waste handling facility (e.g., electronic-waste recycling). All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste (APM USS-1 requires preparation of a Waste Recycling Plan). In accordance with APM HAZ-2, the Applicants would develop an Environmental Inspection and Compliance Monitoring program and plan for construction and operation of the Projects and designate a

Project Environmental Manager to oversee the plan. Incorporation of APM HAZ-1, APM HAZ-2, APM USS-1, and APM BIO-21 into the Projects and compliance with applicable local, state, and federal regulations would minimize the risk of damage or injury from use, disposal, and transport of hazardous materials to less-than-significant levels.

During construction, herbicides may be applied to control weed growth. Use of herbicides would occur in accordance with all recommended application procedures as identified on product labels. If herbicides or pesticides are required, they would be BLM-approved herbicides to control weed populations when manual control methods are not successful in managing the spread of invasive plants. The process for treatments would be characterized in a Pesticide Use Proposal approved by BLM. Herbicides would likely be necessary to control the spread of invasive weeds following construction disturbance, as part of an integrated pest management strategy. Weed management also would be performed in accordance with an approved Weed Management Plan. The plan would comply with existing BLM plans and permits, including the Vegetation Treatments Using Herbicides and Vegetation Treatment Final EIS (BLM 2007). Projects would not contain a residential or commercial component that would potentially expose people to pesticides or herbicides, and pesticide and herbicide use would follow the BLM-approved Pesticide Use Proposal. As a result, application of herbicides during construction and operation would have a less-than-significant impact.

The Project sites are located within the historic World War II DTC/CAMA training camp/maneuver area where military exercises with tanks and troops were conducted, including practice artillery fire, weapons training, and land mine placement and removal. During the biological survey of the sites in October 2019, a potential UXO item was discovered in the western portion of the Arica Project site. During construction, maintenance, and future closure and decommissioning activities associated with the proposed Projects, land disturbance activities could unearth unexploded World War II-era munitions, including conventional and unconventional land mines, personnel mines, shells, mortars, and bullets, the detonation of which would pose a safety risk to the workers. For example, surface and shallow sub-surface UXO could be disturbed by vehicles, walkers, and excavation using shovels or similar hand tools, and deeper sub-surface UXO could be disturbed by the earth movement and excavation processes that would be required for development of the Projects. Incorporation of APM HAZ-3 (UXO Training and Reporting Plan) into the Projects would formalize UXO training, investigation, removal, and disposal to ensure that potential UXO impacts would be less than significant.

During O&M of the proposed Projects, small quantities of a variety of hazardous materials would be transported to the site and used and stored on site for miscellaneous, general maintenance activities. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals are not expected to be used on site; chemicals would be stored in smaller returnable delivery containers. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Small quantities of diesel fuel and gasoline may also be used and stored at the facility for use in off-road service vehicles and generators. Transformers located on site would be equipped with coolant that is biodegradable and contains no polychlorinated biphenyls or other toxic compounds. BMPs would be employed in the use and storage of all hazardous materials within the Project sites, including the use of containment systems in appropriate locations. Herbicides may be used for weed control. The required SPCC Plan and HMBP and associated emergency response plan and inventory would be prepared and implemented during operation. Preparation and compliance with the required SPCC Plan and HMBP, and compliance with applicable state and federal regulations, would minimize the risk of damage or injury from use, disposal, and transport of hazardous materials to less-than-significant levels during the Projects' O&M.

Decommissioning impacts are anticipated to be similar to those determined for construction, as described above. The actual impacts would depend on the proposed future decommissioning action and final use of the sites.

In summary, as a result of conformance with applicable regulations and incorporation of applicable APMs, including APM HAZ-3, the proposed Projects would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HAZ-2. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

LESS THAN SIGNIFICANT. As noted above, construction and future decommissioning of the Projects would involve the use of small amounts of hazardous materials, such as fuels and greases to fuel and service construction equipment. Improper handling and storage of these hazardous materials could result in accidental release if not managed appropriately. The small quantities of chemicals to be stored at the Project sites during construction would be stored in appropriate containers, in an enclosed and secured location, such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. APM HAZ-1 specifies that all hazardous materials will be kept in segregated storage with secondary containment as necessary. The portable chemical storage cabinets may be moved to different locations around the site as construction activity locations shift. The chemical storage area would not be located immediately adjacent to any drainage. Additionally, APM BIO-12 requires that no vehicles or equipment refueling occur within 100 feet of an ephemeral drainage or wetland.

The required Stormwater Pollution Prevention Plan must include a list of potential pollutants (i.e., hazardous materials, fugitive dust, sediment, concrete waste), identify fueling areas, and include BMPs to prevent and limit these pollutants from reaching stormwater runoff. Spill response plans would be developed prior to each Project construction, operation, and future decommissioning, and personnel would be made aware of the procedures for spill cleanup and the procedures to report a spill. Spill cleanup materials and equipment appropriate to the type and quantity of chemicals and petroleum products expected would be located on site and personnel would be made aware of their location. The Projects would incorporate APM HAZ-1, APM HAZ-2, APM BIO-12, the Project Stormwater Pollution Prevention Plan, and spill response plans, and would comply with all applicable local, state, and federal regulations to reduce the potential that spills or leaks of hazardous materials would occur. In addition, if quantities exceed regulatory thresholds, a SPCC Plan and an HMBP, which will include additional hazardous material requirements, would be developed for the Projects. The incorporation of APM HAZ-4 (Health, Safety, and Noise Plan) into the Projects would further ensure that any impact from accidental releases of hazardous materials into the environment would be less than significant by providing further detail regarding worker training, ensuring that workers would be trained on site-specific spill prevention, emergency response, and safe material handling.

Valley fever (coccidioidomycosis) is considered endemic in California and *Coccidioides* fungus are present in the arid desert regions of California, including Riverside County. Although the numbers of reported valley fever cases in Riverside County is a fraction of that reported statewide in 2019 (9,004 cases reported statewide versus 255 cases in Riverside County), the number of cases in Riverside County has increased considerably since 2013 (34 cases). Solar farm construction workers have a history of contracting valley fever at a greater rate than average (see the discussion of valley fever in Section 3.9.2) due to inadequate

dust control, respirator or dust mask use, training, and enforcement of dust control and valley fever reduction measures. Although valley fever is not considered highly endemic (greater than 20 cases per 100,000 population) in Riverside County, there has been a steady and marked increase in the number of cases reported of the last several years. Therefore, there is a potential that construction activities such as grading, excavation, and construction vehicle traffic could loosen and stir up soil containing *Coccidioides* fungus spores, indirectly exposing workers and the public to contracting valley fever. Ways to reduce the risk of valley fever include avoiding exposure to dusty air or dust storms, preventing dirt or dust from becoming airborne by wetting or use of palliatives, and, if working at a dusty site, use of an N95 or equivalent mask or respirator. Construction activities for the Projects would be subject to stringent dust control requirements (including South Coast Air Quality Management District Rules 402 and 403) and APM AIR-1. Incorporation of APM AIR-1 (Fugitive Dust Control Plan) and APM HAZ-4 (Health, Safety, and Noise Plan) into the Projects would reduce the potential for workers and the public to contract valley fever due to exposure to substantial concentrations of dust, which may contain *Coccidioides* fungus spores.

Each Project may include operation of an up to 200-megawatt BESS that would consist of batteries housed in storage containers. Potential hazards related to BESS could include fire, gaseous build up, explosion, and hazardous materials. The BESS would consist of batteries housed in storage containers of approximately 8 feet wide by 4 feet long by 8.5 feet high, with approximately 6.5 feet of clearance on all sides. The battery storage component would have a footprint of approximately 5 acres. The major components of the battery system include the inverter, cells, modules, enclosure, and safety system. The inverter converts the direct current electricity produced by the solar system into alternating current electricity that can safely be transferred into the electrical grid. The inverter contains no liquids or chemicals. The battery cell and modules for the Projects would use lithium ion technology, which would be housed in an enclosure that contains integrated fire suppression technology and controls.

The BESS would be designed, constructed, and operated in accordance with applicable industry best practices and regulatory requirements, including, but not limited to, National Fire Protection Association 855 (Standard for the Installation of Stationary Energy Storage Systems) and Section 1206 of the CFC and, if applicable, certified to UL 9540. The configuration of the safety system would be determined based on site-specific environmental factors and associated fire response strategy and would contain a safety system that would be triggered automatically when the system senses imminent fire danger. A fire safety system would be provided within each on-site battery enclosure. Components of the system could include a fire panel, aspirating hazard detection system, smoke/heat detector, strobes/sirens, and suppression tanks. If applicable, the BESS would be tested to UL 9540A, which would confirm that the system will self-extinguish without active fire-fighting measures. The results of this test are used to inform facility safety system design and emergency response plans, which would be shared with first responders. If applicable, the system would use a chemical agent suppressant-based system to detect and suppress fires. If smoke or heat were detected, or if the system were manually triggered, an alarm would sound, horn strobes would flash, and the system would release suppressant, typically FM-200, NOVEC 1230, or similar from pressurized storage cylinders. However, final safety design would follow applicable standards and would be specific to the battery technology chosen.

Implementation and compliance with these design and safety regulations would reduce the impact to less than significant. In summary, as a result of conformance with applicable regulations, implementation of applicable BMPs, and incorporation of APM AIR-1 and APM HAZ-4, the proposed Projects would not directly or indirectly create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HAZ-3. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

LESS THAN SIGNIFICANT. Some ground-disturbing activities would occur during construction and future decommissioning of the proposed solar facilities, including compaction, micrograding, or disc-and-roll grading. Some of the parcels where facilities and arrays would be located would require light grubbing for leveling and trenching. In addition, access roadbeds would also be grubbed, graded, and compacted and underground cables to connect panel strings would be installed using ordinary trenching techniques. Ground disturbance for the 230-kilovolt gen-tie line would include grading for temporary and permanent access roads, for wire setup sites, and excavation for tower foundations.

Components of the proposed Projects where ground disturbance would occur would be susceptible to encountering environmental contamination, if located near commercial or industrial sites with known contamination or adjacent to sites that store and use large quantities of hazardous materials; on rural properties with unknown number and status of underground storage tanks; or in agricultural areas that may have used herbicides, pesticides, rodenticides, or fumigants. No known hazardous materials sites or known groundwater/soil-contaminated sites were identified in the vicinity of the Project sites. However, the Projects are located within the former World War II DTC/CAMA, where maneuvers included weapons training, firing exercises, and laying out and removing landmine fields. During the biological surveys conducted for the proposed Projects in October 2019, a potential UXO item was noted in the western part of the Arica Solar Project site. Therefore, there is a potential to encounter UXO or munitions debris during grading, construction activities, and future decommissioning. Incorporation of APM HAZ-3 (UXO Training and Reporting Plan) would formalize UXO training, investigation, removal, and disposal, thus minimizing the potential UXO hazards. As a result, the proposed Projects would not create a significant hazard to the public or the environment. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HAZ-4. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

LESS THAN SIGNIFICANT. The proposed Project sites are in a remote area with very few residences. Access to the solar facility sites would be provided from Highway 177, via an improved existing BLM open route to the solar facility access gates. The routes would be maintained throughout construction, and appropriate detours would be provided in the event of potential road closures. Access would be via improved existing routes rather than new route construction.

Construction and future decommissioning of the solar facilities are not expected to require any temporary lane closures that could restrict the movements of emergency vehicles or impair an emergency evacuation. The sites would have controlled access points for ingress and egress into the solar farms only. These access points would allow for emergency vehicle access into and through the sites. Once constructed, maintenance activities would occur as needed at the solar facilities but are not expected to require any temporary travel lane closures that could restrict emergency vehicle movements. Refer to Section 3.16, Transportation, for detailed discussions regarding access in and around the area.

Thus, the proposed Projects would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HAZ-5. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

LESS THAN SIGNIFICANT. The Project sites are not within a High or Very High Fire Hazard Severity Zone, as determined by CAL FIRE. Rather, the proposed Projects are in a Moderate Fire Hazard Severity Zone, due to sparse vegetation. The sites consist of undeveloped open space, with minimal native or ruderal vegetation. Each solar facility would be designed and constructed to industry safety design standards (i.e., Institute of Electrical and Electronic Engineers, National Electric Code) and Riverside County Building and Safety Department requirements, to reduce the risk of electrical fires at the site. Solar arrays are fire resistant, as they are constructed largely out of steel, glass, aluminum, or components housed within steel enclosures. Substation equipment and inverters would be sited on concrete foundations and inverters would be housed in steel and concrete equipment enclosures, minimizing the risk of electrical sparks that could ignite during equipment failure. In the event of a fire or accident, the complete facility alternating current power system could be shut down, and each power block could be isolated and shut down individually. The inverters automatically shut down when they no longer sense voltage from the grid.

The BESS would be designed and constructed per all applicable design, safety, and fires standards for the installation of energy storage systems, including, but not limited to, National Fire Protection Association 855 (Standard for the Installation of Stationary Energy Storage Systems) and Section 1206 of the CFC. These standards would require installation of fire suppression systems in the BESS. The proposed shared gen-tie line would be co-located with other existing and proposed high-voltage transmission lines and would not introduce a new obstruction that would adversely impact fire suppression efforts. Overall, the construction, O&M, and future decommissioning of the gen-tie line would result in a minimal increased risk of wildfires in the area.

The Project sites are entirely in a Federal Responsibility Area, with some adjacent Local Responsibility Areas. Because the Projects are not located in a State Responsibility Area, CAL FIRE would not be responsible for fire management or suppression activities in this area. Agencies that are likely to provide wildfire protection to the Projects would be Riverside County Fire Department and the BLM Fire and Aviation Program. Compliance with all applicable wildland fire management plans and policies established by CAL FIRE and the Riverside County Fire Department, as well as creation of a Projects-specific Fire Management and Prevention Plan, as required under APM FIRE-5, would further reduce wildfire risks during construction, operation, and future decommissioning.

During operations, one or more aboveground water storage tanks would be installed adjacent to the O&M facility. The tanks would be sized to meet BLM and Riverside County Fire Department requirements to supply sufficient fire suppression water during operations. Additional fire protection measures would include sprinkler systems in the O&M building; an FM200 fire suppression system, or equivalent, in the facility control room at the O&M building; and portable carbon dioxide fire extinguishers mounted at the power conversion system units. The Projects would be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. Effective maintenance and monitoring programs are vital to productivity as well as to fire protection, environmental protection, and worker protection. The Projects would have a Project Fire Plan in place for construction, O&M, and future decommissioning. This plan would comply with applicable BLM and County regulations and would be coordinated with the Riverside County Fire Department. Additionally, APM FIRE-5 (refer to Section 3.19) specifies information and training required by the Fire Management and Prevention Plan.

Overall, the construction, O&M, and future decommissioning of the proposed Projects would result in a minimal increased risk of wildfires in the area. The proposed Projects would comply with all applicable

wildland fire management plans and policies established by CAL FIRE and the Riverside County Fire Department, as specified in APM FIRE-5. Additionally, APM FIRE-1 requires circulation and access for fire protection purposes and APM FIRE-2 and APM FIRE-3 require an appropriate volume of water for fire use and that all maintenance trucks be equipped with a small water tank and pump. Furthermore, APM FIRE-4 requires that welding and all construction hot work abide by the appropriate regulations. These APMs would reduce the potential for each Project to trigger a damaging wildland fire. Accordingly, the proposed Projects are not expected to expose people or structures, directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts. Refer to Section 3.19 for detailed discussions regarding wildfires and wildland fires in the Projects' area.

Cumulative Impacts

The geographic scope considered for cumulative impacts from health, safety, and hazardous materials/fire and fuels management is the area extending 1 mile from the boundary of the Project sites. One mile is the American Society of Testing and Materials standard search distance for hazardous materials. Tables 3.1-1 and 3.1-2 in Section 3.1.2 Cumulative Impact Scenario list existing and reasonably foreseeable projects in the region. The West-wide Section 368 Energy Corridors, SCE Red Bluff Substation, Devers–Palo Verde 1 Transmission Line, Palen Solar Project, Athos Renewable Energy Project, ~~and Oberon Renewable Energy Project, and Easley Solar & Green Hydrogen Project~~ would all be within 1 mile of the boundary of the Project sites and could therefore combine with the proposed Projects and result in a cumulatively considerable impact.

The transport, use, and disposal of hazardous materials during cumulative project construction would be limited to the areas where concurrent construction is occurring or where concurrent roads are being used for construction traffic. Operation and maintenance of the proposed Projects, including the proposed substations, shared switchyard, and O&M building, would involve periodic and routine transport, use, and disposal of minor amounts of hazardous materials, primarily petroleum products (fuels and lubricating oils) and motor vehicle fuel. Incorporation of APM HAZ-1 (Hazardous Materials Management Plan), APM HAZ-2 (Environmental Inspection and Compliance Monitoring Program and Plan), APM HAZ-4 (Health, Safety, and Noise Plan), and agency regulations that address the handling of hazardous materials would ensure that the Projects would not create a significant hazard to the public or the environment related to the handling or accidental release of hazardous materials. Past, present, and reasonably foreseeable future projects would also be subject to existing agency regulations that address the handling and accidental release of hazardous materials, and would include project-specific Worker Education and Awareness Programs for construction and O&M. Therefore, existing regulations would ensure that the combined effects related to hazards and hazardous materials from the cumulative projects within the geographic scope of analysis would not be cumulatively considerable. Accordingly, the Projects' incremental contribution to the cumulative handling of hazardous materials in combination with other past, present, and probable future projects would not be cumulatively considerable or significant.

Previously documented and undocumented hazardous materials sites could be encountered during cumulative project grading and construction. No such hazardous materials sites are known at the Project sites. Any contaminated soil and/or groundwater at the cumulative project sites would be assessed and remediated, as applicable, in compliance with federal, state, and local regulations. Since the proposed Project sites are located within an area with a history of World War II military use, there is a potential for encountering UXO and munitions debris during grading and construction. In compliance with APM HAZ-3, the proposed Projects would implement a UXO Identification, Training and Reporting Plan, which would

address potential encounter of UXO and munitions debris. In addition, in compliance with APM HAZ-4, the Projects would implement a Health, Safety, and Noise Plan, which would address potential UXO hazards on site. The cumulative projects would similarly be located on former military land with a history of UXO and munitions debris, so may have a similar potential for encountering UXO and munitions debris. As a result, a UXO Identification, Training and Reporting Plan; Health, Safety, and Noise Plan; and/or similar measures would also be required to minimize impacts related to UXO and munitions debris. Potential UXO impacts would generally be project-specific and would have no overlap with other cumulative projects. However, because of the history of UXO in this area, the cumulative projects collectively could reduce the overall impacts due to UXO hazards following construction, as UXO hazards would likely be cleared from these areas, resulting in beneficial cumulative impacts. Accordingly, implementation of the proposed Projects, in conjunction with development of other past, present, and probable future projects listed in Tables 3.1-1 and 3.1-2, is not anticipated to present a cumulatively considerable or significant impact with respect to public health and safety hazards.

Construction of the proposed Projects could result in mobilization of *Coccidioides* fungus spores in airborne dust, incrementally contributing to cumulative fungus spores in airborne dust in the area in combination with other past, present, and probable future projects' ground-disturbing activities. If inhaled, such mobilization could expose workers and the public to contracting valley fever. Incorporation of stringent dust control regulations, APM AIR-1 (Fugitive Dust Control Plan) and APM AIR-3 (Construction Activity Management Plan), and incorporation of APM HAZ-4 (Health, Safety, and Noise Plan) into the Projects would minimize the risk of workers or the public contracting valley fever. Past, present, and reasonably foreseeable future projects would also be subject to existing agency regulations that address fugitive dust and would likely have similar mitigation to prepare dust control and air quality plans. Therefore, existing regulations and mitigation measures would minimize the combined effects related to contracting valley fever from the cumulative projects. Accordingly, the Projects' incremental contribution to the cumulative valley fever risk in combination with other past, present, and probable future projects would not be cumulatively considerable or significant.

The proposed Projects and cumulative solar projects would all involve the storage, use, disposal, and transportation of hazardous materials to varying degrees during construction, operation, and future decommissioning. Impacts from these activities would not result in a cumulatively considerable impact because the storage, use, disposal, and transportation of hazardous materials are extensively regulated by various federal, state, and local laws, regulations, and policies. It is reasonable to assume that the proposed Projects and other cumulative projects would implement and comply with these existing hazardous materials laws, regulations, and policies, thus minimizing the potential for cumulative impacts. Accordingly, the Projects' incremental contribution to the cumulative use, transport, and disposal of hazardous materials in combination with other past, present, and probable future projects would not be cumulatively considerable or significant.

Construction, operation, and future decommissioning of the Projects could introduce a risk of wildland fire through accidental ignition of the sparse native vegetation. The proposed Projects would be required to comply with applicable federal, state, and County requirements relating to fire safety and fire hazards and APM FIRE-1 through APM FIRE-5, thus minimizing the risk of wildland fire occurring. Similarly, cumulative projects would be required to comply with fire safety and fire hazard guidelines and policies. Accordingly, the Projects' incremental contribution to the wildland fire risk in combination with other past, present, and probable future projects would not be cumulatively considerable or significant. In addition, the proposed Projects would not contribute to potential cumulatively considerable or significant impacts related to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan because no aspect of the Projects would

interfere with emergency response (e.g., construction is not expected to require any temporary lane closures that could restrict the movements of emergency vehicles). Accordingly, the Projects' impacts associated with potential interference of an emergency response plan or emergency evacuation plan, in combination with other past, present, and probable future projects, would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to hazards and hazardous materials.

3.9.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation was identified to further avoid or substantially lessen impacts to hazards and hazardous materials.

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3.10 Hydrology and Water Quality

This section evaluates the environmental impacts to hydrology and water quality that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on hydrology and water quality from both of the proposed Projects as the whole of the action. This section includes a description of the regulatory framework for hydrologic and water quality, presents an overview of the existing conditions of these resources, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and evaluates the Projects' potential impacts.

Issues raised during the scoping process involved water supply and groundwater. Groundwater concerns arose from the local reliance on groundwater and Colorado River water. There were concerns regarding the Projects' water use, the potential of lowering the water table, and the potential for impacting Colorado River water resources.

3.10.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Clean Water Act (33 USC Section 1251 et seq.). Formerly the Federal Water Pollution Control Act of 1972, the Clean Water Act (CWA) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA, enforced by the U.S. Environmental Protection Agency, requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water.

Section 402 of the CWA requires that direct and indirect discharges and stormwater discharges into waters of the United States be pursuant to a National Pollutant Discharge Elimination System (NPDES) permit for industrial or construction activities. NPDES permits contain industry-specific, technology-based limits and may include additional water quality-based limits and pollutant-monitoring requirements. An NPDES permit may include discharge limits based on federal or state water quality criteria or standards. NPDES permitting authority is delegated to, and administered by, the California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs).

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers to regulate the discharge of dredged or fill material to the waters of the United States and adjacent wetlands. Discharges to waters of the United States must be avoided where possible and minimized and mitigated where avoidance is not possible. Permits are issued by the U.S. Army Corps of Engineers.

Section 401 of the CWA requires that any activity that may result in a discharge into waters of the United States be certified by the RWQCB. This certification ensures that the proposed activity follow state and/or federal water quality standards.

National Flood Insurance Act/Flood Disaster Protection Act. The National Flood Insurance Act of 1968 made flood insurance available for the first time. The Flood Disaster Protection Act of 1973 made the purchase of flood insurance mandatory for the protection of property located in Special Flood Hazard Areas. These laws led to mapping of regulatory floodplains and to local management of floodplain areas according to federal guidelines, which include prohibiting or restricting development in flood hazard zones.

Colorado River Accounting Surface. Based on the Colorado River Compact of 1922, and the 1928 apportionment of lower Colorado River water by the U.S. Congress, groundwater in the river aquifer beneath the floodplain is considered Colorado River water, and water pumped from wells on the floodplain is presumed to be river water and is accounted for as Colorado River water (USGS 2009). The accounting-surface method was developed in the 1990s by the U.S. Geological Survey (USGS), in cooperation with the U.S. Bureau of Reclamation (USBR), to identify wells outside the floodplain of the lower Colorado River that yield water that will be replaced by water from the river. This method was needed to identify which wells require an entitlement for diversion of water from the Colorado River and need to be included in accounting for consumptive use of Colorado River water, as outlined in the Consolidated Decree of the U.S. Supreme Court in *Arizona v. California*.¹ The method is based on the concept of a river aquifer and an accounting surface within the river aquifer. Wells within the Chuckwalla Valley Groundwater Basin (CVGB) that draw water from below the accounting surface require an entitlement for the use of that water (USGS 2009). Within the Projects' area, the accounting surface is at elevation of 238 to 240 feet above mean sea level (USGS 2009). Extractions of water below that elevation are prohibited without an entitlement. Entitlements to extract and use the groundwater below the accounting surface are granted by USBR through its designated representative in California, the Colorado River Board of California. Entities in California are using California's full apportionment of Colorado River water, meaning that all water is already contracted, and no new water entitlements are available in California.

State Laws, Regulations, and Policies

California Streambed Alteration Agreement. Sections 1600–1616 of the California Fish and Game Code require that any entity that proposes an activity that will substantially divert or obstruct the natural flow of any river, stream or lake, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit material into any river, stream, or lake, must notify CDFW. If CDFW determines the proposed alteration will impact a jurisdictional river, stream, or lake, a Lake or Streambed Alteration Agreement will be prepared. The agreement applies to any stream, including ephemeral streams and desert washes.

California Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act of 1967, California Water Code Section 13000 et seq., requires SWRCB to adopt water quality criteria to protect state waters. Each RWQCB has developed a Water Quality Control Plan (Basin Plan) specifying water quality objectives, beneficial uses, numerical standards of pollution concentrations, and implementation procedures for waters of the state. Waters of the state are defined by the Porter-Cologne Water Quality Control Act as “any surface water or groundwater, including saline waters, within the boundaries of the State.” General objectives of the Basin Plans state that all waters (of the state) shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in, human, plant, animal, or aquatic life. The Basin Plans are intended to protect designated beneficial uses of waters, avoid altering the sediment discharge rate of surface waters, and avoid introducing toxic pollutants to the water resource. The Porter-Cologne Water Quality Control Act requires anyone proposing to discharge waste that could affect the quality of the waters of the state to report the waste discharge to the appropriate RWQCB.

¹ The treaties, compacts, decrees, statutes, regulations, contracts and other legal documents and agreements applicable to the allocation, appropriation, development, exportation, and management of the waters of the Colorado River Basin are often collectively referred to as the Law of the River. There is no single, universally agreed upon definition of the Law of the River but is useful as a shorthand reference to describe this longstanding and complex body of legal agreements governing the Colorado River.

SWRCB Storm Water Program Construction General Permit (Construction General Permit). The Construction General Permit, required by the federal CWA, regulates stormwater runoff from construction sites of 1 acre or more in size. The Construction General Permit is a statewide, standing permit. Qualifying construction activities must obtain coverage under the permit by filing a Notice of Intent with the RWQCB and by developing and complying with a Stormwater Pollution Prevention Plan (SWPPP) describing best management practices (BMPs) the discharger will use to protect stormwater runoff. The SWPPP must contain a visual monitoring program, a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the Section 303(d) list (described below) for sediment.

The Construction General Permit prohibits the discharge of pollutants other than stormwater and non-stormwater discharges authorized by the Construction General Permit or another NPDES permit and prohibits all discharges which contain a hazardous substance in excess of reportable quantities established in Title 40, Sections 117.3 and 302.4, of the Code of Federal Regulations (pursuant to Section 311 of the CWA), unless a separate NPDES permit has been issued to regulate those discharges. In addition, the Construction General Permit incorporates discharge prohibitions contained in Basin Plans. Discharges to Areas of Special Biological Significance are prohibited unless covered by an exception that the SWRCB has approved.

The CWA provides definitions for BMPs, which may include runoff control, soil stabilization, sediment control, proper stream crossing techniques, waste management, spill prevention and control, and a wide variety of other measures depending on the site and situation.

SWRCB Industrial Storm Water General Permit (Industrial General Permit). The Industrial General Permit regulates discharges to surface waters associated with industrial activities, and although rare for renewable energy projects, could be required for the Projects’ operations if stormwater discharges are anticipated. The Industrial General Permit requires the implementation of management measures that will achieve the performance standard of best available technology for toxic pollutants and non-conventional pollutants and best conventional pollutant control technology for conventional pollutants. The General Industrial Permit also requires the development of a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are identified and the means to manage the sources to reduce stormwater pollution are described.

BMPs may include, but not be limited to, spill and overflow protection, stormwater control, covering of fueling areas, proper clean-up methods, spill prevention, preventative maintenance on equipment, inspections, and training. Specific BMPs vary by situation and site. Guidance on the use of BMPs is available from SWRCB.

Water Rights. California water law is embodied in the California Water Code and the Water Commission Act of 1914. There are two basic kinds of rights to surface water: riparian and appropriative. As the Projects do not propose the use of surface waters, these rights are not relevant to the Projects. Percolating groundwater, under which category the CVGB falls, has no SWRCB permit requirement. The CVGB supports two types of water rights, overlying rights and groundwater appropriative rights. Overlying rights indicate that all property owners above a common aquifer possess a mutual right to the use of that groundwater. Groundwater appropriative rights allow the pumping of groundwater in one location to be diverted (appropriated) to another location. However, those with overlying rights have priority among other appropriators on a first in time use basis. Overlying users cannot take unlimited quantities of water without regard to the needs of other users.

The California Water Code allows any local public agency that provides water service whose service area includes a groundwater basin or portion thereof that is not subject to groundwater management pursuant

to a judgment or other order to adopt and implement a groundwater management plan (California Water Code Sections 10750 et seq.). Groundwater management plans often require reports of pumping and some restrictions on usage. The California legislature has found that by reason of light rainfall, concentrated population, the conversion of land from agricultural to urban uses, and heavy dependence on groundwater, the Counties of Riverside, Ventura, San Bernardino, and Los Angeles have certain reporting requirements for groundwater pumping. Any person or entity that pumps more than 25 acre-feet (af) of water in any one year must file a Notice of Extraction and Diversion of Water with SWRCB (California Water Code Sections 4999 et seq.).

The Projects are located on land that overlies the CVGB, for which a method was developed by the USGS, in cooperation with the USBR, to identify groundwater wells outside the floodplain of the lower Colorado River that yield water that will be replaced by water from the river. The specific method to determine whether wells draw water from the Colorado River (referred to as the accounting surface) has not been promulgated by the USBR. However, wells placed into the groundwater beneath and within the Projects' vicinity that extract groundwater may, depending on whether the groundwater surface is above or below the accounting surface, be considered as drawing water from the Colorado River and require an entitlement to extract groundwater.

California Senate Bill (SB) 610. SB 610, passed in 2002, amended the California Water Code to require detailed analysis of water supply availability for certain types of development projects, and to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires detailed information regarding water availability to be provided to the city and county decision makers prior to approval of specified large development projects. SB 610 requires that a project be supported by a Water Supply Assessment (WSA) if the project is subject to the California Environmental Quality Act, and would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project. According to SB 610 Guidelines, one dwelling unit typically consumes 0.3 to 0.5 acre-feet per year (afy), which would amount to 150 to 250 afy for 500 units.

SB 610 indicates that if the projected water demand associated with a proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the WSA for the project shall include a discussion regarding whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years, over a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

Sustainable Groundwater Management Act. On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739, SB 1168, and SB 1319—collectively known as the Sustainable Groundwater Management Act (SGMA), which requires local and regional groundwater sustainability agencies with management authority over high- and medium-priority basins to manage their respective basins within their sustainable yield, in line with minimum thresholds to avoid undesirable results, including chronic lowering of groundwater levels. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically overdrafted basins, the agencies must develop planning goals and criteria to achieve sustainability by 2040. For the remaining high- and medium-priority basins, 2042 is the deadline. Through SGMA, the California Department of Water Resources (DWR) provides ongoing support to local agencies through sustainability plan review, guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins sustainably and requires completion of Groundwater Sustainability Plans for crucial (i.e., medium- to high-priority) groundwater basins in California. Among other requirements, Groundwater Sustainability Plans

must consider the interests of all beneficial uses and users of groundwater, including environmental users of groundwater, and develop planning goals and criteria to avoid impacts such as significant and unreasonable depletions of interconnected surface water. Groundwater Sustainability Plans must also identify and consider impacts to groundwater dependent ecosystems within the basin. As trustee for California's fish and wildlife resources, CDFW engages as a stakeholder in groundwater planning processes where resources allow to represent the groundwater needs of groundwater dependent ecosystems and fish and wildlife beneficial uses.

State Water Resources Control Board Policies.

Anti-Degradation Policy (Resolution No. 68-16). This policy requires RWQCB, in regulating the discharge of waste, to (a) maintain existing high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state; will not unreasonably affect present and anticipated beneficial uses; and will not result in water quality less than that described in State or Regional Water Boards policies; and (b) require that any activity which produces or may produce a waste or increased volume or concentration of waste, and which discharges or proposes to discharge to existing high quality waters, to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that: (1) a pollution or nuisance will not occur and (2) the highest water quality consistent with maximum benefit to the people of the state will be maintained.

Sources of Drinking Water Policy (Resolution No. 88-63). This policy designates all groundwater and surface waters of the state as potential sources of drinking water, worthy of protection for current or future beneficial uses except under certain specific exemptions.

Policies and Procedures for Investigations and Clean-up and Abatement of Discharges Under California Water Code (CWC) Section 13304 (Resolution No. 92-49). This policy establishes requirements for investigation and cleanup and abatement of discharges. Under this policy, clean-up and abatement actions are to implement applicable provisions of Title 23 of the California Code of Regulations Chapter 15, to the extent feasible. The policy also requires the application of Section 2550.4 of Chapter 15 when approving any alternative cleanup levels less stringent than background. It requires remediation of the groundwater to the lowest concentration levels of constituents technically and economically feasible, which must at least protect the beneficial uses of groundwater, but need not be more stringent than is necessary to achieve background levels of the constituents in groundwater.

Local Laws, Regulations, and Policies

Riverside County Ordinance No. 682 (As Amended Through 682.4) an Ordinance of The County of Riverside Regulating the Construction, Reconstruction, Abandonment and Destruction of Wells and Incorporating by Reference Ordinance No. 725. This ordinance provides minimum standards for construction, reconstruction, abandonment, and destruction of all wells to (a) protect underground water resources and (b) provide safe water to persons within Riverside County.

Ordinance No. 650 (As Amended Through 650.6) an Ordinance of the County of Riverside Amending Ordinance No. 650 Chapter 8.124 of the Riverside County Code Regulating the Discharge of Sewage in the Unincorporated Areas of the County of Riverside and Incorporating by Reference Ordinance No. 725. This ordinance protects water quality and public health by establishing regulations for the installation, replacement, and performance of on-site wastewater treatment systems.

3.10.2 Environmental Setting

The Project sites are in the Chuckwalla Valley of Riverside County near the community of Desert Center, California. Although they are in the Mojave Desert Geomorphic Province, the Project sites lie within the

Sonoran Desert ecoregion, a broad interior region of isolated mountain ranges separated by expanses of desert plains. The sites are part of an interior enclosed drainage system, meaning there is no outlet to the ocean. Drainage flows to shallow lake beds which, being dry most of the time, are known as dry lakes or playas. The Project sites lie on alluvial fans emanating from the Chuckwalla Mountains to the south. The Chuckwalla Valley is bisected by a broad drainage system that extends southwest between the Chuckwalla and Coxcomb mountains to the Palen Dry Lake, located a short distance north of the proposed Arica solar array. The elevation of Chuckwalla Valley ranges from about 500 feet above mean sea level (amsl) on the north boundary of the Arica Project site to 800 feet amsl at the southern end of the gen-tie line at the Red Bluff Substation. The elevation of the access roads range from approximately 900 feet amsl in Desert Center to approximately 540 feet amsl at the eastern terminus of the road. The surrounding mountains rise to approximately 3,000 and 5,000 feet amsl (BLM 2011). The Project sites, including the gen-tie line and access roads, are relatively flat with a slight descending slope to the northeast.

Climate and Precipitation

The Chuckwalla Valley, being part of the Sonoran Desert ecoregion, is characterized by high aridity, low precipitation, hot summers, and cool winters. Average maximum temperature is 108°F in July. Average minimum temperature is 66.7°F in December (BLM 2011). Average annual precipitation, based on the gauging station at Blythe Airport, is approximately 3.6 inches, with August recording the highest monthly average of 0.64 inches and June recording the lowest monthly average of 0.02 inches. Most rainfall occurs during the winter months, or in association with summer tropical storms, which tend to be of shorter duration and higher intensity than winter storms (BLM 2011). Eastern Riverside County is currently (December 2020) classified by the National Drought Mitigation Center, National Oceanic and Atmospheric Administration, and U.S. Department of Agriculture as being in a severe to extreme drought (U.S. Drought Monitor 2020).

Groundwater

A WSA has been prepared for the Projects (refer to Appendix H of this EIR). Except for groundwater quality, the groundwater information presented below is based on the WSA.

Groundwater Overview

The Project sites overlie the CVGB, which covers an area of 940 square miles in eastern Riverside County, California. The basin underlies the Palen and Chuckwalla Valleys, and is bounded by consolidated rocks of the Chuckwalla, Little Chuckwalla, and Mule Mountains on the south; the Eagle Mountains on the west; and the Mule and McCoy Mountains on the east. The Coxcomb, Granite, Palen, and Little Maria Mountains bound the valley on the north and extend ridges into the valley. The CVGB is also bordered by the Orocopa Valley Groundwater Basin on the west; the Palo Verde Mesa Groundwater Basin on the east; the Arroyo Seco Groundwater Basin on the southeast; the Chuckwalla and Little Chuckwalla Mountains on the south; small portions of the Cadiz Valley, Ward Valley, and Rice Valley Groundwater Basins on the north; and the Pinto Valley Groundwater Basin on the northwest.

Perennial streams do not occur in the Chuckwalla Valley. Palen, Ford, and several smaller dry lakes are at topographic low points. The surface watershed contributing to the area of the CVGB is 1,344 square miles, comprising the Chuckwalla Valley (940 square miles) and the surrounding bedrock mountains (404 square miles).

Total groundwater storage available to wells was originally estimated at 9,100,000 af, and more recently at 15,000,000 af. The estimate of 15,000,000 af was calculated by DWR based on multiplying specific yield, saturated thickness, and basin size. Saturated thickness was calculated by subtracting the average depth to water from the average thickness of alluvial sediments, or 500 feet, whichever is smaller. A project-

specific 2013 analysis for the Eagle Mountain Project estimated the storage capacity of the CVGB to be about 10,000,000 af. The most recent DWR estimate of 15,000,000 af is used in this baseline description.

The CVGB is an unadjudicated groundwater basin considered very low priority under SGMA. Owners of property overlying the basin have the right to pump groundwater from the basin for reasonable and beneficial use, provided that the water rights were never severed or reserved. Groundwater production in the basin is not managed by an entity and no groundwater management plan or groundwater sustainability plan has been submitted to DWR. In addition, no urban water management plan or integrated regional water management plan have been prepared for the Projects' area.

Current and historical groundwater extraction in the CVGB includes agricultural water use, pumping for Chuckwalla and Ironwood State Prisons, pumping for the Tamarisk Lake development and golf course, pumping for solar farm construction and operation, domestic pumping, and a minor amount of pumping by Southern California Gas Company.

Groundwater Trends

Groundwater levels within the CVGB range from the ground surface to about 400 feet below ground surface. Groundwater contour data from 1979 indicates CVGB groundwater flows from the north and west toward the gap between the Mule and McCoy Mountains at the southeastern end of the valley. Groundwater levels were stable up to about 1963. DWR reported total groundwater extraction of 9,100 afy in 1966.

The direction of groundwater movement is not expected to have changed since 1979, but there have been changes in groundwater levels, especially localized around areas of significant extraction. For example, data from wells within the Desert Center area show a period of water level decline from the mid-1980s through the early 1990s during periods of expanded agricultural operations when combined pumping exceeded 20,000 afy, well above historic water usage for the western portion of the basin.

The National Park Service (NPS) has noted that groundwater levels throughout the CVGB appear to have been trending downward for several decades. Most wells in the CVGB have not been used for monitoring data, such as groundwater level trends, since the 1980s. However, several wells have been used to collect groundwater data for the past 25 years and these data show that groundwater level trends have been fairly stable in the eastern CVGB, rising slowly back towards pre-agricultural pumping groundwater levels in the western CVGB, and dropping slowly but steadily in the central CVGB. Monitoring wells installed in the eastern CVGB in 2012 by the USGS show rising water surface levels since 2012.

In general, well data show a relatively stable groundwater surface, interrupted locally in the past mainly by agricultural pumping. Local groundwater levels show evidence of rising after the agriculture-related drawdown of the 1980s ended, indicating that local extraction rates have not exceeded recharge. Although the groundwater level trends derived from the available data show a general trend toward stability, the analysis is inconclusive because the data are not complete, there are gaps in the record, and well locations do not cover the entire CVGB. The monitoring wells that show the most prominent historic declines are in agricultural or prison areas where a local drawdown would occur from intense use but would not necessarily be representative of the CVGB.

Baseline Groundwater Budget

A baseline groundwater budget was calculated for the CVGB in the absence of the proposed Projects and all other known cumulative projects not already in place. For the purposes of this analysis, agricultural

uses are considered as part of the baseline budget, as is prison water use and the Genesis Solar Project. There are no manufacturing water uses in the area.

Table 3.10-1 provides a baseline normal groundwater budget (refer to Appendix H for the derivation of this budget). This budget indicates a safe yield, which is the maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect. The baseline safe yield for the CVGB is estimated at 2,390 afy (Budget Balance from Table 3.10-1), indicating the basin is currently close to capacity in terms of groundwater extraction. This budget represents a normal (average) year, in terms of precipitation and water use.

Table 3.10-1. Estimated Normal Baseline Groundwater Budget for The Chuckwalla Valley Groundwater Basin

Budget Components	Acre-Feet per Year
Inflow	
Recharge from Precipitation	8,588
Underflow from Pinto Valley and Orocopia Valley Groundwater Basins	3,500
Irrigation Return Flow	800
Wastewater Return Flow	831
Total Inflow	13,719
Outflow	
Groundwater Extraction	-10,579
Underflow to Palo Verde Mesa Groundwater Basin	-400
Evapotranspiration at Palen Dry Lake	-350
Total Outflow	-11,329
Budget Balance (Inflow – Outflow)	2,390 (+ 0.02% of total storage)

Source: Table 1 in Appendix H.

Because of uncertainty in CVGB inflow rates, Table 3.10-2 provides the same analysis using lower inflow rates that have been used by NPS (Appendix H). This baseline budget shows the CVGB to be in deficit, with a groundwater loss of approximately 6,685 afy, indicating groundwater levels would be expected to drop as the resource is depleted over the years.

Table 3.10-2. Estimated Normal Baseline Groundwater Budget for the Chuckwalla Valley Groundwater Basin Using NPS Estimates of Precipitation and Subsurface Inflow.

Budget Components	Acre-Feet per Year
Inflow	
Recharge from Precipitation	2,060
Underflow from Pinto Valley and Orocopia Valley Groundwater Basins	953
Irrigation Return Flow	800
Wastewater Return Flow	831
Total Inflow	4,644
Outflow	
Groundwater Extraction	-10,579
Underflow to Palo Verde Mesa Groundwater Basin	-400

Table 3.10-2. Estimated Normal Baseline Groundwater Budget for the Chuckwalla Valley Groundwater Basin Using NPS Estimates of Precipitation and Subsurface Inflow.

Budget Components	Acre-Feet per Year
Evapotranspiration at Palen Dry Lake	-350
Total Outflow	-12,755
Budget Balance (Inflow – Outflow)	-6,685 (-0.04% of total storage)

Source: Table 2 in Appendix H.

Groundwater Quality

Groundwater quality is variable throughout the CVGB. Total dissolved solids (TDS) content across the basin ranges from 274 to 12,300 milligrams per liter (mg/L) (DWR 1979). Groundwater to the south and west of Palen Dry Lake is generally characterized as sodium chloride to sodium sulfate-chloride. The best water quality is found in the western portion of the basin, where TDS content ranges from 275 to 730 mg/L (DWR 2004).

Sulfate, chloride, fluoride, and TDS concentrations in the CVGB are high for domestic use and high boron, TDS, and sodium concentrations impair groundwater for irrigation use (DWR 2004). TDS content north of Palen Dry Lake ranges from 2,960 to 4,370 mg/L (DWR 2004).

Surface Water

Hydrology and Flooding

The Project sites are located within the Chuckwalla Valley Drainage Basin. All surface water in the western portion of the valley flows to Palen Dry Lake, located approximately 10 miles east of the community of Desert Center and about 2 miles east of the Arica Project site. Surface water in the eastern portion of the valley flows to Ford Dry Lake, located approximately 10 miles southeast of the Palen Dry Lake. All the Projects’ parcels, the gen-tie line, and the access roads drain to the Palen Dry Lake (Appendix H).

Off-site stormwater flows affecting the Projects are primarily from the Corn Springs Wash, originating in the Chuckwalla Mountains approximately 5 miles south of the Project sites. The Corn Springs Wash drains a watershed of approximately 44 square miles and enters the Projects’ area from the south. Downstream of the Chuckwalla Mountains, the Corn Springs Wash spreads over a wide alluvial fan. The alluvial fan is characterized by unconsolidated shallow flows with numerous small, unstable, and shifting stream pathways that, due to the arid climate and distance from the mountains, would carry water infrequently and only after sufficient rainfall. The Big Wash, generated from the Eagle Mountains and from a watershed that extends north of the Eagle and Coxcomb Mountains, flows northwest to southeast into Palen Dry Lake north of the Arica Project (Appendix H).

Federal Emergency Management Agency flood insurance rate maps have not been prepared for the Project sites or surrounding lands. The sites are within Federal Emergency Management Agency Zone D, Area of Undetermined Flood Hazard (FEMA 2021). However, a small portion of the northwest corner of the Victory Pass Project site is within a DWR Flood Awareness Zone (Figure 3.10-1, Flood Map). In addition, the proposed gen-tie line and access roads traverse DWR Flood Awareness Zones (DWR 2021). The Project sites, gen-tie line, and access roads are traversed by desert watercourses characteristics of alluvial fans. Stormwater flow on alluvial fans typically originates from mountain canyons and then discharges onto the alluvial desert floor into a series of braided channels, which can inundate wide areas. Flood depths are generally (though not always) shallow, resulting from the inability of the small, braided drainage channels

to contain large flows. Flow patterns, as exhibited by visible watercourses, can shift over time, even within the duration of a single flood, as existing channels fill with sediment and new channels form.

Water Quality

The Projects are under the jurisdiction of the Colorado River Basin RWQCB. The Water Quality Control Plan (Basin Plan) developed by the RWQCB for the Colorado River Basin establishes water quality objectives, including narrative and numerical standards, to protect the beneficial uses of surface waters and groundwaters in the region. The Basin Plan describes implementation plans and other control measures designed to ensure compliance with statewide plans and policies, and documents comprehensive water quality planning.

Beneficial uses of waters, also designated by the RWQCB, include consumptive and non-consumptive uses. Consumptive uses are those normally associated with people's activities, primarily municipal, industrial, and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower generation, and other uses that do not significantly deplete water supplies.

Historical beneficial uses of water within the Colorado River Basin Region have largely been associated with irrigated agriculture and mining. Industrial use of water has become increasingly important in the Region, particularly in the agricultural areas (RWQCB 2019).

The RWQCB Basin Plan (RWQCB 2019) lists specific beneficial uses for surface waters and groundwater. The surface waters on the Project sites would be classified as washes (ephemeral streams) for which beneficial uses are as follows:

- Groundwater Recharge (GWR)
- Non-Contact Water Recreation (REC II)
- Warm Freshwater Habitat (WARM) (to be established on a case-by-case basis)
- Wildlife Habitat (WILD)

Beneficial uses of the CVGB are as follows:

- Municipal and Domestic Supply (MUN)
- Industrial Service Supply (IND)
- Agriculture Supply (AGR)

Surface water and groundwater in the Projects' area are considered suitable, or potentially suitable, for municipal or domestic water supply except under the following circumstances (RWQCB 2019):

- Surface water and groundwater where the TDS exceed 3,000 mg/L, and it is not reasonably expected by RWQCB to supply a public water system
- There is contamination, either by natural process or by human activity, that cannot be treated for domestic use using either Management Practices or best economically achievable treatment practices
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day
- Surface water in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives, as required by RWQCB.

RWQCB sets water quality objectives to ensure the protection of beneficial uses and the prevention of nuisance, although it is understood that water quality can be changed to some degree without unreasonably affecting beneficial uses (RWQCB 2019). Current objectives for surface water in the area include those for aesthetic qualities, tainting substances, toxicity, temperature, pH, dissolved oxygen, suspended and settleable solids, dissolved solids, bacteria, biostimulatory substances, sediment, turbidity, radioactivity, chemical constituents, and pesticide wastes. Specific information on these objectives is provided in the Basin Plan (RWQCB 2019). Groundwater objectives include those for taste and odors, bacteriological quality, chemical and physical quality, brines, and radioactivity. The RWQCB has objectives for groundwater overdraft for several specific groundwater basins, but the CVGB is not listed among these.

Section 303(d) of the CWA requires states to assess surface water quality and prepare a list of waters (known as the Section 303[d] list of water quality limited segments) considered to be impaired by not meeting water quality standards and not supporting their beneficial uses. Impairment may result from point-source pollutants or non-point source pollutants. None of the waters in or near the proposed Projects are currently listed as impaired (SWRCB 2018).

3.10.3 Impact Analysis

Methodology

The impact analysis analyzes potential direct and indirect impacts of the proposed Projects on hydrology and water quality, including the Projects' potential to adversely affect groundwater supplies, alter geomorphic features/processes, modify drainage and flooding conditions, induce erosion and sedimentation, and degrade water quality. APMs that are incorporated into the Projects to avoid or reduce potential impacts are provided. The analysis also considers the potential for incremental impacts of the Projects to combine with impacts of other projects and activities to adversely affect hydrology and water quality.

Criteria for Determining Significance

The criteria used to determine the significance of potential hydrology and water quality impacts are based on Appendix G of the CEQA Guidelines. The Projects would result in a significant impact under CEQA related to hydrology and water quality if they would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality (see Impact HWQ-1).
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin (see Impact HWQ-2).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
 - result in substantial erosion or siltation on- or off-site (see Impact HWQ-3a);
 - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site (see Impact HWQ-3b);
 - create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff (See Impact HWQ-3c); or
 - impede or redirect flood flows (see Impact HWQ-3d).

- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation (see Impact HWQ-4).
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan (see Impact HWQ-5).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to hydrology and water quality, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

- APM BIO-3 Avoidance of Wetlands, Streambeds, and Streambanks** (refer to Section 3.4.3 for full text of APM)
- APM BIO-4 Best Management Practices** (refer to Section 3.4.3 for full text of APM).
- APM BIO-15 Maintain Existing Hydrologic Patterns** (refer to Section 3.4.3 for full text of APM).
- APM HAZ-1 Hazardous Materials Management Plan** (refer to Section 3.9.3 for full text of APM).
- APM HWQ-1 Drainage Erosion and Sedimentation Control Plan (DESCP).** Prior to site mobilization, the Applicants shall submit a Drainage Erosion and Sedimentation Control Plan (DESCP) to the California Department of Fish and Wildlife (CDFW) and the U.S. Bureau of Land Management (BLM) for managing stormwater during Project construction and operations. The DESCPC must ensure proper protection of water quality and soil resources, address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. The plan must also cover all linear Project features such as the proposed gen-tie line. The DESCPC shall contain, at minimum, the elements presented below that outline site management activities and erosion and sediment-control Best Management Practices (BMPs) to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.
- A. *Vicinity Map* – A map(s), at a minimum scale 1 inch to 500 feet, shall be provided indicating the location of all Project elements with depictions of all significant geographic features including swales, storm drains, drainage concentration points, and sensitive areas.
 - B. *Site Delineation* – All areas subject to soil disturbance for the proposed Project shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures and drainage facilities.
 - C. *Clearing and Grading Plans* – The DESCPC shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and pro-posed topography shall be illustrated by tying in proposed contours with existing topography.
 - D. *Clearing and Grading Narrative* – The DESCPC shall include a table with the estimated quantities of material excavated or filled for the site and all Project elements, whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.

- E. *Erosion Control* – The plan shall address exposed soil treatments to be used during construction and operation including specifically identifying all chemical-based dust palliatives, soil bonding, and weighting agents appropriate for use that would not cause adverse effects to vegetation. BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use.
- F. *Best Management Practices Plan* – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, Project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control stormwater runoff and sediment transport.
- G. *Best Management Practices Narrative* – The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each Project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information would be available.

The DESCP shall be prepared, stamped, and sealed by a professional engineer or erosion control specialist. The DESCP shall include copies of recommendations, conditions, and provisions from CDFW and/or BLM.

APM HWQ-2a Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin (PVMGB). If water for the Projects is to be obtained from on-site or off-site wells drilled by the Applicants, the Applicants shall develop a Colorado River Water Supply Plan (Plan) to monitor groundwater extractions and prevent, replace, or mitigate Project impacts that deplete the PVMGB groundwater safe yield (i.e., budget balance). The amount of PVMGB depletion requiring mitigation shall be equal to the amount of withdrawals from below the Colorado River accounting surface. If the Project results in consumption of any water from within or below the Colorado River accounting surface, the Plan shall identify measures to replace water on an acre-foot to acre-foot basis, towards the purpose of ensuring that no allocated water from the Colorado River is consumed without entitlement to that water.

The Plan shall describe groundwater monitoring activities and quarterly data reports to be closely reviewed for depth to groundwater information, and proximity of the depth of Project related groundwater pumping to the Colorado River accounting surface. The Plan shall further describe that if Project-related groundwater pumping draws water from below the accounting surface the following shall occur:

- A. Based on groundwater monitoring data, the quantity of groundwater pumped from below the accounting surface shall be recorded, and
- B. The Applicants shall implement water conservation/offset activities to replace Colorado River water on an acre-foot by acre-foot basis.

To effectively implement item (B) above, the Plan shall include the following information:

- Identification of water conservation/offset activities to replace the quantity of water diverted from the Colorado River, including identification of any replacement water source(s) if deemed necessary, in consultation with regional water purveyors, regional water agencies, and the Colorado River Board;
- Identification of any required permits or approvals and compliance of conservation/offset activities with CEQA and NEPA;
- An estimated schedule of completion for each identified activity;
- Performance measures that would be used to evaluate the amount of water replaced by each identified activity; and
- Monitoring and reporting protocol to ensure that water conservation/offset activities are effectively implemented and achieve the intended purpose of replacing Colorado River water diversions.

The Plan shall be submitted to the U.S. Bureau of Reclamation for review and approval prior to the initiation of construction and is required to be implemented at any time during the life of the Project that groundwater withdrawals reach the accounting surface, based on the results of the Groundwater Monitoring, Reporting, and Mitigation Plan (APM HWQ-2b). No pumping of groundwater below the accounting surface shall occur without compensatory mitigation according to the approved plan. A copy of the Plan shall also be submitted to the Metropolitan Water District for review and comment.

APM HWQ-2b Groundwater Monitoring, Reporting, and Mitigation Plan. Before the Projects' use groundwater pumped from any well drilled by the Applicants (on site or off site) that extracts water from the Chuckwalla Valley Groundwater Basin (CVGB), the Applicants shall retain a U.S. Bureau of Land Management (BLM) approved qualified hydrogeologist to develop a Groundwater Monitoring, Reporting, and Mitigation Plan (GMRMP), in coordination with the California Department of Fish and Wildlife (CDFW) and BLM, to ensure that groundwater wells surrounding the Projects' sites and Projects' supply well(s) are not adversely affected by project activities. The Applicants shall submit the GMRMP to the CDFW for review and BLM for review and approval. Additionally, although no Groundwater Sustainability Agencies (GSAs) has been established for the Riverside County portions of the CVGB, in the event that such agencies have been established when the GMRMP is developed, the Applicants also shall submit the plan to the GSAs. The Applicants shall implement the approved GMRMP throughout any Project phase that pumps groundwater for consumptive use.

The GMRMP shall provide detailed methodology for monitoring on-site and off-site groundwater levels and comparisons for levels within the basin, including identification of the closest private wells to the Projects' sites. Monitoring shall be performed during pre-construction, construction, and operation of the Projects, to establish pre-construction and Projects-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Projects' pumping well(s) and near potentially impacted existing wells. The GMRMP shall include a schedule for submittal of quarterly data reports by the Applicants to the GMRMP designated agencies and the GSA (if established), for the duration of the construction period. These quarterly data reports shall be prepared and submitted for review and shall

include water level monitoring data and effect on the nearest off-site private wells. The designated agencies shall determine whether groundwater wells surrounding the Projects sites and Projects supply well(s) are adversely affected by Project activities in a way that requires additional mitigation and, if so, shall determine what remedial measures are needed. Examples of additional mitigation, if approved by the designated agencies, could include:

- cessation or reduction of pumping ~~from~~ the Projects' wellsites until groundwater levels return to levels that allow nearby wells to resume pre-Project pumping levels;
- acquisition/sourcing of additional water for the Projects from local agricultural wells, from Riverside County Service Area (CSA) 51, which provides water service to the Desert Center area, or from the Metropolitan Water District, among other sources;
- compensation for whatever additional equipment is necessary to lower nearby pumps to levels that can adequately continue pumping;
- compensation to repair or replace wells found to be damaged or inoperable due to lowered groundwater levels; or
- compensation for increased energy cost due to Projects-related well drawdown.

After the completion of construction, the Applicants and the BLM shall jointly evaluate the effectiveness of the GMRMP and determine if monitoring and reporting frequencies or procedures should be revised or eliminated.

APM HWQ-3 Project Drainage Plan. The Applicants shall provide the California Department of Fish and Wildlife (CDFW) and the U.S. Bureau of Land Management (BLM) with a drainage plan for review by CDFW and review and approval by BLM prior to construction, which includes the following information:

- A. Hydrologic assessment of flood discharges affecting each parcel.
- B. A detailed on-site hydraulic analysis utilizing FLO-2D or similar two-dimensional hydraulic model which models pre- and post-development flood conditions for the 10- and 100-year storm events. The post-development model must include all proposed Project features, contours, and drainage improvements. Graphical output must include depth and velocity mapping as well as mapping which graphically shows the changes in both parameters between the pre- and post-development conditions.
- C. The Drainage Plan shall show the location of all watercourses, drainage concentration points, and drainage ditches as those features enter, traverse, and exit the site. The Drainage Plan shall include pre-development and post-development peak flow rate estimates, as well as hydraulic calculations to determine flood conditions, floodplain limits, flood depths, and velocities. The Drainage Plan shall show the relationship of drainage and flood features to the features of the proposed Project, including buildings, fences, substations, access roads, culverts, linear features, and panel supports. The Drainage Plan shall demonstrate adequate design to protect from flooding, erosion, and scour, and to do so without adversely affecting adjacent property, inducing erosion, or concentrating or diverting flows.
- D. The Drainage Plan shall show how drainage would be conveyed through the site without adversely affecting other property, either through increased flood hazard or increased potential for scour and erosion. No flow obstructing fences (e.g., block wall

shall be constructed perpendicular to existing drainage patterns. Proposed fencing shall allow runoff to traverse the Project sites unencumbered.

- E. The Drainage Plan shall include an assessment of existing diversion berms and channels around parcel perimeters, the magnitude and frequency of flood events that would be diverted by these existing features, and the probable integrity of these features to withstand flows. The Drainage Plan shall demonstrate how on-site drainage features would be affected by Project grading and shall include an assessment of stormwater flows approaching proposed perimeter fences and whether or not those flows would be adjacent to existing berms. The Drainage Plan shall include design recommendations to avoid diversion of flows by perimeter fences, such as creation of fence openings large enough to allow the passage of debris-laden flows without the potential for diversions to other property.
- F. The Drainage Plan shall include detailed design of flood retention features necessary to avoid any increase in downstream flood peak flow rates.
- G. The Drainage Plan shall include a narrative of the measures necessary to protect the Project sites and Project features from flooding, erosion, and sedimentation, including proposed measures to prevent Project-induced erosion and flooding of adjacent property.

APM HWQ-4 Flood Protection. Proposed substations, operations and maintenance buildings, energy storage systems, and all other Project buildings shall either be located outside of primary drainages and the 100-year floodplain, or if located within such areas, designed such that flood flows would not impede or redirect flood flows, resulting in increased flooding of off-site properties.

Environmental Impacts

Impact HWQ-1. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

LESS THAN SIGNIFICANT.

Surface Water. Construction of the Projects would require excavation and grading for the solar panels, access roads, gen-tie line, buildings, substations, battery storage facilities, and other features. Disturbance of soil during construction could result in soil erosion and temporary lowered water quality through increased turbidity and sediment deposition into local washes and downstream Palen Dry Lake. Downstream beneficial uses (refer to Section 3.10.2, Environmental Setting) could be adversely affected through violation of RWQCB water quality standards and objectives for suspended solids, TDS, sediment, and turbidity.

Accidental spills or disposal of harmful materials used during construction of the Projects could wash into and pollute surface waters or groundwater. Materials that could contaminate the construction area or spill or leak include diesel fuel, gasoline, lubrication oil, cement slurry, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents.

The dry nature of most of the alluvial fan washes is such that should material spills occur during construction, these could easily be cleaned up prior to water being contaminated. Groundwater is well below the maximum depth of excavation, resulting in little likelihood that groundwater could be affected from spills during

construction. Fuel and greases for construction equipment would be stored in temporary aboveground storage tanks or sheds located on the Project sites. The fuels stored on site would be in a locked container within a fenced and secure temporary staging area. Additionally, as noted in APM HAZ-1, hazardous materials would be stored in segregated storage with secondary containment as necessary, records of storage and inspections would be maintained, and proper off-site disposal would be provided.

Development and adherence to a SWPPP, in conformance with the California Construction General Permit (refer to Section 3.10.1, Regulatory Framework) and APM BIO-4, would require BMPs to prevent and control erosion and siltation during construction; prevent, contain, and mitigate accidental spills during construction; and prevent violation of water quality objectives or damage to beneficial uses identified in the RWQCB Colorado River Basin Plan.

Potential threats to surface water quality during operation and maintenance activities include potential increases in erosion and associated sediment loads to adjacent washes, and accidental spills of hydrocarbon fuels, greases, and other materials associated with operation of equipment on site. The Projects would include electrical transformers, electrical substations, operations and maintenance (O&M) buildings, and battery storage systems. As described for construction, hazardous materials use, storage, and disposal would be regulated on site. These materials are not intended to be released to the environment, but if spilled or otherwise accidentally released, these substances could have the potential to contaminate surface water or groundwater. Secondary containment is proposed (APM HAZ-1), as is a Hazardous Materials Business Plan, and these materials would be subject to the regulatory requirements described in Section 3.9.1. These impacts would also be mitigated by compliance with the California Industrial Storm Water General Permit described in Section 3.10.1.

Decommissioning of the Projects is expected to potentially result in adverse impacts related to hydrology and water quality, similar to construction impacts. Demolition, excavations, and site restoration grading could result in potential increases in sediment loads to adjacent washes and/or accidental spills of hydrocarbon fuels and greases and other materials associated with motorized equipment and construction work. A Closure, Decommissioning, and Reclamation Plan would be prepared for the Projects that would be designed to ensure public health and safety, environmental protection, and compliance with all applicable laws, ordinances, regulations, and standards, including those related to water quality.

Existing state and federal water quality regulations, including the proposed SWPPP, are intended to ensure that water quality standards and waste discharge standards would not be violated during construction, operations, and future decommissioning. In addition, APM HWQ-1 requires the development of a Projects-specific Drainage Erosion and Sedimentation Plan that would address and mitigate site-specific erosion impacts during construction, operation, and future decommissioning. With incorporation of APM HWQ-1, the proposed Projects would not violate any surface water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Groundwater. In the event of incidental spills of petroleum products and hazardous materials during construction, operation, or future decommissioning, groundwater quality impacts could occur if those substances were allowed to migrate to the groundwater table. The potential for groundwater quality impacts would be minimized with adherence to the Hazardous Materials Business Plan, APM HAZ-1, and the NPDES Construction General Permit.

The O&M buildings would produce sanitary wastewater, which would be treated and disposed of on site using a proposed septic system and leach field for each O&M building. The Riverside County Department

of Environmental Health has permit and design requirements for wastewater treatment system design, including requirements for percolation, vertical distance from the groundwater table, and setbacks from the nearest groundwater well. The use and application of septic fields is an established practice as a method of wastewater treatment and disposal. Construction and design of the Projects' septic systems would be subject to the Department of Environmental Health permit and design requirements. As a result, the proposed Projects would not violate any groundwater quality standards or waste discharge requirements or otherwise substantially degrade groundwater quality. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HWQ-2. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

LESS THAN SIGNIFICANT. Construction water use is expected to be 1,300 af total (650 af per Project) for the anticipated 18-month construction period. Construction water would be used primarily for dust control and soil compaction, with minor amounts for sanitary and other purposes. The average total annual water usage during operation is estimated to be up to 50 afy (15 to 25 afy per Project) for the assumed 35-50 years of operation. Water use during operations would be primarily for panel washing, restrooms, and general maintenance activities.

The Projects' water needs would be met by use of groundwater pumped from on- or off-site wells or purchased from a local water purveyor. Whether purchased or directly pumped from on- or off-site wells, all water needs would be met by groundwater from the CVGB.

As discussed in Section 3.10.1, SB 610 indicates that a WSA shall be completed for any project with anticipated water demand of more than 150 to 250 afy. Because construction of the Projects would require approximately 1,300 af of water during the 18-month construction period (i.e., 650 af per Project), this threshold would be exceeded and a WSA is required. As a result, a Projects-specific WSA (Appendix H) was completed for the Projects. SB 610 indicates WSAs shall include a discussion regarding whether the water system's total projected water supplies, during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to the water system's existing and planned future uses, including agricultural and manufacturing uses. The WSA was completed assuming the Projects would operate for 30 years. However, as indicated in Chapter 2, Description of the Proposed Projects, it is anticipated that operations would occur for 35 to 50 years. As a result, the results of the WSA have been extrapolated with respect to this anticipated time frame. Similarly, the WSA was completed assuming the Projects would require up to 20 afy (10 afy per Project), whereas it is anticipated that O&M would require up to 50 afy (15 to 25 afy per Project). This discrepancy has been accounted for in the groundwater impacts analysis below.

The WSA concluded the Projects' water demand would be 1,900 af, including 1,300 af during the 18-month construction period and up to 20 afy during 30 years of operations. Based on the estimated CVGB surplus of 2,390 afy (Table 3.10-1), the CVGB under average year conditions would have a cumulative surplus of 76,480 af over 32 years. The net CVGB surplus with the Projects in place would therefore be 74,580 af, or 97% of the surplus that would exist without the Projects. However, assuming an operational demand of 50 afy for a period of 50 years, the total water demand would be 3,800 af, including construction and operation. Based on the estimated CVGB surplus of 2,390 afy (Table 3.10-1), the CVGB under average year conditions would have a cumulative surplus of 124,280 af over 52 years. The net CVGB surplus with the Projects in place would therefore be 120,480 af, or 97% of the surplus that would exist

without the Projects. The Projects alone would therefore not cause nor contribute to a groundwater deficit or impact the sustainable groundwater management of the basin.

However, as described in the WSA and Section 3.10.2, substantial uncertainty exists regarding the baseline groundwater budget. Using the NPS estimates of baseline recharge (i.e., lower inflow rates), the CVGB is already in overdraft, with a groundwater loss of approximately 6,685 afy (Table 3.10-2). Based on this groundwater deficit, the CVGB under average year conditions would have a cumulative deficit of 213,920 af over 32 years. Based on the WSA, the net CVGB deficit with the Projects in place would therefore be 215,820 af. The Projects would contribute about 1% to this cumulative deficit.

Assuming an operational period of 50 years, the estimated CVGB deficit of 6,685 af would result in a cumulative groundwater deficit of 347,620 af over 52 years. Assuming a total water demand of 3,800 af, the net CVGB deficit with the Projects in place would therefore be 351,420 af. The Projects would contribute about 1% to this cumulative deficit. The Projects alone would therefore not substantially contribute to a groundwater deficit or impact the sustainable groundwater management of the basin.

One concern is that Project-related groundwater use could affect the adjacent Palo Verde Mesa Groundwater Basin (PVMGB) by inducing flows from the Colorado River into that basin. Any resulting use of Colorado River water without an entitlement would be illegal. However, given the distance of the Projects from the Colorado River, and the pumping elevation, the Projects would not likely result in direct impacts to the PVMGB, and wells drawing groundwater for the Projects' use would not induce flow from the Colorado River. Nonetheless, because of uncertainty regarding an induced flow from the Colorado River, APM HWQ-2a (Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin [PVMGB]) is required to reduce the possibility of impacts related to Colorado River water.

An additional concern is that groundwater use during the Projects' construction, operation, and future decommissioning would cause drawdown in the immediate vicinity of the well(s) used to produce groundwater for the Projects. This is true regardless of whether the wells are on- or off-site at a nearby well. This drawdown may have the potential to adversely affect nearby wells by lowering localized water levels such that the wells' operational capability would be affected, pumping rates would decline, or pumping and operation costs would increase. Incorporation of APM HWQ-2b, which includes the development and implementation of a Groundwater Monitoring, Reporting, and Mitigation Plan prior to the onset of groundwater pumping for the Projects, would provide a detailed methodology for monitoring site groundwater levels and comparisons for levels within the basin, including identification of the closest private wells to the Project sites. If monitoring identifies an adverse effect on nearby wells, cessation of pumping, reduction of pumping, and/or compensation for equipment, other well improvements, or for increased costs for affected nearby wells, would be required to substantially reduce the impact.

With respect to groundwater recharge, the Project sites are currently undeveloped, and the surface is pervious, allowing groundwater recharge. The Projects would introduce new impervious surfaces from solar panels, roofs, and compacted or paved access roads. However, the solar panels would only nominally impede infiltration of rainfall. The solar panels would be mounted on tubular steel foundations and the intervening areas between foundations would be unpaved and pervious. Solar field development would maintain sheet flow of stormwater runoff where possible, thus allowing stormwater infiltration into on-site soils. Electrical inverters and the transformer would be placed on concrete foundation structures or steel skids. The gen-tie line structures would be constructed of either tubular steel monopoles or lattice structures. The footprint of each Project substation would be approximately 300 feet by 300 feet. It is assumed that areas between the 15- by 30-foot control room and substation equipment (i.e., transformers, breakers, switches, meters, and related equipment) would primarily be unpaved and pervious. The O&M facility for each Project would be 3,500 square feet and located near the substation.

~~In addition, the energy~~The battery storage facility would similarly be constructed adjacent to the substation ~~on a cement or concrete foundation~~ and would have a footprint of 8 acres, including 2 acres of impervious surfaces. With regard to available area for groundwater recharge, ~~t~~The area of impervious surfaces created by construction of these facilities would be nominal with respect to the size of the Projects. As a result, the Projects would not interfere substantially with groundwater recharge.

With incorporation of APM HWQ-2a and APM HWQ-2b, the proposed Projects would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Projects may impede sustainable groundwater management of the basin. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HWQ-3. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

■ ***Impact HWQ-3a. Result in substantial erosion or siltation on- or off-site***

LESS THAN SIGNIFICANT. Earthwork for the Projects' construction would require the use of heavy machinery for vegetation grubbing, grading, and installation of roads, solar fields, transmission facilities, O&M buildings, the substations and switchyard, the energy storage systems, and other facilities. Construction and future decommissioning of these facilities would involve the use of tractors, bulldozers, graders, trucks, and various other types of heavy equipment, and would involve minor changes to on-site topography. These activities would loosen existing surface soils and sediments, increasing the potential for erosion during storm events, along with associated effects such as increased downstream sediment yields from on-site disturbed areas. Increased impervious areas could also lead to erosion by increasing the rate and frequency of runoff.

Grading that could result in alteration of drainages would be minimized by the proposed grading design, which would minimize the required volume of earth movement, as described in Chapter 2. The Project sites are relatively flat to gently sloping and would require minimal grading to allow for installation of the solar panels. Grading would be required only for the inverter pads, substation, driveways, and other improvements, including the access roads, ~~and gen-tie line,~~ and battery storage facilities. The sites would be contour-graded level and the overall topography and drainage patterns would remain unchanged, but within each solar array, high spots would be graded and the soil cut from these limited areas used to fill low spots within the same array. Very limited cut and fill would be completed within specific arrays to limit slope to within 3.0% and produce a consistent grade in each solar field area.

Solar field development would maintain sheet flow where possible, with water exiting the site in existing natural contours and flows. The Projects would specifically avoid the largest washes that cross the sites, as shown on Figure 2-2, Proposed Projects. It is therefore anticipated that existing drainage patterns would not be substantially altered. However, much of the solar facility would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. There would be some light grubbing for leveling and trenching. Access roads would also be grubbed, graded, and compacted. As described for Impact HWQ-2, impervious groundcover would be limited to foundations for the transmission structures and solar panels, compacted roads and parking areas, O&M buildings, energy battery storage system, and portions of the substations and switchyard. The battery storage component would have a footprint of 8 acres, including 2 acres of impervious surfaces.

Because of the proposed plan of minimal grading, maintaining sheet flow across most of the sites, and avoiding the largest washes that cross the sites, alteration of the existing drainage pattern and any

associated erosion or siltation would be minimal. Existing hydrologic patterns would be maintained with respect to runoff, as described in APM BIO-15, and washes, stream beds, and stream banks would be avoided during construction, as described in APM BIO-3. However, in the absence of final grading plans and drainage plans, there remains a potential for alteration of drainage patterns and localized increased runoff in areas of proposed impervious surfaces, such as the battery storage facility, such that substantial erosion could occur, resulting in potentially significant impacts.

APM HWQ-1, Drainage Erosion and Sedimentation Control Plan (DESCP), would be incorporated in the Projects to address potential erosion and siltation on or off site during construction, operation, and maintenance activities. During future decommissioning activities, erosion control measures would be included in the Decommissioning and Reclamation Plans (Appendix L of each Project's Plan of Development) that would be implemented during the decommissioning phase of the Projects. In addition, APM HWQ-3, Project Drainage Plan, would be incorporated in the Projects to control runoff and prevent long-term erosion during operations. The Drainage Plan would include pre-development and post-development peak flow estimates and hydraulic calculations to determine flood conditions, floodplain limits, flood depths, and velocities. The Drainage Plan would demonstrate the relationship of drainage and flood features to the features of the proposed Projects, including buildings, fences, substations, access roads, culverts, linear features, and panel supports. The plan would demonstrate adequate design to protect from flooding, erosion, and scour without adversely affecting adjacent property, inducing erosion, or concentrating or diverting flows. The plan would include detailed design of flood retention features necessary to avoid any increase in downstream flood peak flow rates, including but not limited to retention basins and swales, thus minimizing the potential for off-site erosion and siltation of downstream washes and Palen Lake. Finally, future decommissioning would involve site restoration, which would improve site conditions to approximate pre-Project conditions. The Plan of Development prepared for each Project includes a Decommissioning and Reclamation Plan (Appendix L of each Plan of Development) that will be implemented during the decommissioning phase of the Projects. With incorporation of APM HWQ-1 and APM HWQ-3 into the Projects, and future implementation of the Decommissioning and Reclamation Plans, the Projects would not substantially alter the existing drainage pattern of the sites or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

- **Impact HWQ-3b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.**

LESS THAN SIGNIFICANT.

Although minimal alteration of drainage patterns is expected, the final site plans are not yet complete, and there remainsThere is a minor potential for the Projects to increase the magnitude and frequency of runoff rates through the construction of impervious areas and by altering the ground surface characteristics through grading and removal of vegetation. Such increases in impervious surfaces and ground surface alterations could result in localized flooding on or off site. As discussed for Impact HWQ-3a2, impervious areas would be limited to the foundations for the proposed solar panels, foundations for the transmission structures, the proposed buildings, energy storage system, and portions of the substations and switchyard. The battery storage component would have a footprint of 8 acres, including 2 acres of impervious surfaces. The proposed parking area and roadways would be compacted, which would also increase the runoff potential. Together, these features are anticipated to be only a small portion of the 2,724-acre sites; however, localized increased surface runoff could occur in the vicinity of proposed impervious surfaces, such as the battery storage facility, resulting in flooding on or off site.

~~Depending on final engineering analysis of post construction hydrology, retention basins may be necessary to reduce increased discharges created by the Projects.~~

~~Although minimal alteration of drainage patterns is expected, the final site plans are not yet complete, and there remains a potential for the Projects to locally cause flooding on or off site as a result of increased impervious surfaces.~~ As discussed for Impact HWQ-3a, APM HWQ-3, Project Drainage Plan, would be incorporated into the Projects to control runoff volumes and rates and prevent on- and off-site flooding during operations. The Drainage Plan would include pre-development and post-development peak flow estimates and hydraulic calculations; would demonstrate the relationship of existing drainage features to the features of the proposed Project, including buildings, fences, substations, access roads, culverts, linear features, and panel supports; and would demonstrate adequate design to protect from on- and off-site flooding. The plan would include detailed design of flood retention features necessary to avoid any increase in downstream flood peak flow rates. Finally, future decommissioning would involve site restoration, which would improve surface runoff conditions to approximate pre-Project conditions. The Plan of Development prepared for each Project includes a Decommissioning and Reclamation Plan (Appendix L of each Plan of Development) that will be implemented during the decommissioning phase of the Projects. With incorporation of APM HWQ-3 into the Projects, and future implementation of the Decommissioning and Reclamation Plans, the Projects would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in flooding on or off site. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

■ ***Impact 3c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.***

LESS THAN SIGNIFICANT. The Project sites and adjoining areas are undeveloped and include no on-site or off-site drainage improvements. As discussed for Impact HWQ-3a, localized increases in stormwater runoff would occur in the vicinity of proposed impervious surfaces. However, APM HWQ-3, Project Drainage Plan, would be incorporated into the Projects to control runoff volumes and rates, and prevent on- and off-site flooding during operations. The Drainage Plan would include pre-development and post-development peak flow estimates and hydraulic calculations; would demonstrate the relationship of existing drainage features to proposed Project features; and would demonstrate adequate design to protect from on- and off-site flooding. The plan would include detailed design of flood retention features necessary to avoid exceedance of the capacity of existing or planned stormwater drainage systems. In addition, although minor amounts of petroleum products and hazardous materials may be used for long-term maintenance of the Projects' facilities, no large quantities of hazardous materials that might be subject to upset and spills during a high intensity rain event would be stored on site. In addition, although portions of the Projects sites are located within a 100-year floodplain, as discussed in Impact HWQ-1 and required in accordance with APM HAZ-1, hazardous materials would be stored in segregated storage with secondary containment as necessary, per a Hazardous Materials Business Plan. Finally, future decommissioning would involve site restoration, which would improve stormwater drainage conditions to approximate pre-Project conditions. The Plan of Development prepared for each Project includes a Decommissioning and Reclamation Plan (Appendix L of each Plan of Development) that will be implemented during the decommissioning phase of the Projects. With incorporation of APM HWQ-3 into the Projects, and future implementation of the Decommissioning and Reclamation Plans, the Projects would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned

stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

■ **Impact 3d. Impede or redirect flood flows?**

LESS THAN SIGNIFICANT. As illustrated on Figure 3.10-1, a small portion of the northwest corner of the Victory Pass Project site is within a DWR Flood Awareness Zone. As illustrated on Figure 2-2, no solar panels or related infrastructure would be placed within the DWR Flood Awareness Zone. The boundaries of the Projects' disturbance areas were designed to avoid desert dry washes. Although not located within flood zones or primary washes, the solar panels would be mounted on posts at least 4 feet aboveground and would therefore not impede or redirect stormwater runoff. Similarly, power lines would be protected from flooding as a result of burying or installation on power poles. Although the proposed gen-tie line traverses a DWR Flood Awareness Zone, the transmission line would be mounted overhead on steel poles, which would not impede or redirect flood flows. Similarly, although the access roads traverse a DWR Flood Awareness Zone, drainage culverts would be installed at drainage crossings to prevent impeding or redirecting flood flows.

However, the Projects would include perimeter fencing which, if clogged with debris normally carried by natural flood flows in the desert, could impede and redirect flood flows and substantially increase the flood potential on and off site. Fence-induced diversions along west, east, and southern boundaries of the Projects could cause flooding of the adjoining properties to the west, east, and southeast, respectively. Security fences would not traverse the primary washes that cross the sites. Structures (e.g., substation control room building, O&M facility) placed in drainage areas or stormwater diversion features could also impede and redirect flood flows, which could increase flooding on or off site.

APM HWQ-3, Project Drainage Plan, requires that no flow-obstructing fences (chain-link, block wall, etc.) be constructed perpendicular to existing drainage patterns and that fencing allow runoff to traverse the Project sites unencumbered. In addition, APM HWQ-4, Flood Protection, requires that proposed structures be located outside of primary drainages and the 100-year floodplain, or if located within such drainages or the floodplain, designed such that they would not impede or redirect flood flows, resulting in increased flooding of off-site properties. Finally, future decommissioning would involve site restoration, which would improve flood flow conditions to approximate pre-Project conditions. The Plan of Development prepared for each Project includes a Decommissioning and Reclamation Plan (Appendix L of each Plan of Development) that will be implemented during the decommissioning phase of the Projects. With incorporation of APM HWQ-3 and APM HWQ-4 into the Projects, and future implementation of the Decommissioning and Reclamation Plans, the Projects would not substantially alter the existing drainage pattern of the sites or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact HWQ-4. In a flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

LESS THAN SIGNIFICANT. The Project sites are in an inland desert area and would not be subject to inundation by a tsunami. In addition, no water bodies (e.g., lake, reservoir, canal) capable of producing a seiche are present on site. As indicated in Impact HWQ-3d, except for the proposed overhead gen-tie line and access roads, no portions of the proposed developments are located within 100-year floodplains. Gen-tie line

and access road operations would not risk release of pollutants due to project inundation. As a result, issuance of the Permits would result in less-than-significant impacts.

Impact HWQ-5. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

LESS THAN SIGNIFICANT. As discussed in Impact HWQ-1, existing state and federal water quality regulations, including the proposed SWPPP, are intended to ensure that water quality standards and waste discharge standards are not violated during construction, operations, and future decommissioning. APM HWQ-1 requires the development of a Projects-specific Drainage Erosion and Sedimentation Plan that would address and mitigate site-specific erosion-induced siltation impacts during construction, operation, and future decommissioning. In addition, construction and design of the Projects' septic systems would be subject to the Department of Environmental Health permit and design requirements. As a result, the Projects would not conflict with or obstruct implementation of a water quality control plan.

Groundwater production in the CVGB is not managed by an entity and no groundwater management plan or groundwater sustainability plan has been submitted to DWR. In addition, no Urban Water Management Plan or Integrated Regional Water Management Plan has been prepared for the Projects' area. As discussed for Impact HWQ-2, with incorporation of APM HWQ-2a and APM HWQ-2b, the proposed Projects would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge. As a result, the Projects would not conflict with or obstruct implementation of a sustainable groundwater management plan. Therefore, with incorporation of the APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

Geographic Scope. The Projects are in the USGS Chuckwalla Hydrologic Unit (i.e., watershed), which is a closed drainage basin that drains entirely to the Palen and Ford Dry Lakes. Because the watershed is a closed drainage basin, stormwater does not flow to other hydrologic units. Therefore, the area for cumulative hydrology and water quality analysis is confined to this hydrologic unit. The following existing, proposed, and reasonably foreseeable projects from Tables 3.1-1 and 3.1-2, in Section 3.1.2 Cumulative Impact Scenario, are located within this same hydrologic unit, which has relatively uniform drainage and water quality characteristics: West-Wide Section 368 Energy Corridors, Genesis Solar Energy Project, Desert Sunlight Solar Project, SCE Red Bluff Substation, Devers–Palo Verde No. 1 Transmission Line, Devers-Colorado River Transmission Line, Blythe Energy Project Transmission Line, Desert Harvest Solar Project, Palen Solar Project, Desert Southwest Transmission Line, Eagle Mountain Pumped Storage Project, Athos Renewable Energy Project, ~~and~~ Oberon Renewable Energy Project, and Easley Solar & Green Hydrogen Project.

Surface Water and Water Quality. Cumulative impacts to hydrology and water quality include the impacts of the Projects together with those likely to occur from other existing, proposed, and reasonably foreseeable projects, many of which are similar solar power projects. These cumulative projects have the potential to contribute to cumulative hydrologic and water quality impacts in the Chuckwalla Hydrologic Unit. These cumulative projects have the potential to introduce new or exacerbate existing pollutant generation associated with construction, operation, and future decommissioning. These projects could contribute to increased runoff due to increases in impervious surfaces. All cumulative projects are crossed by watercourses that could generate flooding, with similar flooding impacts as described for the proposed Projects.

All foreseeable future projects in the Chuckwalla Valley Hydrologic Unit would be subject to similar measures as the proposed Projects when obtaining the required permits that implement compliance with

state and federal clean water regulations and Riverside County floodplain development regulations. As all projects would go through an environmental review process, they would be subject to similar measures as those APMs incorporated into the Projects to address potential water quality impacts for the proposed Projects. Many of the projects (Palen, Desert Harvest, and Oberon) do or would likely avoid major drainages that traverse those sites. Because the cumulative projects are in a similar hydrologic setting and most are similar types of projects, individual project impacts are expected to be reduced to less than significant through compliance with regulations and mitigation. Accordingly, the Projects' incremental contribution to the cumulative effects to water quality caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Groundwater. A cumulative groundwater analysis is provided in the WSA (EIR Appendix H), which considers the entire CVGB. Existing, proposed, and reasonably foreseeable projects that were considered in the cumulative groundwater analysis include Palen Solar PV Project, Desert Sunlight Solar Farm, Red Bluff Substation, Eagle Mountain Gen-tie line, Eagle Mountain Pumped Storage Project, Desert Harvest Solar PV Project, Athos Renewable Energy Project, and Oberon Renewable Energy Project. The WSA demonstrates that the Projects contribute a little less than 1% of the total cumulative operational extractions, long term. The WSA was completed prior to the Easley Solar & Geen Hydrogen Project application being submitted to BLM; therefore, the Easley Project was not included in the WSA. However, given the application status for the Easley Project, it is not anticipated that the construction of the Projects would overlap with construction of the Easley Project, which is when solar projects use the most water. The Eagle Mountain Pumped Storage Project would use nearly 10 times the operational groundwater of all other cumulative projects combined.

The WSA also demonstrates that with the proposed Projects and all the above listed cumulative projects in place, assuming the adopted inflow estimates presented in Table 3.10-1, and assuming construction starts in mid-2022, there would be an initial groundwater overdraft of up to 11,527.5 af in the year 2024. The CVGB would then begin to slowly recover. By the end of the 33-year period of analysis, the cumulative groundwater deficit would be approximately 6,896.2 af (approximately 0.05% of total CVGB storage). Without the proposed Projects and all other cumulative projects in place, there would be a surplus of 81,260 af at the end of the 33-year period (approximately 0.5% of total CVGB storage). Assuming an initial overdraft of approximately 0.05% of total CVGB storage, cumulative water use would be slightly less than the current CVGB surplus, or safe yield, of 0.02% of CVGB storage (2,390 af).

Similarly, assuming a 50-year operational period and the adopted inflow estimates presented in Table 3.10-1, by the end of the 53-year period of analysis, the cumulative groundwater deficit would be approximately 3,702 afy (approximately 0.02% of total CVGB storage), which is similar to the safe yield of the CVGB. Based on this small decline in groundwater storage, cumulative project development would not substantially decrease groundwater supplies and impacts would not be cumulatively considerable.

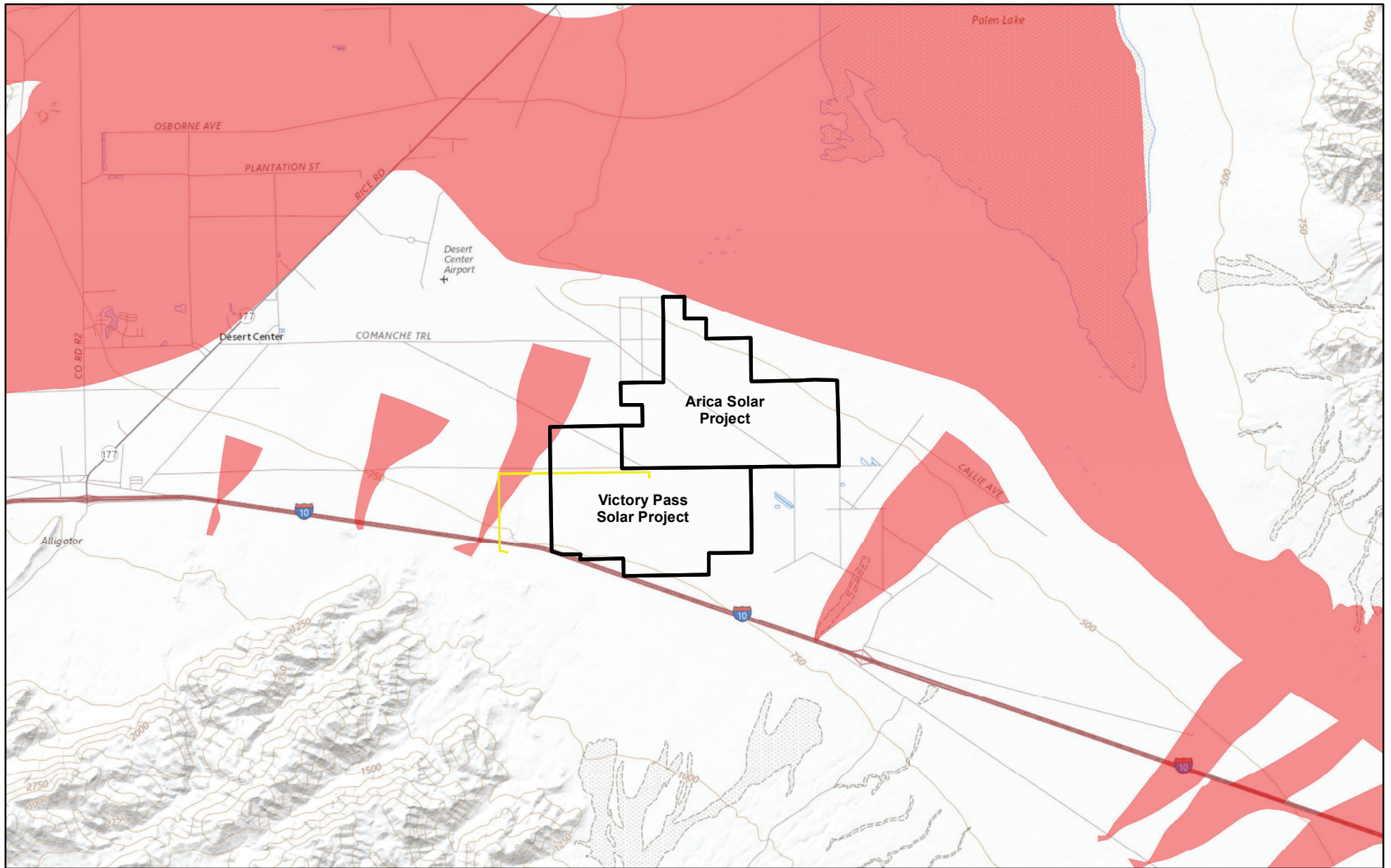
The same analysis using NPS infiltration and underflow estimates (Table 3.10-2) would result in a total cumulative deficit of about 315,446 af (2.1% of total storage) over 33 years, to which the proposed Projects would contribute about 0.6%, or 1,900 af. Using these inflow estimates, the CVGB would not recover the overdraft within the 30-year period, with or without the proposed Projects. Using the reduced recharge rates for precipitation and underflow, the 32-year deficit without the Projects would be 211,692 af, increased to 213,592 af by the Projects. The Projects would contribute about 1% to this cumulative deficit. The impact of each Project would be half of these described impacts. Without the proposed Projects or any other project in place, using NPS infiltration and underflow estimates, the 30-year deficit would be 200,550 af, or about 1.3% of total storage. Although this would be an impact, it is not substantial considering the amount of groundwater available in storage.

Similarly, assuming 20 more years of Project operations, using NPS infiltration and underflow estimates (Table 3.10-2) would result in a total cumulative deficit approximately 40% greater than during the 33-year analysis. This would result in a deficit of 441,624 af over 53 years, to which the proposed Projects would contribute about 3,800 af. The Projects would contribute about 0.9% to this cumulative deficit. Although this would be an impact, it is not substantial considering the amount of groundwater available in storage. Accordingly, the Projects' incremental contribution to cumulative groundwater supply impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Like the proposed Projects, many of the cumulative projects may install or use existing wells on or near each project site, drawing directly from the CVGB. Therefore, as all the cumulative projects listed would overlap for some period during operation, it is possible that some projects could overlap in construction and/or future decommissioning in timing and groundwater withdrawal could combine from these projects such that cumulatively these projects would cause local CVGB groundwater levels to decline. Lowered groundwater levels of cumulative projects and the proposed Projects related pumping could combine to cumulatively impact pumping rates and capability in other nearby wells, a potentially significant cumulative impact. APM HWQ-2b would require the development and implementation of a Groundwater Monitoring, Reporting, and Mitigation Plan prior to construction of the Projects that would result in implementation of measures to mitigate any adverse effects on nearby wells. This measure would reduce the Projects' incremental contribution to a less-than-significant level because it would ensure that all Projects-related impacts to local groundwater levels would be addressed through (1) cessation or reduction of pumping, (2) equipment and other well improvements, or (3) offset of increased costs for continued groundwater pumping at affected wells. Therefore, issuance of the Permits would not result in cumulatively considerable impacts related to hydrology and water quality.

3.10.4 Mitigation Measures


In addition to APMs, no other potentially feasible mitigation was identified to further avoid or substantially lessen impacts to hydrology and water quality.



Source: USGS National Map 2021;
CDWR 2021

 BLM Right-of-Way Grant Application Area

 Gen-tie

 CDWR Flood Awareness Zone

0 0.75 1.5 3



Scale in Miles

Figure 3.10-1

Flood Map

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3.11 Land Use and Planning

This section evaluates environmental impacts on land use and planning that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on land use and planning for both of the proposed Projects as the whole of the action. The section includes a description of land use plans and policies and existing land uses in the vicinity of the proposed Projects, identifies the criteria used for determining the significance of land use and planning impacts, and evaluates the Projects' potential impacts.

Scoping comments were reviewed for this section. Both the Metropolitan Water District and the Eagle Crest Energy Company requested that potential impacts to their existing rights-of-way (ROWs) related to the Eagle Crest Pumped Storage project be considered.

3.11.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Federal Land Policy and Management Act, 1976. As Amended. The United States Congress passed the Federal Land Policy and Management Act (FLPMA) in 1976. Title V, "Rights-of-Way (ROW)," of the FLPMA establishes public land policy and guidelines for administration; provides for management, protection, development, and enhancement of public lands; and provides the BLM authorization to grant ROWs. Authorization of systems for generation, transmission, and distribution of electric energy is addressed in Section 501(4) of Title V. In addition, Section 503 specifically addresses "Right of Way Corridors" and requires common ROWs "to the extent practical." FLPMA, Title V, Section 501(a)(6) states the following:

[t]he Secretary, with respect to the public lands (including public lands, as defined in Section 103(e) of this Act, which are reserved from entry pursuant to Section 24 of the Federal Power Act (16 USC 818)) [P.L. 102-486, 1992] and, the Secretary of Agriculture, with respect to lands within the National Forest System (except in each case land designated as wilderness), are authorized to grant, issue, or renew ROW over, upon, under, or through such lands for roads, trails, highways, railroads, canals, tunnels, tramways, airways, livestock driveways, or other means of transportation except where such facilities are constructed and maintained in connection with commercial recreation facilities on lands in the National Forest System.

The primary directive guiding all of BLM's decisions under FLPMA is to put public lands to their highest and best use.

The Applicants are requesting a grant of ROW approval from BLM (Palm Springs-South Coast Field Office) for both Projects and the entire gen-tie line, which are on land under the jurisdiction of BLM.

California Desert Conservation Area Plan, 1980. As Amended. Section 601 of the FLPMA required preparation of a long-range plan for the California Desert Conservation Area (CDCA). The CDCA Plan was adopted in 1980 to provide for the use of public lands and resources of the CDCA in a manner that enhances, wherever possible, and does not diminish, on balance, the environmental, cultural, and aesthetic values of the desert and its productivity. The CDCA Plan is a comprehensive, long-range plan covering 25 million acres. Approximately 10.7 million acres of this total are public lands administered by the BLM on behalf of the CDCA.

The CDCA Plan contains goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. A consistency analysis, including review of all applicable Conservation and Management Actions, has been done to ensure the Projects align with the goals and objectives of the CDCA Plan, as amended. This is included in the Plan of Development and reviewed by BLM.¹ The CDCA Plan identifies Areas of Critical Environmental Concern (ACECs) as special management areas where attention is required to protect important historic, cultural, scenic, biological, or other natural resources. There are seven ACECs located near the Projects (refer to Table 3.15-1 in Section 3.15, Recreation).

The Victory Pass Project and the gen-tie line serving both Projects would be partially located within BLM Designated Utility Corridor K, as identified in the CDCA Plan. The CDCA Plan designated utility Corridor K for “multi-modal use,” allowing for new electrical gen-tie towers and cables of 161 kilovolts or above. Utility Corridor K is also designated as Section 368 Federal Energy Corridor 30-52 in the Record of Decision (ROD) for the West-wide Energy Corridor Programmatic Environmental Impact Statement. Energy Corridor 30-52 is identified for “multi-modal use,” which allows for electricity transmission and distribution facilities. Section 368 corridors are identified with a numeric designation and are often overlain on locally designated corridors, as is the case with the east–west Section 368 2-mile-wide Corridor 30-52 overlying BLM Designated Utility Corridor K.

Western Solar Plan. BLM issued the Final Programmatic Environmental Impact Statement for Solar Energy Development in Arizona, California, Colorado, Nevada, New Mexico, and Utah in July 2012, and signed the associated ROD on October 12, 2012. The Western Solar Plan was adopted through the Approved Resource Management Plan Amendments/ROD for Solar Energy Development in Six Southwestern States in October 2012.

As part of the Western Solar Plan, BLM identified priority development areas called solar energy zones (SEZs) to preserve these sites for future solar energy development. Included in this amendment was the Riverside East SEZ in Riverside County. The Projects and their associated infrastructure are in this SEZ. SEZs are “developable” areas for solar power development.

Desert Renewable Energy and Conservation Plan Amendment to the CDCA. The Desert Renewable Energy and Conservation Plan (DRECP) is a landscape-level plan that streamlines renewable energy development while conserving unique and valuable desert ecosystems and providing outdoor recreation opportunities. The ROD for the DRECP Land Use Plan Amendment (LUPA) was signed in 2016 and is intended to facilitate the development of utility-scale renewable energy and transmission projects in the Mojave and Colorado deserts in California to reach federal and state energy targets while conserving sensitive species and habitats as well as cultural, scenic, and social resources. The LUPA applies to nearly 11,000,000 acres of BLM-managed federal lands. The Projects are located within an area designated as a Development Focus Area (DFA). DFAs are locations where renewable energy generation is an allowable use, incentivized, and could be streamlined for approval under the DRECP LUPA.² No state or local agency, including CDFW, has adopted or approved the DRECP. CDFW recognizes the DRECP under federal law as

¹ The Plan of Development can be found on the BLM project ePlanning website at <https://eplanning.blm.gov/eplanning-ui/project/1502789/570>.

² ~~In January 2021, BLM released a Draft Environmental Impact Statement and plan amendment for the CDCA Plan that underlies the DRECP. This draft document included revision to the Conservation and Management Actions as well as some of the land allocations, but not the land allocations of the lands used by the Projects (i.e., the DFA in Riverside County and the ACEC and Special Recreational Management Area crossed by the gen-tie line.) Until any revisions are final and approved by BLM, BLM would continue to manage the land under the existing DRECP management actions as addressed in this document.~~

a land use plan for BLM. It is also a relevant regional plan for purposes of CDFW's lead agency review of the Projects under the California Environmental Quality Act (CEQA), including the DRECP's landscape-level focus on the conservation of, among other things, unique desert ecosystems in the plan area, which includes the Project sites.

State Laws, Regulations, and Policies

The Projects would be located entirely on BLM-administered public lands, therefore state laws, regulations, and policies do not apply.

Local Laws, Regulations, and Policies

The Projects would be located entirely on BLM-administered public lands, therefore local plans and ordinances do not apply. However, for CEQA purposes, the applicable County of Riverside policies were reviewed and are included here for informational purposes.

County of Riverside General Plan. The County of Riverside General Plan was adopted on October 7, 2003. Through a series of resolutions, the Board of Supervisors adopted an update on December 8, 2015. The General Plan consists of a vision statement and the following elements: Land Use, Circulation, Multi-purpose Open Space, Safety, Noise, Housing, Air Quality, and Administration. The County of Riverside General Plan sets forth County of Riverside (County) land use policies and guidance for implementation. The General Plan is augmented by more detailed Area Plans covering the County's territory.

County of Riverside General Plan land use designations within the Project area include Open Space-Rural. The Open Space-Rural land use designation is applied to remote, privately owned open space areas with limited access and a lack of public services. Single-family residential uses are permitted at a density of one dwelling unit per 20 acres. The extraction of mineral resources subject to an approved surface mining permit may be permissible.

The General Plan establishes policies for development and conservation within the entire unincorporated County territory. The General Plan's policy goals that are potentially relevant to land use for the Project are provided below (County of Riverside 2015a, 2020).

Land Use Element

- **Policy LU 2.1.c.** The County shall provide for a broad range of land uses, intensities, and densities including a range of residential, commercial, business, industry, open space, recreation, and public facility uses.
- **Policy LU 5.1.** Ensure that development does not exceed the ability to adequately provide supporting infrastructure and services, such as libraries, recreational facilities, educational and day care centers, transportation systems, and fire/police/medical services
- **Policy LU 7.1.** Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts.
- **Policy LU 8.1.** The County shall accommodate the development of a balance of land uses that maintain and enhance Riverside County's fiscal viability, economic diversity and environmental integrity.
- **Policy LU 9.1.** Provide for permanent preservation of open space lands that contain important natural resources, cultural resources, hazards, water features, watercourses including arroyos and canyons, and scenic and recreational values.

- **Policy LU 9.2.** Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and federal and state regulations such as CEQA, NEPA [National Environmental Policy Act], the Clean Air Act, and the Clean Water Act.
- **Policy LU 10.1.** Require that new development contribute their fair share to fund infrastructure and public facilities such as police and fire facilities.
- **Policy LU 14.1.** The County shall preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.
- **Policy LU 14.5.** Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.
- **Policy LU 17.2.** Permit and encourage, in an environmentally and fiscally responsible manner, the development of renewable energy resources and related infrastructure, including but not limited to, the development of solar power plants in the County of Riverside.
- **Policy LU 26.3.** Ensure that development does not adversely impact the open space and rural character of the surrounding area.
- **Policy LU 26.5.** Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character.

Multi-Purpose Open Space Element

- **Policy OS 11.1.** Enforce the state Solar Shade Control Act, which promotes all feasible means of energy conservation and all feasible uses of alternative energy supply sources.
- **Policy OS 11.2.** Support and encourage voluntary efforts to provide active and passive solar access opportunities in new developments.
- **Policy OS 11.3.** Permit and encourage the use of passive solar devices and other state-of-the-art energy resources.
- **Policy OS 11.4.** Encourage site-planning and building design that maximizes solar energy use/potential in future development applications.

Desert Center Area Plan. The Project is located within the Desert Center Area Plan. The Desert Center Area Plan provides customized direction specifically for this portion of the County and guides the evolving character of the agricultural and desert area. The Desert Center Area Plan envisioned little new development for the planning horizon (through 2020), except for infill and/or revitalization of the Eagle Mountain Townsite and contiguous expansion of the Desert Center and Lake Tamarisk communities. It was written in 2010 before widespread development of utility-scale renewable projects and as a result is largely silent on such development (County of Riverside 2015b).

3.11.2 Environmental Setting

The Projects' area is in eastern Riverside County, north of Interstate (I) 10 and approximately 5 miles east of Desert Center (refer to Figure 2-2, Proposed Projects). The Projects' area is surrounded primarily by BLM land with some scattered rural residences and agricultural operations.

Nearby projects include the operating Desert Sunlight Solar Farm, which is approximately 6 miles northwest of the Projects. The Desert Harvest Solar Project and the Palen Solar Project are both approved and under construction, both within 0.5 miles of the Projects. The adjacent Athos Solar Project is approved, and in the pre-construction phase (as of June 2021), and the Oberon Solar Project, approximately 1,000 feet west of Victory Pass, is proposed and currently under environmental review.

These solar projects have existing or proposed gen-tie lines connecting to the Southern California Edison Red Bluff Substation (refer to Figure 2-4, Proposed Projects and Other Solar Projects). The Federal Energy Regulatory Commission- and BLM-approved Eagle Mountain Pumped Storage Project, located north of Desert Center, would interconnect with the Red Bluff Substation as well. Several existing ROWs on BLM-administered land cross the Projects (BLM 2020) including the Palen (CACA 48810) and Athos (CACA 57730) gen-ties and access routes, the existing Southern California Edison 161-kilovolt transmission route (LA 0149780), and several drainages for the I-10 (R 05498). In addition, the Metropolitan Water District aqueduct (LA 053581) is north of the Arica Project. The gen-tie would also cross the Eagle Crest Pumped Storage gen-tie ROW (CACA 49980), and the Desert Sunlight (CACA 48649) and Desert Harvest (CACA 49491) gen-tie line ROW.

The Chuckwalla Valley Raceway is located northwest of the Projects. The Projects are approximately 6 miles south of the Joshua Tree National Park. Other development in the surrounding area consists of active and fallow agricultural fields, residences, solar development, and electrical transmission lines. Surrounding areas also include undeveloped desert land that is largely federally owned.

The 230-kilovolt gen-tie line would traverse BLM-administered public lands within the Riverside East SEZ, and within a DRECP DFA. The gen-tie line would cross into the Chuckwalla ACEC located south of I-10, within the existing utility corridor, to tie into the existing Red Bluff Substation. A portion of the gen-tie lines north and south of the I-10 corridor would also be sited within the Section 368 Federal Energy Corridor as established by the West-wide Energy Corridor Final Programmatic Environmental Impact Statement and ROD.

3.11.3 Impact Analysis

Methodology

Evaluation of potential land use conflicts that may result from the Projects was based on a review of relevant planning documents, including the CDCA Plan and Amendments, and a review of the proposed solar facilities sites and surrounding area. The focus of the land use analysis is on land use conflicts that would result from implementation of the Projects. Land use conflicts are identified and evaluated based on existing or authorized land uses, land uses proposed as part of the Projects, land use designations, and standards and policies related to land use.

Criteria for Determining Significance

The criteria used to determine the significance of potential land use impacts are based on the criteria identified in the CEQA Guidelines, Appendix G. The Projects would result in a significant impact under CEQA related to land use if they would:

- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (see Impact LU-1)

The following CEQA significance criteria from Appendix G is not included in the analysis:

- Physically divide an established community.

The Projects and their gen-tie line would not divide an established community because all are allocated on undeveloped parcels of BLM-administered public lands.

Applicant Proposed Measures

No Applicant Proposed Measures or other measures regarding land use and planning are required.

Environmental Impacts

Land use can be assessed by analyzing current land activities, land ownership, zoning, and consistency with existing land use plans, ordinances, regulations, and policies. Both Projects and the gen-tie line are located entirely on Bureau of Land Management (BLM)-administered public lands.

Impact LU-1. Would the Projects cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

LESS THAN SIGNIFICANT. This impact considers both the use of the land and the existing rights and potential conflicts with the Projects.

Projects' Use of Land. The Projects would be located entirely on BLM-administered land, within a DFA. The Projects are also located within the Riverside East SEZ. The DFA designation allows for development of renewable energy facilities and associated infrastructure, including gen-tie lines, without requiring a land use plan amendment if a project complies with relevant DRECP Conservation and Management Actions. The DRECP is relevant to CDFW's lead agency review of the Projects because information provided by the Applicants to CDFW regarding potential environmental effects to is presented, in part, against the backdrop of the Projects' consistency with the DRECP. In addition, as noted in Section 3.11.1, BLM describes the DRECP as a landscape-level plan that streamlines renewable energy development while conserving unique and valuable desert ecosystems and providing outdoor recreation opportunities. CDFW has determined for purposes of CEQA that the DRECP is a "land use plan" relevant to its lead agency review of the Projects.

Approximately 500 feet of the Projects' shared gen-tie line would be within an ACEC and would require ground disturbance for the transmission pole(s), but would remain within the existing utility corridor. There is not a feasible manner for the Projects to interconnect with the Red Bluff Substation without use of the ACEC, and the proposed gen-tie line would parallel the existing gen-tie lines. The Projects and the gen-tie line would be consistent with the CDCA as amended by the DRECP LUPA, and its Conservation and Management Actions including for the ground disturbance within the ACEC.² Because this land is specifically designated for developments such as the proposed Projects, there would be no conflicts with BLM land use, and would not conflict with federal policies, regulations, and goals.

If the Projects are developed on this site, the land could not be used for other use opportunities that would otherwise be available on public lands during the life of the Projects. As discussed in Section 3.15, Recreation, the Projects would permanently affect some BLM open routes by closing them, while others would be left open. BLM open routes are defined as off-highway vehicle routes where access by all types of motorized vehicles is allowed generally without restriction (BLM 2021). Closure of BLM open routes would be considered by the BLM in their National Environmental Policy Act document and would be considered an implementation process, consistent with their regulations. At the end of the BLM ROW grant term, if there is no contract extension available, no other buyer of the energy emerges, or there is no further funding, the Projects would be decommissioned. Decommissioning would include removal of all facilities and reclamation of all disturbed areas (refer to Section 2.5, Decommissioning and Repowering, regarding decommissioning). The land would then be available for other multiple uses, as allowed by applicable land use planning documents and regulations at the time of decommissioning.

² Refer to Plan of Development, available on the BLM ePlanning website for Arica and Victory Pass Solar Projects at <https://eplanning.blm.gov/eplanning-ui/project/1502789/570>.

Because the Projects are located on public land, they are not required to be consistent with local land use policies. Nonetheless, local land use policies have been reviewed in this CEQA document where appropriate, see for example the Aesthetics and Noise sections (Sections 3.2 and 3.12, respectively). Additionally, Table 3.11-1 includes a review of the applicable local land use policies for consistency for informational purposes. The proposed Projects would be expected to be consistent or partially consistent with the local and regional policies. Where not fully consistent, the partial inconsistency is not expected to be significant (refer to Section 3.2 regarding partial inconsistencies with some local visual policies). Additionally, the Projects would be consistent with the County’s policies to promote alternative energy supply sources and provide solar opportunities. As part of the permitting process, the Projects’ Applicants are coordinating as appropriate with specific County departments, such as the Riverside County Fire Department, that may be impacted by the Projects to ensure any impacts are addressed and that the Projects do not impact public facilities (refer to Section 3.14, Public Services, regarding impacts to public services and facilities).

Table 3.11-1. Consistency with Regional and Local Land Use Plans, Policies, and Regulations

Policy/Regulations/ Goals	Description	Consistency Analysis
Land Use Element		
LU 2.1.c	Requires a broad range of land uses, including a range of residential, commercial, business, industry, open space, recreation and public facility uses.	Consistent. The Projects would not limit the range of land uses and would provide a new land use on the sites.
LU 5.1	Requires development does not exceed the ability to adequately provide supporting infrastructure and services	Consistent. The Projects would not result in a permanent increase in population or associated infrastructure or services. Roads and other infrastructure that must be improved to accommodate the Projects will be improved as needed by the Applicants.
LU 7.1	Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts	Consistent. The Projects would be consistent with the County of Riverside General Plan and Desert Center Area Plan.
LU 8.1	Develop a balance of land uses that maintain and enhance the County’s fiscal viability, economic diversity and environmental integrity	Consistent. The Projects would be located on Bureau of Land Management (BLM) land which does not directly affect the County’s fiscal viability. However, it would help maintain the County’s fiscal viability by increasing the revenue of the County through increased construction workforce.
LU 9.1	Provide for permanent preservation of open space lands that contain important natural resources, cultural resources, hazards, water features, watercourses including arroyos and canyons, and scenic and recreational values.	Consistent. The Projects are not within an area with important natural resources, they are within an area identified by the BLM as appropriate for renewable energy and would be adjacent to existing and proposed renewable energy projects.
LU 9.2	Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and federal and state regulations such as CEQA [California Environmental Quality Act], NEPA [National Environmental Policy Act], the Clean Air Act, and the Clean Water Act	Consistent. The Projects would comply with CEQA, NEPA, and other federal and local resource conservation laws and regulations. By complying with the Conservation and Management Actions from the BLM Desert Renewable Energy Conservation Plan Land Use Plan Amendment, they would protect environmental resources on the project site.

Table 3.11-1. Consistency with Regional and Local Land Use Plans, Policies, and Regulations

Policy/Regulations/ Goals	Description	Consistency Analysis
LU 10.1	Require that new development contribute their fair share to fund infrastructure and public facilities such as police and fire facilities	Consistent. The Projects are not anticipated to cause additional impacts to public facilities. The Applicants are coordinating with the Riverside County Fire Department to ensure they meet the County’s requirements and minimize impacts to their resources.
LU 14.1	Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public	Consistent. The Projects would be located on disturbed lands that are near existing solar projects and existing electrical facilities. Refer to Section 3.2, Aesthetics, of this EIR for more information.
LU 14.5	Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground	Consistent. The Projects may have views from County-eligible scenic highway Interstate (I) 10, but near I-10, where views will be more substantially impacted, the Projects would parallel existing electrical facilities and be located in an existing utility corridor. Refer to Section 3.2, Aesthetics, of this EIR for more information.
LU 17.2	Permit and encourage, in an environmentally and fiscally responsible manner, the development of renewable energy resources and related infrastructure, including but not limited to, solar power plants in the County of Riverside	Consistent. The Projects are renewable energy projects and are being reviewed under CEQA to reduce the environmental impacts of the Projects.
LU 26.3	Ensure that development does not adversely impact the open space and rural character of the surrounding area.	Consistent. The Projects are located on BLM land identified as appropriate for solar in a landscape-scale planning document. They are near existing solar projects. The Projects will not impair the character of the surrounding area.
LU 26.5	Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character	Consistent. The Projects would be located on BLM land identified as appropriate for solar in a landscape-scale planning document. They are near existing and approved solar projects. Some open space areas will be impacted, but the Projects will not introduce urban uses into the area and because it is time limited, open space areas will be able to maintain their character in the future.
Multi-Purpose Open Space Element		
OS 11.1	Enforce the state Solar Shade Control Act, which promotes all feasible means of energy conservation and all feasible uses of alternative energy supply sources	Consistent. The Projects would be renewable energy solar projects.
OS 11.2	Support and encourage voluntary efforts to provide active and passive solar access opportunities in new developments	Consistent. The Projects would be renewable energy solar projects.

Table 3.11-1. Consistency with Regional and Local Land Use Plans, Policies, and Regulations

Policy/Regulations/ Goals	Description	Consistency Analysis
OS 11.3	Permit and encourage the use of passive solar devices and other state-of-the-art energy resources	Consistent. The Projects would be renewable energy solar projects.
OS 11.4	Encourage site-planning and building design that maximizes solar energy use/potential in future development applications	Consistent. The Projects would be renewable energy solar projects.
Desert Center Area Plan		
Desert Center Area Plan (DCAP) 3.1	Protect farmland and agricultural resources in Desert Center through adherence to the Agricultural Resources section of the General Plan Multipurpose Open Space Element and the Agriculture section of the General Plan Land Use Element, as well as the provisions of the agriculture land use designation	Consistent. The Projects are on BLM land that does not include agriculture use and is not under any grazing lease. The Projects would not impact any nearby agriculture use of private land.
DCAP 4.1	When outdoor lighting is used, require the use of fixtures that would minimize effects on the nighttime sky and wildlife habitat areas, except as necessary for security reasons.	Consistent. Security lights around the substation, inverters, gates, and along the perimeter fencing would be motion sensitive and directional. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties.
DCAP 5.2	Maintain Riverside County’s roadway Level of Service standards as described in the Level of Service section of the General Plan Circulation Element.	Consistent. With incorporation of Applicant Proposed Measures in Section 3.16, Transportation, the Projects are not anticipated to impact the County roadways.
DCAP 8.1	Protect the scenic highways within the Desert Center Area Plan from change that would diminish the aesthetic value of adjacent properties through adherence to the policies found in the Scenic Corridors sections of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.	Consistent. The Projects would be located on BLM lands that are near an existing solar project. The Projects gen-tie would cross the I-10 parallel to existing electrical facilities. Refer to Section 3.2, Aesthetics, of this EIR for more information.
DCAP 9.1	Encourage clustering of development for the preservation of contiguous open space.	Consistent. The Projects would be located near an existing solar project and several proposed or approved solar projects.
DCAP 9.2	Work to limit off-road vehicle use within the Desert Center Area Plan.	Consistent. The Projects would not encourage off-road vehicle use.
DCAP 9.3	Require new development to conform with Desert Tortoise Critical Habitat designation requirements	Consistent. The Projects would conform to Desert Tortoise Critical Habitat designation requirements, refer to Section 3.4, Biological Resources.

Existing Rights and Potential Conflicts. Grants, including the Projects’ ROW grants, are subject to the valid existing right of others, including rights retained by the United States. Other valid existing rights pertain to collocated transmission lines, which do not conflict with the Projects, as the shared transmission line ROWs would be managed to meet all applicable regulations. If there are other applications in the Projects area, BLM retains the right to require common use of rights-of-way for compatible uses, including facilities or access routes and the right to change grants to protect public health or safety of the environment.

BLM retains the right to issue other compatible ROWs within the boundary of the Projects. If subsequent ROWs are granted within the site for the proposed ROW, BLM would be required to notify those with valid existing rights, per Code of Federal Regulations Section 2807.14. Grant holders would have an opportunity to respond in writing as to how the actions would impact their existing operations/rights. BLM would consider the potential effects prior to granting subsequent ROWs. There are multiple active, approved, and proposed projects in the Projects' area, as shown in Tables 3.1-1 and 3.1-2, on Figure 3.1-1, and in Section 3.1.2, Cumulative Impact Scenario. These include existing and proposed solar projects, and the approved Eagle Mountain Pumped Storage Project. Each of these projects include gen-tie lines that would cross or be adjacent to the Arica and Victory Pass gen-tie line, and all would connect into the Southern California Edison Red Bluff Substation.

Prior to ROW grant approval, the Applicants are required to coordinate with any legally existing ROWs or conflicting uses to ensure the Projects do not impact these uses, including bearing the cost of this coordination. This includes coordinating the construction of the gen-tie lines with construction of other approved projects. The Applicants have started this coordination process, in consultation with BLM, by submitting documentation to the various existing and planned land users to ensure the gen-tie line does not infringe on their existing rights. This coordination is ongoing, and the developers are having continued discussions as well as working with BLM to resolve the potential conflicts.

Eagle Crest Energy, the developer of the approved Eagle Mountain Pumped Storage Project, stated in a scoping comment that the Victory Pass solar array would potentially block their transmission interconnection to the Red Bluff Substation. They noted that while there is no conflict with the proposed Projects' gen-tie line or arrays and the approved Eagle Crest Energy gen-tie ROW, they need to revise the Eagle Crest Energy gen-tie ROW to tie into the Red Bluff Substation. The scoping comment letter also notes that the Victory Pass Project overlaps with a federally designated corridor (refer to Figure 3.11-1, Federal Section 368 Designated Corridor). However, the Eagle Crest Energy scoping comment did not provide information regarding the route a revised transmission interconnection could potentially take. Without a revised route, it is not feasible to assume how the Victory Pass solar arrays may conflict with the Eagle Crest Energy gen-tie ROW. Because the Victory Pass Project is not contiguous, there is availability within the designated corridor for the Eagle Crest Energy gen-tie line to cross between the fenced areas and interconnect with the Red Bluff Substation. Coordination between the Victory Pass Applicant and Eagle Crest Energy is ongoing, and BLM would require resolution of identified conflicts prior to approval, reducing any land use conflict.

The Metropolitan Water District provided a scoping comment that noted their aqueduct ROW north of the Projects and requested that the Projects consider the potential for flooding during engineering. The Applicants would consider all potential flooding concerns during engineering. Flood hazards are also discussed in Section 3.10, Hydrology and Water Quality.

Conclusion. The proposed Projects would not conflict with applicable land use plans, policies, and regulations, and would not result in an alteration of the present or planned land use of the area. The Projects are not inconsistent or incompatible with the site's existing, proposed, or surrounding land uses. Therefore, the Projects would not indirectly cause a significant environmental impact due to conflicts with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts related to the use of the land and other conflicts.

Cumulative Impacts

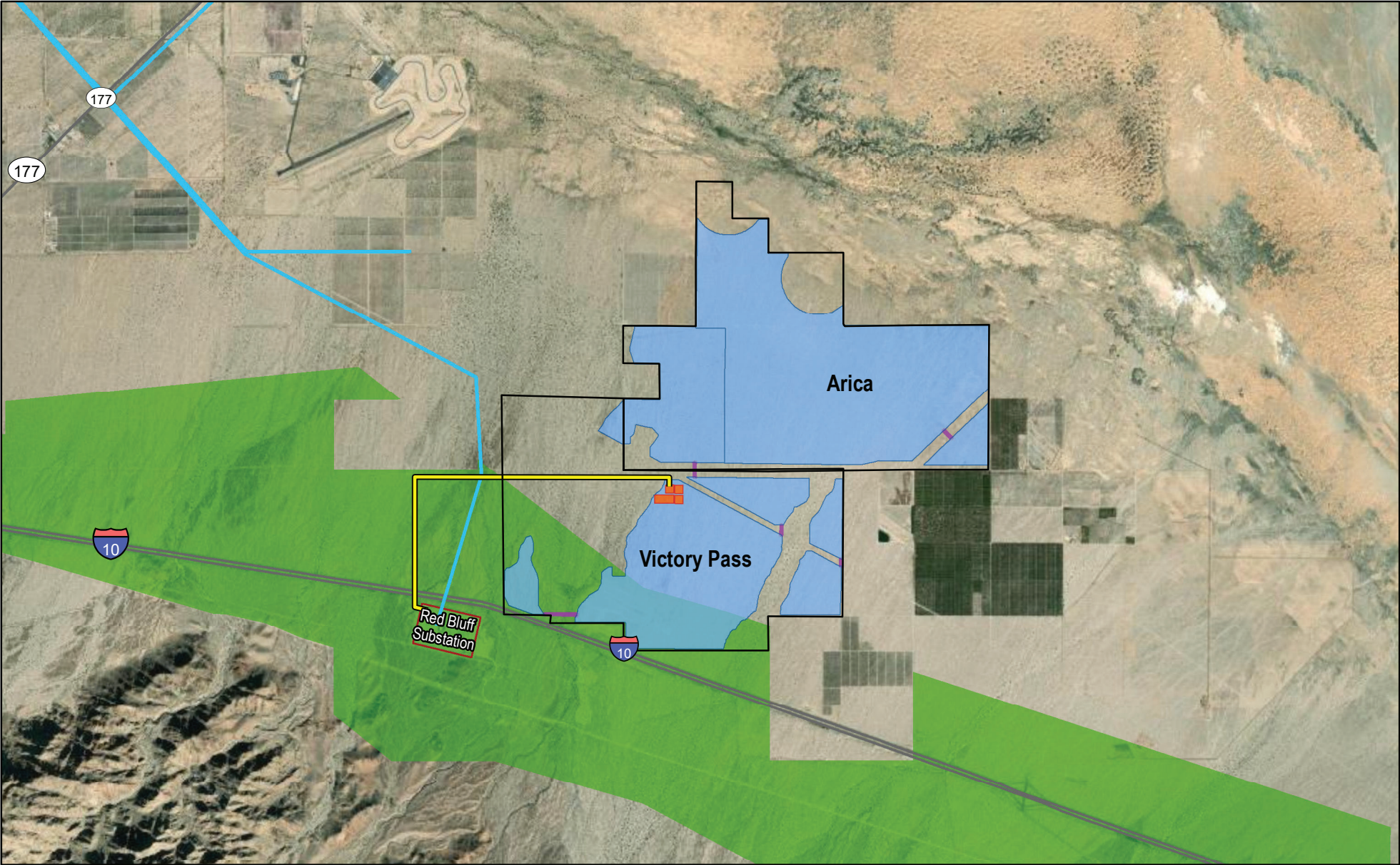
Geographic Scope. The cumulative scope for land use would include eastern Riverside County. This is because the uses and users of the land from Desert Center to Blythe are similar and this region is often considered as a whole for land use planning. Implementation of the Projects and other past, present, and reasonably foreseeable future projects, primarily solar development, would preclude the development of other future uses on the Project sites over the lifetime of the projects and could affect land use opportunities on lands within the eastern Riverside County portion of the CDCA Plan area. Potential effects could include access conflicts, or conflicts with various gen-tie line routes connecting to the Red Bluff Substation.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Tables 3.1-1 and 3.1-2 in Section 3.1.2 Cumulative Impact Scenario. Many solar and renewable energy projects have been proposed, approved, or constructed in the Projects' area, both on private and public land. Similar to the Projects, some cumulative projects would also block or preclude access to recreational opportunities or preclude other types of multiple use (e.g., agriculture, mining, grazing). With appropriate permitting, each project would avoid impacts to land use. During the permitting of the cumulative projects, multiple uses would be reviewed by BLM or the County to ensure there would be appropriate access and no direct conflicts. As part of its planning process, BLM has set aside millions of acres for uses other than renewable development (e.g., recreation, mining, conservation) and has directed renewable development to DFAs. While the County's Desert Center Area Plan did not anticipate the potential for multiple solar projects in the area, the County has approved nearby solar projects (Athos and Palen) and has shown they do not conflict with the County plans (refer to Table 3.11-1). Because each individual project must undergo this type of review and because the agencies have identified Desert Center as an area where renewable energy is acceptable, the Projects, in conjunction with other past, present, and probable future projects, would not result in a cumulatively considerable or significant land use impact. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to land use and planning.

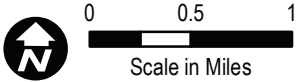
3.11.4 Mitigation Measures

No mitigation is required to avoid or substantially lessen impacts to land use and planning.

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Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020



- BLM Right-of-Way Grant Application Area
- Solar Project Facilities (Project Fencelines)
- Substations, Switchyard, O&M Building, and Battery Storage
- Proposed Shared Gen-tie Line
- Eagle Mountain Pumped Storage Project Approved gen-tie ROW
- BLM Section 368 Designated Corridor
- Project Roads

Figure 3.11-1

Federal Section 368 Designated Corridor

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3.12 Noise

This section evaluates the environmental impacts caused by the noise and groundborne vibration levels that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects related to noise and groundborne vibration levels for both of the proposed Projects as the whole of the action. The analysis in this section describes the applicable policies and ordinances, presents the fundamentals of environmental noise, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the potential noise impacts of the proposed Projects. Noise impacts to wildlife are separately addressed in this Environmental Impact Report in Section 3.4, Biological Resources.

During the scoping effort, no party identified any public concerns related to potential noise or vibration impacts.

3.12.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Regulating environmental noise is generally the responsibility of local governments; however, the U.S. Environmental Protection Agency has published guidelines on recommended maximum noise levels to protect public health and welfare (EPA 1974).

State Laws, Regulations, and Policies

The State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research (OPR 2017).

To protect workers from excessive on-site noise levels, the Occupational Safety and Health Act of 1970 sets on-site occupational noise exposure levels, which are regulated in California via the California Occupational Safety and Health Administration. The maximum time-weighted average noise exposure level of workers is 90 dBA over an 8-hour work shift (29 CFR Section 1910.95).

Local Laws, Regulations, and Policies

Riverside County General Plan Noise Element

Land Use Compatibility. The County of Riverside General Plan Noise Element (County of Riverside 2015) provides the guidelines on Land Use Compatibility for Community Noise Exposure, which are used to evaluate potential noise impacts and to set the criteria for environmental impact findings and conditions for project approval. Land use compatibility defines the acceptability of a land use in a specified noise environment. The land use compatibility criteria adopted by the County of Riverside (County) as part of its Noise Element of the General Plan appear in Table 3.12-1.

Table 3.12-1. County of Riverside Land Use Compatibility Standards

Land Use	CNEL or Ldn Noise Level			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low-density (single-family, duplex, mobile homes)	Up to 60 dBA	55–70 dBA	70–75 dBA	Over 75 dBA
Residential – Multiple-family	Up to 65 dBA	60–70 dBA	70–75 dBA	Over 75 dBA
Transient lodging, motels, hotels	Up to 65 dBA	60–70 dBA	70–80 dBA	Over 80 dBA
Schools, libraries, churches, hospitals, nursing homes	Up to 70 dBA	60–70 dBA	70–80 dBA	Over 80 dBA
Auditoriums, concert halls, amphitheatres	Category not used	Up to 70 dBA	Over 65 dBA	Category not used
Sports arenas, outdoor spectator sports	Category not used	Up to 75 dBA	Over 70 dBA	Category not used
Playgrounds, neighborhood parks	Up to 70 dBA	Category not used	67.5–75 dBA	Over 72.5 dBA
Golf courses, riding stables, water recreation, cemeteries	Up to 75 dBA	Category not used	70–80 dBA	Over 80 dBA
Office buildings, business commercial, professional	Up to 70 dBA	67.5–77.5 dBA	Category not used	Over 75 dBA
Industrial, manufacturing, utilities, agriculture	Up to 75 dBA	70–80 dBA	Category not used	Over 75 dBA

Source: Noise Element Table N-1 (County of Riverside 2015).

CNEL = Community Noise Equivalent Level; Ldn = day-night average sound level; dBA = A-weighted decibel

Policies for Noise Compatibility. The following County General Plan Noise Element policies protect noise-sensitive land uses from noise emitted by outside sources, and prevent new projects from generating adverse noise levels on adjacent properties (County of Riverside 2015):

- **Policy N 1.1.** Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.
- **Policy N 1.2.** Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors or within the projected noise contours of any adjacent airports.
- **Policy N 1.4.** Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.
- **Policy N 1.5.** Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.
- **Policy N 1.6.** Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive uses.
- **Policy N 1.8.** Limit the maximum permitted noise levels that cross property lines and impact adjacent land uses, except when dealing with noise emissions from wind turbines.
- **Policy N 3.2.** Require acoustical studies and subsequent approval by the Planning Department and the Office of Industrial Hygiene, to help determine effective noise mitigation strategies in noise-producing areas.

- **Policy N 3.3.** Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses.
- **Policy N 3.5.** Require that a noise analysis be conducted by an acoustical specialist for all proposed projects that are noise producers. Include recommendations for design mitigation if the project is to be located either within proximity of a noise-sensitive land use, or land designated for noise sensitive land uses.
- **Policy N 3.6.** Discourage projects that are incapable of successfully mitigating excessive noise.
- **Policy N 3.7.** Encourage noise-tolerant land uses such as commercial or industrial, to locate in areas already committed to land uses that are noise-producing.

Temporary Construction. The County General Plan Noise Element includes numerous policies intended to minimize noise-related conflicts between adjacent types of land uses. Policies addressing “temporary construction” activities include the following (County of Riverside 2015):

- **Policy N 13.1.** Minimize the impacts of construction noise on adjacent uses within acceptable practices.
- **Policy N 13.2.** Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.
- **Policy N 13.4.** Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Stationary Sources of Noise. The County General Plan Noise Element also identifies preferred noise standards for stationary noise sources that affect residential land uses, as shown in Table 3.12-2.

Table 3.12-2. Stationary Source Land Use Noise Standards

Land Use	Time of Day	Interior Noise Standard	Exterior Noise Standard
Residential	10:00 p.m. to 7:00 a.m.	40 Leq dBA, 10-minute	45 Leq dBA, 10-minute
Residential	7:00 a.m. to 10:00 p.m.	45 Leq dBA, 10-minute	65 Leq dBA, 10-minute

Source: Noise Element Table N-2 (County of Riverside 2015).

Leq = equivalent sound level; dBA = A-weighted decibel

Note: The County General Plan Noise Element indicates that these levels are preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

Vibration. Groundborne vibrations can be a source of annoyance to people or a source of structural damage to some types of buildings. Although vibration measurements can be presented in many different forms, peak particle velocity is the unit of measure used most often to assess building damage potential. Table 3.12-3 describes human reaction to typical vibration levels.

The County General Plan Noise Element (County of Riverside 2015) includes consideration of groundborne vibrations. Residential areas, schools, and sensitive research operations are among the land uses that are vibration sensitive.

Table 3.12-3. Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (inches per second)	Human Reaction
0.0059–0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings

Table 3.12-3. Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (inches per second)	Human Reaction
0.3937–0.5905	Vibrations considered unpleasant when continuously subjected and unacceptable by some walking on bridges

Source: California Department of Transportation data in County General Plan Noise Element Table N-3 (County of Riverside 2015).

County of Riverside Noise Ordinance

The County Noise Ordinance allows for different levels of acceptable noise depending on land use. The Noise Ordinance or Ordinance No. 847 (Regulating Noise) is incorporated in the County Code as Chapter 9.52 (Noise Regulation). The standards in Chapter 9.52.040 (also Section 4 of Ordinance No. 847) limit noise sources on any property from causing excessive exterior noise on any other nearby occupied property. The maximum decibel level standards depend on the receiving land use, such that sound levels in a low-density “Rural Community” must not exceed 55 dBA Lmax during the daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA Lmax during the nighttime hours (10:00 p.m. to 7:00 a.m.). These County standards protect noise-sensitive receptors within the very-low-density rural areas near the Projects.

Exceptions to the noise standards can be requested for construction-related reasons. Section 2 of Ordinance No. 847 specifies that the following construction activities are exempt from the provisions of the noise ordinance:

- Private construction projects located one-quarter-mile or more from the nearest inhabited dwelling.
- Private construction projects located within a one-quarter-mile of an inhabited dwelling provided that construction activities are limited to 6:00 a.m. to 6:00 p.m. during the months of June through September and are limited to 7:00 a.m. to 6:00 p.m. during the months of October through May.

3.12.2 Environmental Setting

Fundamentals of Community Noise

To describe environmental noise and to assess impacts on areas that are sensitive to community noise, a measurement scale that simulates human perception is used. The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel (dBA) is cited in most noise criteria. Decibels are logarithmic units that can be used to conveniently compare wide ranges of sound intensities.

Community noise levels can be highly variable from day to day and between day and night. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour day/night period (Ldn). The Leq, or equivalent sound level, is a single value (in dBA) for any desired duration that includes all the time-varying sound energy in the measurement period, usually 1 hour. L₅₀ is the median noise level that is exceeded 50% of the time during any measuring interval. The Ldn, or day-night average sound level, is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel (dB) penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m. Community Noise Equivalent Level (CNEL) is another metric that is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 5 dB to sound levels in the evening from 7:00 p.m. to 10:00 p.m., and after addition of 10 dB to sound levels in the night from 10:00 p.m. to 7:00 a.m. To easily estimate the day-night level caused by any noise source emitting steadily and continuously over 24-hours, the Ldn is 6.4 dBA higher than the source’s Leq. For example, if the

expected continuous noise level from equipment is 50.0 dBA Leq for every hour, the day-night noise level would be 56.4 dBA Ldn.

Community noise levels are usually closely related to the intensity of human activity. Noise levels are generally considered low when below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the Ldn noise levels can be below 35 dBA (BLM 2010). In small towns or wooded and lightly used residential areas, the Ldn is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports (Caltrans 2013). Although people often accept the higher levels associated with very noisy urban residential and residential/commercial zones, they nevertheless are considered to be adverse to public health.

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial and industrial zones. Nighttime ambient levels in urban environments tend to be higher than nighttime noise levels in rural areas away from roads and other human activity. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference. At 70 dBA, sleep interference effects become considerable (EPA 1974).

Existing Noise Environment

Historically, noise surveys conducted for the County General Plan found locations along Interstate (I) 10 to be exposed to noise over 60 dBA Ldn for any location within approximately 750 feet of the I-10 centerline, and over 65 dBA Ldn for locations within approximately 350 feet of the I-10 centerline. For other major highways, the 60 dBA traffic noise contour was projected to be approximately 410 feet from the centerline (County of Riverside 2008). Locations along State Route (SR) 177 are exposed to lower noise levels. Data collected for SR-177 in the Desert Center area shows roughly 2,800 vehicles daily and 7.5% of the baseline traffic as trucks (Caltrans 2016); with this mix of baseline traffic, the existing 60 dBA Ldn contour is approximately 230 feet from the centerline of SR-177 (County of Riverside 2019).

The setting for noise also includes the private Desert Center Airport and Chuckwalla Raceway, which offers use of the track for a fee and hosts motor sports events primarily on weekends. The raceway is located within the Desert Center Airport, which is infrequently used. The Riverside County Airport Land Use Compatibility Plan Policy Document (County of Riverside 2004) showed an average of fewer than one aircraft operation per day at the Desert Center Airport, and the 55 dBA CNEL noise contour is limited to the immediate vicinity of the runway (County of Riverside 2004).

Because few human-induced sources of noise occur around the Projects, the noise environment is generally serene and quiet. In 2009, ambient noise levels were measured at two isolated locations east of the Projects.¹ For residences more than 1.5 miles from I-10, the daytime average noise levels were found to be 43 dBA Leq, and nighttime average noise levels were 34 dBA Leq (CEC 2010). Because of the distance between the nearest noise-sensitive land use and the Projects, and with the existing information regarding the noise levels in the area, additional ambient noise measurements are not necessary.

Noise-Sensitive Receptors

In the Riverside County Noise Ordinance and County General Plan Noise Element, “noise-sensitive” land uses include residences, passive recreation areas, schools, hospitals, rest homes, places of worship, and

¹ These locations (one of which was previously a residence) are located on land that is part of the approved Athos Solar Project.

cemeteries (County of Riverside 2015). Noise-sensitive areas are places where quiet is necessary for the intended use of the land, such as residences where noise can interfere with sleep, concentration, and communication, and where excessive noise can cause physiological and psychological stress and hearing loss. In addition, wildlife management areas where breeding could be disturbed are considered sensitive receptors to noise.

There are no noise-sensitive land uses or inhabited dwellings within 0.25 miles of the Projects, and therefore noise from construction of the Projects would be exempt from noise standards (per Section 2 of Ordinance No. 847 listed above). The Projects are surrounded by uninhabited open space and agriculture. The Bureau of Land Management administers a range of recreational resources near the Projects, and the nearest recreation allocations are the Chuckwalla Special Recreation Management Area and Chuckwalla Desert Wildlife Management Area's Area of Critical Environmental Concern, whose boundaries are approximately 500 feet south of the nearest Victory Pass boundary, on the opposite side of the I-10 corridor. Prior to the 2019 County approval of the nearby Athos Solar Project, the nearest residence was located 0.75 miles (3,880 feet) east of Arica, but this residence is now part of the Athos Solar Project that is approved for construction and operation. There are no other residences within 1 mile of the Projects, and the nearest communities (Lake Tamarisk and Desert Center) are approximately 5.5 miles and 4.75 miles west of the Projects, respectively. The nearest school is the Eagle Mountain School, more than 12 miles northwest of the Projects. Project-related traffic would travel along Ragsdale Road, where a mobile home park is located at 43551 Ragsdale Road, in Desert Center. These residences would be within 500 feet (150 meters) of vehicle access to the Projects.

3.12.3 Impact Analysis

Methodology

Analysis of noise and vibration levels was performed through quantitative estimates of expected noise levels, review of agency policies and regulatory requirements, and qualitative analyses for issues that do not readily lend themselves to quantitative evaluation. Quantitative analyses were prepared to address noise and vibration from use of construction equipment on site, noise from construction-related traffic, and noise from facility operations.

The area of interest for noise and vibration issues is typically localized. Airborne noise dissipates fairly rapidly with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Sound is detectable somewhat farther downwind than upwind of a noise source. Temperature inversions and cloud cover can reflect or refract sound that is radiated upward; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high-intensity sounds. For noise sources such as construction activity and vehicle traffic, although potentially audible over large distances, the region of greatest influence is typically less than 0.25 miles (1,320 feet) from the noise source (County Noise Ordinance No. 847).

Groundborne vibrations similarly dissipate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 200 feet from the vibration source (Caltrans 2020).

Criteria for Determining Significance

Each California Environmental Quality Act lead agency has discretion to establish thresholds for when a noise level increase would be considered substantial. Typically, an increase in noise level of at least 5 dB is noticeable by most people, but in a residential setting would not be a substantial adverse impact. An increase in noise level of 10 dB is judged by most people as a doubling of the sound level, which would be considered a substantial adverse impact (Caltrans 2013). Other factors that are considered in determining adverse noise impacts include the resulting combined noise level, the duration and frequency of the noise, the number of people affected, and the land use designation of the affected receptor sites. Mitigating measures must be considered if significant impacts related to noise would occur from construction, operation and maintenance (O&M), or decommissioning of a project.

Typically, noise impacts due to construction activities are not considered substantial, assuming construction activities are temporary, intermittently affect any one location, limit the use of heavy equipment and noise activities to daytime hours, and implement all industry-standard noise abatement measures for noise-producing equipment (County of Riverside 2019).

A peak particle velocity threshold of 0.20 inches per second is a level of vibration impacts that can create adverse human reactions and a risk of damage to nearby buildings or structures, as shown in the County General Plan Noise Element (County of Riverside 2015). This peak particle velocity threshold was used in this analysis to determine whether construction-related vibration levels could cause a significant impact.

The Projects would have significant impacts on noise if they would:

- Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (see Impact N-1).
- Result in generation of excessive groundborne vibration or groundborne noise levels (see Impact N-2).
- For projects located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels (see Impact N-3).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts from noise, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM N-1 Construction Restrictions. Heavy equipment operation and noisy construction work relating to any features of the Projects within 0.25 miles of a sensitive receptor shall be restricted to the times delineated below, unless a special permit has been issued by the County of Riverside:

- June through September: 6 a.m. to 6 p.m.
- October through May: 7 a.m. to 6 p.m.

Haul truck engines and other engines powering fixed or mobile construction equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

The construction contractor shall locate equipment staging in areas to create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Projects during Project construction. Where feasible, the construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receptors nearest the Projects. No music or electronically reinforced speech from construction workers shall be audible at noise-sensitive properties.

APM N-2 Public Notification Process. At least 15 days prior to the start of ground disturbance, the Applicants shall notify all residents within 500 feet of Ragsdale Road, if selected as the approved access road, and the access driveway, by mail or by other effective means, of the commencement of construction. At the same time, the Applicants shall establish a telephone number for use by the public to report any undesirable noise conditions associated with construction and/or operation of the Projects. If the telephone is not staffed 24 hours a day, the Applicants shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the Projects during construction where it is visible to passersby. This telephone number shall be maintained until the Project has been operational for at least 1 year.

APM N-3 Noise Complaint Process. Throughout construction and operation of the Projects, the Applicants shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints. The Applicants or authorized agent shall do the following:

1. Use a Noise Complaint Resolution Form, or other documentation procedure acceptable to the County of Riverside (County), to record and report the Applicants' response to resolving each noise complaint.
2. Attempt to contact the person(s) making the noise complaint within 24 hours.
3. Conduct an investigation to determine the source of noise in the complaint.
4. If the noise is Projects-related, take all feasible measures to reduce the source of the noise.
5. Submit a report to the County documenting the complaint and actions taken. The report shall include a complaint summary, including the final results of noise reduction efforts, and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

Environmental Impacts

Impact N-1. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

LESS THAN SIGNIFICANT. Noise would be generated during construction at the sites of the Projects. Heavy-duty construction equipment would be used on the sites and near the sites for transporting construction equipment and materials by truck.

The construction timeframe for the Projects is estimated to be 16 months for Victory Pass and 18 months for Arica. During these months, construction activities would include mobilizing construction equipment, crews,

and materials; site preparation; access road widening; installing the photovoltaic (solar) and electric facilities; and restoring disturbed areas. The types of construction equipment used on the Project site would include trucks, small pile drivers, scrapers, dozers, graders, forklifts, cranes, loaders, and compactors. Table 3.12-4 summarizes the typical noise levels for individual pieces of construction equipment.

Table 3.12-4. Typical Noise Levels for Individual Construction Equipment

Equipment	Noise Level at 50 Feet (dBA Lmax)	Noise Level at 50 Feet (dBA Leq)
Pile driver (impact)	101	94
Mounted impact hammer (hoe ram)	90	83
Scraper	84	80
Dozer	82	78
Grader	85	81
Forklift, man lift	75	68
Crane	81	74
Backhoe, loader	79	75
Excavator	81	77
Compactor	83	76
Generator	81	78
Drill rig, auger	84	77
Dump truck, haul truck, concrete mixer truck	76-79	73-76
Pickup truck, crew truck	75	62-71

Source: FHWA 2006.

dBA = A-weighted decibel; Lmax = maximum noise level from Actual Measured in Roadway Construction Noise Model; Leq = equivalent noise level for 1 hour incorporating the Acoustical Usage Factor.

The source of highest noise levels at the Projects would be the impact pile driver, if necessary to install steel piles for photovoltaic panel structural supports. The maximum intermittent noise levels at the Projects would be up to 94 dBA Leq at 50 feet from work areas where impact pile driving occurs. Use of a small, light-duty mounted impact hammer, where geotechnical conditions allow, would reduce these highest noise levels to 84 dBA Leq at 50 feet. Work activities without a pile driver would typically cause up to 84 dBA Leq at 50 feet.

The noise levels caused by typical activities within the work area would be substantially lower when experienced at locations distant from the site boundaries. Because sound fades over distance, on-site noise would diminish over the distances separating noise-sensitive receptors from the work area. Assuming the standard spherical spreading loss (-6 dB per doubling of distance) and the highest unmitigated construction noise level of 94 dBA Leq at 50 feet, construction noise levels would be no more than 62 dBA Leq at a distance of 2,000 feet. Refer to Appendix I for a worksheet that quantifies construction noise levels for the project.

The boundaries of the Bureau of Land Management Chuckwalla Special Recreation Management Area and Chuckwalla Desert Wildlife Management Area's Area of Critical Environmental Concern would be approximately 500 feet from the nearest work activities, and at the boundaries of these Bureau of Land Management recreation allocations, the highest unmitigated construction noise level would be 74 dBA Leq. The portions of these recreational resources that would be nearest to construction noise are immediately south of I-10 and are separated from the Projects by I-10. During times of the nearest work activities, construction noise could be up to 9 dB higher than the existing noise levels along I-10, which would exceed 65 dBA Ldn for locations within approximately 350 feet of the I-10 centerline (County of Riverside 2008); these noise levels would be noticeable at the boundaries of the recreational resources. No residences are within 1 mile of the Projects.

With respect to construction-related traffic noise, development activities would also cause noise away from the Projects, primarily due to trucks needed to deliver and remove materials, and from commuting workers. Haul trucks would make trips to bring equipment, water, and materials to the work areas and remove waste. Access to the work areas would be from SR-177 and Ragsdale Road, parallel to I-10 in Desert Center.

The peak noise levels associated with passing trucks and commuting worker vehicles would be approximately 70 to 75 dBA at 50 feet (see Table 3.12-4), and this noise would be concentrated along the roads that access the Projects, primarily SR-177 and Ragsdale Road, where a mobile home park is located. Project construction peak-hour traffic noise along Ragsdale Road and the access driveway would be 67 dBA Leq within 100 feet and approximately 60 dBA Leq within 500 feet, and traffic noise at these levels could substantially increase the daytime noise levels for residences along Ragsdale Road and the access driveway. Refer to Appendix I for a worksheet that quantifies construction-related traffic noise levels. Residences in the near-field of these roads would experience noticeably increased noise from passing trucks and commuting worker vehicles. For the nearest residences, peak-hour construction traffic noise could be up to 7 dB louder than the baseline noise from I-10, which is more than 60 dBA Ldn for any location within approximately 750 feet of the I-10 centerline.

Construction-related traffic noise impacts would be limited to daytime conditions. Nighttime traffic noise would not change notably with construction that occurs mostly in the daytime, and construction-related traffic would not cause the overall day-night noise level to be in excess of any standards established in the County General Plan or Noise Ordinance. Project construction traffic along Ragsdale Road and the access driveway would cause day-night noise levels of approximately 60 dBA Ldn within 100 feet of the traffic. Although construction-related traffic would cause day-night noise levels for residences near Ragsdale Road to increase, the increase in day-night noise levels would not be substantial because of the baseline noise from I-10. APMs would be incorporated into the Projects to reduce the impact of peak-hour construction traffic noise.

The County Noise Ordinance allows noise from construction activities, and designates this noise as exempt, when (a) the construction project is located a quarter-mile or more from the nearest inhabited dwelling, or (b) when the construction project is located within a quarter-mile of an inhabited dwelling and the activities are limited to certain daytime hours. The closest resident is within 0.25 miles of construction traffic but more than 0.25 miles from the Projects. Although construction activities within the work areas would be more than 0.25 miles from inhabited dwellings, the noise from construction traffic would cause an increase over the noise levels that exist without the Projects.

The typical construction work schedule is expected to be from 7:00 a.m. to 5:00 p.m., Monday through Friday. The Riverside County Noise Ordinance allows construction noise to be exempt from noise thresholds between 7:00 a.m. and 6:00 p.m. However, the work schedules of the proposed Projects would need to adhere to the County exemption for construction noise where activities are within 0.25 miles of a sensitive receptor to comply with the ordinance. The County General Plan Noise Element includes no threshold noise levels (in terms of dBA) for temporary construction, but policies require implementation of acceptable practices to minimize the effects of adverse construction noise.

APM N-1 (Construction Restrictions) is required to ensure that any construction activities within 0.25 miles of a sensitive receptor outside of the schedule of the Noise Ordinance would be limited to light-duty equipment and vehicles. APM N-2 (Public Notification Process) and APM N-3 (Noise Complaint Process) are required to ensure that residents near Ragsdale Road and the access driveway are provided advance notification of potentially adverse noise conditions and to ensure that complaints are resolved. With incorporation of the APMs, construction would not result in a substantial increase in noise levels in excess

of standards established in County General Plan or Noise Ordinance or applicable standards of other agencies. With incorporation of the APMs, the impact of construction noise relative to applicable community noise standards would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Operation

LESS THAN SIGNIFICANT. Operations-related activities that could cause minor levels of noise in the areas of the proposed Projects include upkeep, maintenance, inspections, panel washing, site security, and vegetation management. The proposed Projects would also include stationary sources of noise in the form of photovoltaic panel tracking system motors, the inverters and transformers that operate when the solar panels produce electricity in the daytime, and the battery storage component. Each of the two proposed substations and the switchyard would include one emergency-use-only generator for use if the regional transmission system fails. Each standby emergency generator engine would be a new stationary source of noise; however, the generators would only occasionally and intermittently run for testing and emergency situations.

Throughout the solar field, the equipment that could generate the most prominent stationary-source noise would be the pad-mounted inverter stations and transformers. The noise produced by the individual inverters and transformers would depend on the final equipment selected and the ultimate locations of the individual inverter stations. Auxiliary equipment for inverters and transformers usually includes cooling fans and pumps that operate depending on the internal temperature of the transformer cooling oil. This type of noise would have a broad-band spectrum and would not include simple tones or a "hum." The inverters would not operate at nighttime. The typical performance specification of a commercial or utility-scale inverter with cooling system and enclosure would be to achieve a design standard of 66 dBA at a distance of 32.8 feet (10 meters), based on a 2,200 kilowatt-rated unit (SMA 2016).

Within the solar field, other minor noise sources would include tracker motors and mechanisms that allow the solar panels to tilt and track the path of the sun on a single axis throughout the day. Tracker motors and actuators would not operate on a continuous basis or in unison. For example, each set of actuators would operate for a few seconds and then pause for 5 minutes before operating again. This process would occur only during daylight hours, with a return to the starting position at sunrise. Although final design would determine the actual specifications for the motors, based on similar projects, noise from each motor and actuator would be approximately 62 or 63 dBA at the source to a distance of 3.28 feet. Noise levels from the tracker motors and inverters throughout the solar field would not be discernable in the background conditions at any locations farther than 2,000 feet from the edges of the solar field.

Near the proposed O&M building, the dominant stationary source of noise would be heating, ventilation, and air conditioning units, if necessary for the selected battery storage technology. The substations would also include switching and transformer equipment with cooling fans and pumps, and emergency-use standby power generators. Typical cooling systems for battery storage, if necessary, could generate 81 dBA at a distance of 10 feet, which would not be discernable in the background conditions at any locations farther than 2,000 feet from the battery storage equipment. Refer to Appendix I for a worksheet that quantifies project operational noise levels.

Each proposed Project would be operated by up to six workers on the site periodically. Occasional vehicular noise would be caused by crews for operations and maintenance, including panel washing and security patrols. These activities would normally involve only a small crew, and Projects-related O&M traffic would be sporadic.

The applicable standards in the Noise Ordinance (Chapter 9.52.040 and Section 4 of Ordinance No. 847) limits noise sources from causing excessive exterior noise on any nearby occupied property. It ensures that noise levels at any receiving land use that is a low-density “Rural Community” would not exceed 55 dBA Lmax during the daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA during the nighttime hours (10:00 p.m. to 7:00 a.m.). The standards set forth in the County General Plan Noise Element for stationary sources of noise are less stringent than these in the Noise Ordinance. All mobile and stationary equipment for the Projects would be required to comply with the stationary-source noise standards of the Noise Ordinance.

The solar generating facility would be primarily active and operational during daytime hours. However, the pad-mounted inverters and transformers and the battery storage equipment could operate outside of daylight hours. The dominant stationary source of noise could be air conditioning units, if necessary for the battery storage component. The overall noise levels caused by these units would be subject to the 45 dBA Lmax standard of the Noise Ordinance that applies at the boundary of any nearby occupied property. No occupied properties or residences are within 1 mile of the Projects. At the location of the nearest communities, at least 4.75 miles from the boundaries of the solar fields, the overall noise levels caused by all stationary sources from the Projects would not be discernable in the background conditions. The proposed Projects would comply with the Noise Ordinance because no residential receiving land use would be near any of the proposed noise sources. No noise reduction measures would be required for noise associated with operation of the proposed Projects, and the impact of operation noise relative to applicable community noise standards would be less than significant. Therefore, as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Decommissioning

LESS THAN SIGNIFICANT. Future decommissioning impacts are anticipated to be similar to those determined for construction, as described above. Therefore, impacts to noise and ground vibration would be less than significant. As a result, with incorporation of APMs as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact N-2. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

LESS THAN SIGNIFICANT. During construction, the impact or vibratory pile drivers used for installing posts would have the greatest radius of potential groundborne vibration impacts. When necessary to install posts near the Projects’ boundaries, use of pile drivers could result in vibration that is perceptible and potentially annoying for occupants of structures within 100 feet of the source. The upper range of groundborne vibration from an impact pile driver could exceed 1.5 inches per second peak particle velocity near the source, but at 100 feet, the level would attenuate to 0.19 inches per second or below the level likely to cause an adverse human reaction (FTA 2018). Other construction activities would create lower levels of vibration and would not have the potential to create annoyance at distances of 50 feet or more from the equipment in use. Refer to Appendix I for a worksheet that quantifies construction-related vibration levels.

No occupied residential structures would be within 1 mile of the Projects, and accordingly, no residences would experience annoying levels of construction vibration. Other routine construction would also be sufficiently far from the nearest residences to avoid causing a vibration annoyance. Projects-related vibrations would not cause adverse physical effects to structures because no structures susceptible to damage are known to be nearby. When vibration levels are low enough to avoid causing an annoyance,

they would be unlikely to cause structural damage. Impacts from vibration would be localized and temporary (i.e., infrequently recurring during the limited duration of construction near residences), and therefore, would not be excessive; impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Operation

LESS THAN SIGNIFICANT. Operation of the solar facility would not involve any sources capable of generating perceptible levels of vibration in the surrounding area. There would be no permanent source or potential to change vibration levels, except during unscheduled maintenance or repair activities, which would be similar to construction activities. This impact would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Decommissioning

LESS THAN SIGNIFICANT. Future decommissioning impacts are anticipated to be similar to those determined for construction, as described above. Therefore, impacts from vibration would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact N-3. For projects located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

LESS THAN SIGNIFICANT. There are two private airstrips northwest of the proposed Projects. The Desert Center Airport is a private airstrip approximately 2.1 miles from the Projects, and the Eagle Mountain Airstrip is approximately 10 miles from the Projects. Both airstrips have very low use levels.

Because the proposed Projects include no noise-sensitive uses, no airport/land use noise compatibility criteria would apply. All features of the proposed Projects would be outside the airfield properties and would not expose any residential land uses to noise from aircraft. Because the proposed Projects would not expose people to noise from an airport or airstrip, this impact would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

Geographic Scope. The geographic scope for cumulative analysis of noise and vibration is generally localized. Noise sources attributable to cumulative projects may cause adverse effects within approximately 1 mile of a project site, including truck routes, but the region of greatest influence is typically within 0.5 miles from the boundary of a project. Similarly, vibration sources that typically occur from construction activity or vehicle traffic have a region of influence that is limited to approximately 200 feet.

The geographic scope for cumulative noise and vibration effects includes the West-wide Section 368 Energy Corridor and the Desert Renewable Energy Conservation Plan area. Existing, past, and present projects and the probable future projects within the cumulative geographic scope include the following (refer also to Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario):

- Red Bluff Substation
- Devers–Palo Verde No. 1 Transmission Line

- Devers–Colorado River Transmission Line
- Palen Solar Project
- Athos Solar Project
- Oberon Solar Project
- Easley Solar & Green Hydrogen Project

The cumulative projects that occur in the geographic scope for noise and vibration include potential developments allowed under planning documents, and solar energy projects that are similar to the proposed Projects. The planning efforts would not themselves create actions that increase noise or vibration levels. The noise and vibration effects of the equipment used for construction of cumulative projects would depend on site-specific needs and schedules, and may or may not overlap spatially or temporally with the proposed Projects.

Cumulative Impacts. The Athos Solar and Oberon Solar Projects could be within 0.5 miles of the proposed Projects and have the potential to cause overlapping construction noise impacts. Active pieces of construction equipment typically cause noise levels of no more than 85 dBA when measured 50 feet from the source. Construction-phase noise impacts would be short term and limited, with construction activities for all cumulative projects typically being limited to the daytime. However, the Projects would contribute to a cumulative increase in noise in the Projects' area. The duration of construction work for the proposed Projects would be approximately 16 months to 18 months, and after that time, few notable permanent sources of noise would occur from the Projects or the cumulative solar energy facilities.

All cumulative project operations would generate noise from employee vehicles accessing the sites, power inverters, and other power system infrastructure. These sources may cause localized cumulative effects where multiple projects or shared transportation routes occur adjacent to a sensitive receptor. Because there are no sensitive receptors within 0.25 miles of the proposed sites, this impact would be limited to construction haul routes.

Cumulative noise impacts would be reduced through compliance with local laws and regulations and through incorporation of APMs and implementation of typical mitigation to protect sensitive receptors from noise and to implement feasible noise controls. Specifically, APM N-1 requires construction restrictions to be implemented, including limits on construction hours, operation of construction vehicles, and staging area locations. APM N-2 requires notification of all residents within 500 feet of Ragsdale Road and the access driveway at least 15 days prior to the start of ground disturbance. APM N-3 requires the Projects to resolve all Project-related noise complaints throughout construction and O&M. With incorporation of APMs into the Projects, the Projects' contribution to cumulative noise levels in the Projects' area would be less than cumulatively considerable.

Furthermore, cumulative renewable energy projects and other development that are subject to the environmental permitting process would have a detailed analysis of noise and land use conflicts as part of the project-level environmental review. The permitting process normally requires each project to comply with local standards and to avoid noise-related land use conflicts. This means that all projects, even if unrelated to the proposed Projects, would need to comply with local community noise standards, such as the Riverside County Noise Ordinance. Additional mitigation may be applied to the cumulative projects through environmental permitting by lead agencies. This would ensure that cumulative noise impacts during construction would be less than significant. Accordingly, the Projects' incremental contribution to the cumulative construction noise impacts caused by other past, present, and probable

future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to construction noise.

The only sources of noise associated with the Projects' operations that could combine with the cumulative projects to result in a potential cumulative impact near sensitive receptors would be employee vehicles accessing the sites. Given the limited number of employees during operations of the Projects and the nearby cumulative projects, the cumulative operational noise impact would not be cumulatively considerable.

Cumulative effects due to groundborne vibration would occur only if there were sources of vibration within 200 feet from the boundaries between the Projects and cumulative project sites. The Athos Project boundary occurs within 200 feet of the proposed Arica Project site, but not where there are existing residences. The areas of potential overlap of cumulative project construction-related vibration would not be likely to create a cumulative vibration impact at residences near the proposed Projects, and no cumulative effects would be likely from groundborne vibration. Accordingly, the Projects' incremental contribution to the cumulative groundborne vibration impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to ground vibration.

3.12.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation was identified to further avoid or substantially lessen impacts to noise.

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3.13 Population and Housing

This section includes an analysis of the impacts on population and housing that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on population and housing from both of the proposed Projects as the whole of the action. The analysis in this section describes the applicable regulations, presents an overview of existing conditions that influence population and housing, identifies the criteria used for determining the significance of environmental impacts, and describes the potential impacts to population and housing from the Projects.

During the scoping effort, no party identified any public concerns related to potential population and housing impacts.

3.13.1 Regulatory Framework

There are no federal, state, or local regulations, plans, or standards for population and housing that apply to the proposed Projects.

3.13.2 Environmental Setting

Population

The Projects' area is in Riverside County, which is the fourth most populous county in California (CA DOF 2020a). Table 3.13-1 provides a summary of the existing population, housing, and employment conditions for Desert Center, California (the general location of the proposed Projects) and Riverside County and San Bernardino County (counties from which the construction workforce would largely be recruited).

Table 3.13-1. Year 2018¹ and 2020 Existing Conditions – Population, Housing, and Employment: Desert Center, Riverside County, and San Bernardino County

Location	Population	Housing Units		Employment	
		Total Units	Vacancy Rate	Total Employed ²	Unemployment Rate
Desert Center	264	239	60.3%	58	0%
Riverside County	2,442,304	856,124	12.8%	969,900	10.5%
San Bernardino County	2,180,537	726,680	11.1%	853,800	10.3%

Source: CA DOF 2020a; CA EDD 2020a, 2020b; U.S. Census Bureau 2018a, 2018b, and 2018c.

¹ The most recent available housing unit and employment data for Desert Center is from 2018.

² Accounts for population greater than 16 years of age and in Labor Force.

Population estimates, future projections, and average annual growth rates for Riverside County and San Bernardino County are summarized in Table 3.13-2. There was no data available for Desert Center regarding population projections, therefore it has not been included in Table 3.13-2. Population estimates from 2020 through 2060 (based on the assumption that each Project's service life is 35 to 50 years) are listed with an average annual growth number and rate for the communities within the study area. It should be noted that population estimates provided by the Department of Finance only extend to 2060 (CA DOF 2020b). Therefore, only 40 years of population estimates are provided in Table 3.13-2. The population growth in both Riverside County and San Bernardino County are expected to increase slowly during the next 40 years, with Riverside County projected to have a slightly higher annual growth rate than San Bernardino County.

Table 3.13-2. Population Estimates, Projections, and Average Annual Growth Rates

	Riverside County	San Bernardino County
Population, 2020	2,468,145	2,217,398
Projected Population, 2025	2,597,656	2,310,552
Average Annual Growth Rate, 2020–2025	1.05%	0.84%
Projected Population, 2030	2,723,485	2,395,632
Average Annual Growth Rate, 2025–2030	0.97%	0.74%
Projected Population, 2035	2,837,362	2,469,881
Average Annual Growth Rate, 2030–2035	0.84%	0.62%
Projected Population, 2040	2,933,733	2,529,068
Average Annual Growth Rate, 2035–2040	0.68%	0.48%
Projected Population, 2045	3,009,816	2,574,712
Average Annual Growth Rate, 2040–2045	0.52%	0.36%
Projected Population, 2050	3,070,691	2,611,732
Average Annual Growth Rate, 2045–2050	0.40%	0.29%
Projected Population, 2055	3,123,753	2,646,367
Average Annual Growth Rate, 2050–2055	0.35%	0.27%
Projected Population, 2060	3,176,041	2,684,218
Average Annual Growth Rate, 2055–2060	0.33%	0.29%

Source: CA DOF 2020b.

Housing

The current occupied and vacant housing estimates are presented in Table 3.13-1 for communities and counties within the study area of Desert Center, Riverside County, and San Bernardino County. The vacancy rate of Desert Center is high with about 60% of the total housing units vacant. Riverside County and San Bernardino County have relatively low vacancy rates, with approximately 13% and 11% of the total housing units vacant, respectively.

3.13.3 Impact Analysis

Methodology

The regulations implementing the California Environmental Quality Act (CEQA) state that economic or social factors of a project may be included in a CEQA document, but shall not be treated as significant effects on the environment. However, economic or social effects of a project may be used to determine the significance of physical changes caused by the project. Additionally, economic, social, and housing factors should be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment.

To determine whether the Projects would induce population growth, the availability of the local workforce and population in the region was analyzed. It was assumed that most construction and future decommissioning workers would be from communities located mainly within Riverside County and San Bernardino County, which have the largest concentration of construction workers in proximity to the proposed Projects. It is anticipated that most projected construction and future decommissioning workforce would likely seek housing closer to the Projects' area (within 1 to 2 hours' driving distance) or seek temporary housing (such as seasonal, recreational, or occasional use housing; long-term visitor areas; and hotel and motels) during the week and commute an average 150 miles round trip per day and commute home over the weekend.

Criteria for Determining Significance

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Projects would have significant impacts on population and housing if they would:

- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure) (see Impact PH-1).
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere (see Impact PH-2).

Applicant Proposed Measures

No Applicant Proposed Measures or other measures regarding population and housing are required.

Environmental Impacts

Impact PH-1. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

LESS THAN SIGNIFICANT. Construction of both Projects would occur concurrently within the span of approximately 18 months. The construction workforce would consist of an average of about 468 employees with a maximum of approximately 1,016 employees during peak construction activities. The typical construction work schedule is expected to be from 7:00 a.m. to 5:00 p.m., Monday through Friday, but early morning, evening, night, and weekend work may be needed during certain construction phases. The construction workforce would likely be recruited from Riverside County and surrounding areas such as San Bernardino County. Riverside County has the largest concentration of construction workers close to the Projects' area. Many workers are likely commute weekly or would otherwise temporarily relocate to the Desert Center region while working on the Projects.

In 2018, Desert Center's unemployment rate averaged 0%. In 2020, Riverside County's unemployment rate averaged 10.5%, and San Bernardino County's unemployment rate averaged 10.3% (refer to Table 3.13-1). Based on the most recent unemployment rates and population size, it is anticipated that most of the construction, operation, and maintenance workforce would come from the existing labor pool in nearby communities in Riverside or San Bernardino Counties.

As indicated in Table 3.13-1 (Year 2018 and 2020 Existing Conditions – Population, Housing, and Employment: Desert Center, Riverside County, and San Bernardino County) vacancy rates in the study areas are high, ranging from about 11% to 60%. The Desert Center area has approximately 239 vacant units; Riverside County has approximately 856,124 vacant units; and San Bernardino County has approximately 726,000 vacant units. There are sufficient vacant housing units within the local communities to support the number of construction workers to the extent that the Projects' workforce would not be considered a substantial sudden growth that poses a burden on surrounding communities. The Projects would not cause a shortage in available housing for existing residents in these counties, would not trigger the need for new housing, and would not induce a substantial permanent growth to the regional population levels.

During operation of the Projects, up to 6 workers would be part of the regular operations and maintenance workforce for each Project that would perform daily visual inspections and minor repairs.

Like the construction workers, these permanent operational workers would likely reside in the surrounding areas. The small number of operational staff would not substantially increase the population in surrounding communities. Intermittently, approximately 10 to 15 workers may be on-call for additional repairs or replacement of equipment and panel cleaning. These workers would also likely be from the local communities in Riverside and San Bernardino Counties. Overall, the operations and maintenance staff is not anticipated to increase the local population, and vacancy rates within the study area offer abundant available housing to employees who may relocate into the local study area.

Decommissioning of the Projects would require dismantling of the wire, steel, and solar modules for recycling or disposal. A detailed Decommissioning and Reclamation Plan would be developed for both Projects to comply with public health and safety and environmental standards and would likely outline the number of workers required for future decommissioning activities. It is anticipated that future decommissioning activities would require similar equipment and workforce as construction, but would be substantially less intensive.

Other indirect factors are also taken into consideration in regard to a project's ability to substantially increase population growth. For instance, the removal of impediments to growth (e.g., constructing utility infrastructure and service systems in a previously undeveloped region) can induce growth. The Projects are located on BLM-administered land in Riverside County and are proximate to other existing, proposed, and under construction solar projects. The Projects would result in construction of utility infrastructure; however, such infrastructure would consist of large-scale solar power facilities to be connected to the existing power grid rather than consumer-scale utility lines, which could induce future population-inducing growth in the Projects' vicinity, such as residential or commercial uses. Additionally, the Projects would include development of roads to provide access to the Project sites. However, all new internal site roads would be private, and the construction of access roads would not extend into undeveloped areas where future population-inducing growth could occur. Therefore, the Projects would not result in the extension of infrastructure or roads into an undeveloped area leading to substantial indirect population growth.

Overall, the Projects' impact on population growth in the local areas and demand for additional housing from construction, operation and maintenance, and future decommissioning would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect impacts.

Impact PH-2. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

NO IMPACT. The Projects' solar facilities would be constructed on undeveloped Bureau of Land Management-administered land allocated as the Riverside East Solar Energy Zone of the Bureau of Land Management's Western Solar Plan, and as a Development Focus Area under the Desert Renewable Energy Conservation Plan. These two plans encourage and incentivize the development of renewable solar energy facilities within these areas, and as such, the Projects would be consistent with the intended uses of this area. There are no existing residences or buildings in the Projects' parcels. Construction, operation and maintenance, and decommissioning of the solar facilities would occur within the Projects' boundaries and would not result in the displacement of any existing housing or people. No replacement housing would be required because of construction and operation of the solar facilities. As such, no impact would occur.

Cumulative Impacts

Geographic Scope. The geographic scope of the cumulative impacts analysis includes populated areas within a 2-hour worker commute distance of the proposed Projects' areas near Desert Center, which

would extend out into the rest of Riverside County and into San Bernardino County. This geographic scope would include all projects listed in Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario.

Cumulative Impacts. The Projects would contribute to short-term cumulative impacts to population and housing during the construction and future decommissioning periods when construction schedules of multiple projects overlap and create a demand for workers that may not be met by the local labor force, thereby inducing in-migration of non-local labor and their households. Construction of the Arica and Victory Pass Projects could overlap with construction of the reasonably foreseeable future projects listed in Table 3.1-2. It is unlikely that all the foreseeable future projects' construction and future decommissioning would occur simultaneously because some are in different phases of planning, approval, and construction. Under the conservative assumption (worst-case scenario) that peak construction and future decommissioning periods overlap for all reasonably foreseeable projects, there would be an increased demand for temporary housing units in the cumulative area. As discussed under Section 3.13.3 (Impact PH-1), the vacancy rates for housing units are moderately high (ranging from 11% to 60%) in the surrounding communities, and there are several temporary housing options available. There is an ample supply of housing units to accommodate workers drawn from outside the 2-hour commute area. Therefore, the Projects' incremental contribution to cumulative impacts regarding population and housing during construction and future decommissioning would not be cumulatively considerable or significant.

The Projects would also contribute to an incremental cumulative population increase during operation and maintenance, and subsequent demand for housing. However, because the operational workforce is minor, the Projects' contribution to cumulative population and housing growth during operation would not be cumulatively considerable or significant. Even when multiple projects overlap, they do not result in a substantial increase in population in an area that would lead to demand for housing that exceeds available capacity. Accordingly, the Projects' incremental contribution to the cumulative impacts to population and housing caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to population and housing.

3.13.4 Mitigation Measures

No mitigation is required to avoid or substantially lessen impacts to population and housing.

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3.14 Public Services

This section evaluates the environmental impacts on public services that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on public services from both of the proposed Projects as the whole of the action. The section describes the applicable regulations, presents an overview of existing conditions that influence public services, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the Projects' potential impacts on public services. During the scoping effort, no party identified any public concerns related to potential public services impacts.

3.14.1 Regulatory Framework

Federal Laws, Regulations, and Policies

There are no federal regulations, plans, or standards for public services that apply to the Projects.

State Laws, Regulations, and Policies

2019 Strategic Fire Plan for California. The 2019 Strategic Fire Plan for California (CAL FIRE 2019) was developed in coordination with the State Board of Forestry and Fire Protection and California Department of Forestry and Fire Protection (CAL FIRE) to reduce and prevent the impacts of fire in California. The plan reflects the values of the CAL FIRE, including integrating fire protection, natural resource management, and fire prevention under a single mission on behalf of the state and local communities. The plan includes goals to improve CAL FIRE's core capabilities, enhance internal operations, ensure health and safety, and build a workforce by the year 2023. Objectives to reach these goals include but are not limited to the following: establishing a 30-year investment plan to maintain right-sized department staffing and resource deployment for mission delivery, implementing fuels reduction projects on at least 50,000 acres annually, increasing funding to keep pace with wildfire risks, and improving timeliness and frequency of communications. The objectives and goals outlined are applicable to the fire protection agency serving unincorporated Riverside County.

Title 22 California Code of Regulations Division 4.5: Title 22 of the California Code of Regulations discusses an array of requirements regarding the disposal and recycling of hazardous and universal wastes. Specific standards and requirements are included for the identification, collection, transport, disposal, and recycling of hazardous wastes. Additional standards are included for the collection, transport, disposal, and recycling of universal wastes (as identified in 22 CCR 66273.9). Requirements include recycling, recovery, returning spent items to the manufacturer, or disposing of them at an appropriately permitted facility. Title 22 of the California Code of Regulations Division 4.5 also provides restrictions and standards relevant to waste destination facilities and provides authorization requirements for various waste handlers. Title 22 includes California's Universal Waste Rule and additional waste handling and disposal requirements.

Local Laws, Regulations, and Policies

Riverside County Board of Supervisors Resolution 91-474: Resolution 91-474 establishes standards governing the use of portable toilets and applies requirements for disposal of associated liquid wastes. The resolution

provides specifications regarding the number of portable toilets required at a given site and the duration of use of such facilities on site. At minimum, weekly maintenance of portable toilets is required.

Riverside County Fire Department (RCFD) Technical Policy 15-002: RCFD Technical Policy 15-002, Solar Energy Generating System Fire Apparatus Access Roads, is a standard that was developed to assist with the design of fire apparatus access roads from public roadways to a solar energy generating system (i.e., solar facility). It addresses secondary access road requirements, which shall be determined by the County Fire Marshal given the specific conditions of any given solar project. Each solar energy generating system project will be reviewed on a case-by-case basis to determine secondary fire apparatus access requirements to facilitate emergency operations and to minimize the possibility of an access point being subject to congestion or obstruction during an emergency incident. This standard states that the secondary access road shall not be less than 20 feet in width and shall have an unobstructed vertical clearance of no less than 13.5 feet. The grade of the access road shall not exceed 15%. The access road shall be designed, constructed, and maintained to support the imposed load of fire apparatus weighing at least 75,000 pounds and constructed to Riverside County Transportation Standards. A registered engineer shall certify the design and construction of the access road based on the fire apparatus-imposed load of 75,000 pounds.

3.14.2 Environmental Setting

Fire Protection

RCFD, in cooperation with CAL FIRE, provides fire and emergency services to residents of unincorporated areas of Riverside County (RCFD 2020a). The closest RCFD/CAL FIRE station to the Projects' location in the Desert Center area is Station 49 – Lake Tamarisk Station, located at 43880 Lake Tamarisk, Desert Center, about 5.5 miles west of the Project sites (RCFD 2020b). The Bureau of Land Management (BLM) Fire and Aviation Program also provides fire management, suppression, prevention, preparedness, and protection services (BLM 2020a). Its field offices, such as the BLM Palm Springs–South Coast Field Office, provide on-the-ground fire management and aviation activities. BLM California also manages fire restrictions or temporary public land closures to reduce the risk of wildfires from human-related activities, such as campfires, off-road driving, equipment uses, and recreational target shooting (BLM 2020b).

Police Protection

The Riverside County Sheriff's Department's Colorado River Station provides service to the unincorporated area from Hayfield Road in the west to the Arizona state line in the east, and from county line to county line in the north and south, which includes the Desert Center area (Riverside County Sheriff-Coroner 2020). The Colorado River Station is located at 260 North Spring Street, Blythe, California (Riverside County Sheriff-Coroner 2020), approximately 38 miles east of the Projects' area.

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. The CHP division covering highways within the Desert Center area is the Border Division. The California Highway Patrol Blythe Area serves the East Riverside County Region and is located at 430 South Broadway, Blythe, California. This office patrols Interstate 10, State Route 78, and U.S. Route 95, as well as 500 miles of unincorporated Riverside County roadways (CHP 2020).

Under the Federal Land Policy and Management Act of 1976, the Secretary of the Interior is authorized to set up a law enforcement body to enforce federal laws and regulations with respect to public lands and resources. BLM has a law enforcement program that protects public land from illegal activities such as unauthorized use of off-highway vehicles and vandalism of archaeological resources. BLM Rangers from

BLM Law Enforcement and Security Region 1 are responsible for enforcing federal laws on federal land in the State of California.

Emergency Medical Services

Palo Verde Hospital, located at 250 North 1st Street, Blythe, California, is the closest hospital to the Projects' area near Desert Center. It provides intensive care and radiology services, as well as surgery. The hospital has 51 patient beds, consisting of 4 intensive care beds, 6 perinatal beds, and 41 medical-surgical beds (Palo Verde Hospital 2020). It is located approximately 39 miles east of the Projects' area.

Desert Regional Medical Center, located about 72 miles west of Desert Center at 1150 North Indian Canyon Drive in Palm Springs, California, is the second closest hospital to the area. The medical center is the only designated Level II trauma center in the Coachella Valley and is equipped with 385 beds. The facility includes tertiary acute care services, critical care services, and a skilled nursing unit (Desert Care Network 2020).

Parks

There are no recreation facilities, developments, or specific recreational attractions on the Project sites. However, the surrounding area offers multiple outdoor recreational opportunities, including off-highway vehicle use, camping, rock hounding, and hiking. The Project sites are east of Joshua Tree National Park and are near other recreational areas, such as the Chuckwalla Special Recreation Management Area and Corn Springs Campground, Palen-McCoy Wilderness Area, and the Chuckwalla Mountains Wilderness Area. No local parks or Riverside County regional parks are in or near the vicinity of the Projects' area near Desert Center (RPOSD 2020).

Refer to Section 3.15, Recreation, for more information about recreation resources near the Projects' area.

Schools

The Desert Center Unified School District serves the Desert Center area. The school closest to the Projects' area is Eagle Mountain School, which serves kindergarten through eighth grade students (CDE 2020) and is located approximately 13 miles northwest of the Project sites.

Libraries

The Riverside County Library System serves all of Riverside County. The closest library branch to the Projects' area is the Lake Tamarisk Branch located at 43880 Tamarisk Drive, Desert Center, California (Riverside County Library System 2020), about 5 miles west of the Project sites.

3.14.3 Impact Analysis

Methodology

This section considers the potential impact to and disruption of public services in the Desert Center area during construction and operation of the Projects. Some public services would experience minor impacts. Additionally, because of the potential need to disrupt services for extended periods of time during construction, some of the impacts may be moderate.

Criteria for Determining Significance

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the proposed Projects would have significant impacts on public services if they would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities; and/or result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services, which include (see Impact PS-1):
 - Fire Protection;
 - Police Protection;
 - Schools;
 - Parks; and
 - Other Public Facilities.

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APM as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to public services, to the extent feasible. The APM, where applicable, is discussed in the impact analysis section below.

APM FIRE-5 Fire Safety Plan. *For full text refer to Section 3.19, Wildfire.*

Environmental Impacts

Impact PS-1. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

LESS THAN SIGNIFICANT. Construction of both Projects is anticipated to occur concurrently over an approximately 18-month period and require an average construction-related on-site workforce of 468 individuals, with the peak workforce reaching approximately 1,016 individuals. Workers from the overall construction workforce would be associated with the gen-tie line and access road construction. As discussed in Section 3.13, Population and Housing, it is anticipated that the construction workforce would be drawn from communities within Riverside County and San Bernardino County and, as such, would not induce substantial permanent growth to the regional population levels.

After the construction phase, up to 12 permanent staff (6 per Project) could be on site at any time for ongoing facility maintenance and repairs. These 12 operational personnel would also come from or move to local communities and would not contribute to a significant population increase.

Decommissioning is anticipated to require a workforce similar to or slightly less than that required for construction. The workforce would be drawn from communities within Riverside County and San Bernardino County and would not induce substantial permanent growth to the regional population level.

■ **Fire protection?**

The Projects are not located within a designated area of very high or high fire hazard, according to the CAL FIRE Fire Hazard Severity Zones Map (CAL FIRE 2020). In addition, no residential structures exist within the Project sites, nor would any be constructed as part of the proposed Projects.

During construction and future decommissioning, there is the potential for small fires and major structural fires. Electrical sparks; combustion of fuel oil, hydraulic fluid, mineral oil, or insulating fluid at substations; or flammable liquids, explosions, and over-heated equipment may cause small fires. The Projects would result in an increase in demand for fire protection services above existing levels during construction and future decommissioning. However, given the small population of Desert Center and the Projects' proximity to the local fire station (Station 49 – Lake Tamarisk Station is located approximately 5.5 miles away), the Projects would not substantially increase demand for fire protection services. The Projects would not directly or indirectly cause a substantial population growth to generate a need for new or expanded fire protection facilities. Impacts would be less than significant, and no mitigation would be required.

Although the risk of wildfire at both Project sites are low, fire prevention and safety measures would still be implemented. Coordination with BLM and RCFD is ongoing and would define measures to further reduce the risk of fire. During operations, at least one aboveground water storage tank would be installed adjacent to the operations and maintenance facility that would meet BLM requirements to provide sufficient water for fire suppression. Furthermore, each Project would have a Project Fire Plan, as outlined in APM FIRE-5, which includes specific elements that need to be included in each Project Fire Plan. Both Project Fire Plans would identify potential hazards and accident scenarios that have the potential to occur at either facility during construction. The Project Fire Plans would decrease the risk of fires and include fire response measures that employees would implement before emergency responders arrive on site.

Increases in long-term demand for fire protection services are typically associated with substantial permanent increases in population. As stated, the construction and future decommissioning workforce would be drawn from communities within Riverside County and San Bernardino County, and there would not be a substantial increase in population or in demand for fire protection services, aside from that mentioned for activities taking place at the construction sites. After the construction phase, up to 12 permanent staff could be on both sites (6 per site) at any one time for ongoing facility maintenance and minor repairs as needed. These 12 operation personnel would not contribute to a significant population increase resulting in an indirect increase to the demand for fire protection services, or require new or altered facilities. Additionally, the Projects would include emergency access by installing a Knox-Box containing keys for each site and implementing fire safety features and plans for fire protection. Each Project would need to coordinate directly with RCFD regarding fire access and secondary access are required by Technical Policy 15-002. Overall, the Projects' impacts to RCFD's ability to maintain acceptable service ratios, response times, or other performance objectives relating to technical rescue services would be less than significant. Therefore, with incorporation of APM FIRE-5 as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

■ **Police protection?**

The temporary addition of construction and future decommissioning workers to the Projects' area could increase demands on police services. Although an addition of up to 1,016 construction personnel would alter the current protection service ratio, because construction is not anticipated to permanently increase the local population, no new or expanded law enforcement facilities or increased staff levels within the Projects' regional or local study area would be required. In addition, during construction, temporary construction

fencing would surround the Projects' area and a temporary guard shack would be installed near the operations and maintenance facility. The guard shack would be manned to provide security during construction, and security personnel would primarily control ingress and egress of personnel and vehicles, perform fire and security watch during off hours, and perform security badge administration, all of which would minimize the potential need for assistance from the Riverside County Sheriff's Department or CHP.

Construction and future decommissioning of the Projects would generate truck and employee traffic along haul routes and at the Projects' area, which could temporarily increase the accident potential in these areas or affect response times or other service performance over the approximate 18-month construction period and future decommissioning period. The additional volume of traffic associated with workers commuting to the sites during construction and future decommissioning would be temporary and it is anticipated that personnel and equipment from the Riverside County Sheriff's Department or CHP would suffice to respond to incidents in the Projects' area. In addition, construction and future decommissioning are not expected to adversely affect CHP's ability to patrol the highways. After the construction phase, up to 12 permanent staff could be on both sites (6 per site) at any one time for ongoing facility maintenance and minor repairs as needed. These 12 operation personnel would not contribute to a significant population increase resulting in an indirect increase to the demand for police protection services, or require new or altered facilities. Once operational, the Projects would be secured by 7-foot-tall chain-link perimeter fencing topped with barbed wire, controlled access gates, and motion sensitive security cameras and lighting, which would deter unlawful activities and minimize the potential need for the police assistance.

Overall, construction, operation and maintenance, and future decommissioning of both Projects would not result in the need for new or physically altered police or sheriff protection facilities to maintain acceptable service ratios, response times, or other performance objectives. Impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

■ **Schools?**

As described above and in Section 3.13, there are sufficient vacant housing units within the nearby communities to support the number of construction and future decommissioning workers, and the Projects would not trigger the need for new housing. Up to 12 permanent staff could be on the sites at any one time for ongoing facility maintenance and repairs. These 12 operation personnel would likely come from the local labor force and would not contribute to a significant population increase. The Projects would not displace populations or existing housing, and would not necessitate construction of replacement housing elsewhere. Therefore, the temporary addition of construction and future decommissioning workers and operation personnel to the local population is not anticipated to increase school enrollment sufficiently to require new schools to be constructed or existing schools to be physically altered to allow for a Project-related increase in enrollment, where the physical alteration of the school could result in adverse environmental impacts. Impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

■ **Parks?**

As discussed above, no local parks or Riverside County regional parks are in or near the vicinity of the Projects' area near Desert Center. The required construction and future decommissioning workforce for the Projects would be hired from the available regional workforce. The in-migration and presence of construction workers in the area would be temporary and occur during the construction and future decommissioning phases. It is anticipated that some of the workforce would temporarily relocate to near the Project sites and would commute home on the weekends; these workers would be unlikely to use the

local federal recreation facilities to an extent that would require the provision of new or expanded park and recreational facilities within the regional or local study area. Although some workers may use recreational areas during construction, operation and maintenance, and future decommissioning, increased use would be minimal and/or temporary and would not contribute substantially to the physical deterioration of existing facilities. Therefore, impacts to park and recreational facilities would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts. Park and other recreational facilities are discussed in detail in Section 3.15.

■ **Other public facilities?**

Health Services. RCFD would provide first responder emergency medical care. The nearest RCFD fire station is staffed full-time, 24 hours, 7 days a week, with a minimum three-person crew, including paramedics. Once a patient is transported, local area hospitals are available to provide emergency medical care.

While a high number of construction and future decommissioning employees would be located on site, local area emergency medical facilities are expected to adequately handle any worksite accidents requiring their attention. Minor injuries could be treated at Palo Verde Hospital in Blythe. Injuries resulting in significant trauma would be treated at the Desert Regional Medical Center in Palm Springs. If the coronavirus SARS-CoV-2 (COVID 19) epidemic is ongoing during the construction of the Projects (anticipated to occur in 2023–2024), the construction employees would follow strict protocols to reduce the potential for an outbreak. As of 2021, several solar construction projects (Desert Harvest, Palen, and Athos) in the Desert Center are under construction during the COVID-19 pandemic and have been able to minimize the risk of transmission. It is expected that if the COVID-19 pandemic were still ongoing in 2023 and 2024, protocols would be well established and incorporated into the construction to reduce outbreaks and any associated increase in local area medical facilities use. Project construction, operation, and future decommissioning would therefore not require new or physically altered hospital facilities or personnel or result in the increase in emergency responder staff levels within the Projects' regional or local study area; impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Libraries. Consistent with the impacts previously discussed for other public facilities, although construction and future decommissioning of the Projects would temporarily increase the number of people in the Desert Center area, it would not substantially increase the population. The permanent addition of 12 full-time staff and the operation and maintenance–related demands of the Projects would also not substantially increase the population. New or expanded library facilities within the area are not required, and impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

Geographic Scope. The geographic scope of the cumulative impacts analysis includes the service areas of each of the providers serving the proposed Projects. This geographic scope would include all projects listed in Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario. The proposed Projects and other projects in the cumulative scenario, together, could increase demand for public services in eastern Riverside County due to increases in workers within the area during construction and future decommissioning, which could result in a significant cumulative impact to public services.

Fire Protection, Law Enforcement, and Health Services. Construction of reasonably foreseeable future projects may overlap with construction of the Projects. The other present and reasonably foreseeable cumulative projects that fall within the geographic scope for fire and law enforcement services are primarily made up of energy projects, including utility-scale solar and transmission projects. The greatest potential for fires and fire hazards would exist at these sites during construction because the on-site workforce would be at its peak, which would create human presence-related hazards, including the variety of equipment used that could create sparks or other potential fire hazards. The combined effects of the increased cumulative demand for fire, law enforcement, and emergency medical services from the cumulative projects within the geographic scope of analysis could result in a cumulatively significant impact. The implementation of the Project Fire Safety Plans (APM FIRE-5) for both Projects would reduce the Projects' demand for fire, law enforcement, and emergency medical services from construction, such that the residual demand would not exceed established service ratios or require new or physically altered facilities, the construction of which could cause environmental impacts. The incremental effects of the Projects would therefore be reduced to a level that is less than cumulatively considerable. The incremental effects of the proposed Projects from up to 12 permanent staff during operations would also not be cumulatively considerable because the very low number of workers would also not lead to the exceedance of established service ratios or require new or physically altered facilities.

Cumulative operational and maintenance-related impacts to public services including fire, hazardous materials handling, and medical resources and facilities related to the Projects would be less than related demands during construction and would not be cumulatively significant due to the low number of employees required to support projects in the cumulative scenario. No significant cumulative effect would result from operation of the Projects.

At the end of the operational period of the proposed Projects (approximately 30 years with the potential for repowering and extension to approximately 50 years), the Projects' components would be decommissioned and dismantled and the sites would be restored to their approximate pre-project conditions, including restoration of soil and revegetation and mulching according to BLM-approved reclamation measures. Similar to construction (but to a lesser degree), the greatest potential need for public services would be associated with fire hazards. However, with incorporation of APM FIRE-5 (Fire Safety Plan) into the Projects, fire hazards would be reduced. Fire hazards would be greatest during this time because the on-site workforce would be at its peak, which could create a potential demand for fire and police services. Under cumulative conditions, implementation of the Projects in conjunction with past, existing, and future projects listed in Tables 3.1-1 and 3.1-2 in Section 3.1.2 are not anticipated to cause a demand on public services such that the construction of new or physical alteration of existing facilities would be required. The proposed Projects would increase the population in the region only during the construction and future decommissioning phases, which are short-term; would incorporate APMs into the Projects that reduce the need for public services; and would not require construction of new or physical alteration of existing facilities. Accordingly, the Projects' incremental contribution to the cumulative effects on fire, police, and health services caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to fire, police, and health services.

Parks, Schools, and Libraries. Due to the temporary nature of construction and demolition activities, it is unlikely that a substantial number of workers and their families for any of the cumulative projects would permanently relocate to the area. Any potential impact to parks, schools, and libraries from the minimal number of operations personnel for each solar project would be negligible, especially as the workers would be sourced from local communities and would likely commute. There would be no significant cumulative impact to parks, schools, or public libraries. Accordingly, the Projects' incremental contribution

to the cumulative effects on parks, schools, or public libraries caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulative considerable impacts relative to parks, schools, and libraries.

3.14.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation was identified to further avoid or substantially lessen impacts to public services.

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3.15 Recreation

This section evaluates the environmental impacts to recreational facilities that may result directly or indirectly from California Department of Fish and Wildlife issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on recreation from both of the proposed Projects as the whole of the action. The section describes the applicable regulations, presents an overview of existing conditions that influence recreation, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the Projects' potential impacts on recreation. During the scoping effort, no party identified any public concerns related to potential recreation impacts.

3.15.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Wilderness Act of 1964. The Wilderness Act created the National Wilderness Preservation System, which was signed in 1964. This act defined wilderness as “an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions.”

Designated wilderness is the highest level of conservation protection for federal lands, and the only way to designate or change the status of wilderness areas is through Congress. These areas are designated on existing federal public lands. Congress has directed four federal land management agencies to manage wilderness areas to preserve and, if possible, restore their wilderness characteristics. The agencies relevant to these Projects are the Bureau of Land Management (BLM) and the National Park Service.

Permanent roads and commercial enterprises are prohibited by the Wilderness Act, except commercial services that may provide for recreational or other purposes of the Wilderness Act. Wilderness areas generally do not allow motorized equipment, motor vehicles, mechanical transport, temporary roads, permanent structures, or installation (with exceptions in Alaska). The Wilderness Act acknowledges the need to provide for human health and safety, protect private property, control insect infestations, and fight fires within these areas, although wilderness areas are to be primarily affected by the forces of nature. Wilderness areas are managed under the direction of the Wilderness Act, subsequent legislation (such as the Alaska National Interest Lands Conservation Act), and agency policy.

Federal Land Policy and Management Act. The Federal Land Policy and Management Act (FLPMA) recognizes the value of public lands. FLPMA provides for outdoor recreation for future generations by including the multiple use/sustained yield framework for management. The recreational resources contained within the California desert environment are acknowledged in Title VI of FLPMA, Designated Management Areas, California Desert Conservation Area, which also directs BLM to develop a multiple use and sustained yield management plan to conserve the desert's resources, particularly recreational use.

California Desert Conservation Area Plan. The California Desert Conservation Area (CDCA) Plan establishes goals for management of recreation in the California desert (BLM 1999). Recreational opportunities in the study area are framed by the CDCA Plan. To provide for the use of public lands and the resources of the CDCA, the goals include recreational uses, in a manner that enhances wherever

possible and does not diminish the environmental, cultural, and aesthetic values of the desert (BLM 1999). The goals of the Recreation Element of the plan are to (BLM 1999):

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use
- Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources
- Adjust management approach to accommodate changing visitor use patterns and preferences
- Encourage the use and enjoyment of desert recreation opportunities by special populations and provide facilities to meet the needs of those groups
- Provide for off-road vehicle recreation use where appropriate in conformance with FLPMA, Section 601, and Executive Orders 11644 and 11989

Within the CDCA Plan, the motorized vehicle access element includes a system and a set of rules that provide for constrained motor-vehicle access to the CDCA while protecting desert resources (BLM 1999). When the CDCA Plan was first adopted, BLM designated a network of motorized vehicle routes on public lands within the northern and eastern Mojave Desert, including routes for north-central and southern portions of the CDCA. The conditions of the special-status species and other natural and cultural resources are maintained because BLM manages off-highway vehicle (OHV) use. Since the CDCA Plan was adopted, BLM updated its travel and transportation management policies and regulations. Under the current BLM regulations, opening and closing a specific route is an implementation decision. Refer to BLM Land Use Planning Handbook, Appendix C (BLM 2005), "At the implementation phase of the plan, establish a process to identify specific areas, roads and/or trails that will be available for public use, and specify limitations placed on use." The most recent Travel and Transportation Handbook, H-8342 (BLM 2012), was published in 2012 and provides more guidance for preparing, amending, revising, maintaining, implementing, monitoring, and evaluating BLM land use and travel management plans.

The following amendments to the CDCA Plan are incorporated into the plan through their Records of Decision:

- **Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan.** The NECO Plan provided for management of California desert recreation in El Centro, Blythe, Needles, and cities in the Coachella Valley (BLM 2002). According to the NECO Plan, all OHV routes outside OHV areas are designated as open, closed, or limited. Included in the NECO Plan is a route inventory for OHVs and designated routes of travel. Approximately 95% of existing routes remained available for vehicle access under the plan. Special Recreation Permits are issued as a means to control visitor use, protect recreational and natural resources, and provide for the health and safety of visitors, and are authorizations that allow for recreation uses of the public lands and related waters.
- **Desert Renewable Energy Conservation Plan.** In September 2016, the Record of Decision was signed for the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment. The DRECP Land Use Plan Amendment designated Special Recreation Management Areas (SRMAs) and Extensive Recreation Management Areas within the California desert (BLM 2016). The DRECP included additional conservation management actions for recreation that dictate the types of activities allowed near certain recreational features.

Off-Road Vehicles (43 Code of Federal Regulations Section 8340 et seq.). This regulation establishes criteria for designating public lands as open, limited, or closed to the use of OHVs and for establishing controls governing the use and operation of OHVs in such areas, while protecting resources, promoting safety, and minimizing user conflicts. Recreation use under Title VI “includes the use, where appropriate, of off-road recreational vehicles.”

State Laws, Regulations, and Policies

There are no state regulations, plans, or standards for recreation that apply to the Projects.

Local Laws, Regulations, and Policies

Riverside County Integrated Plan, General Plan, and Desert Center Area Plan. The Riverside County General Plan includes separate Land Use Plans for future development and growth. The Area Plan Volume 2 includes the Desert Center Area Plan, which the Projects fall within (Riverside County 2015). Local land use regulation does not apply to BLM-administered public lands, but FLPMA requires BLM to coordinate with local governments in land use planning in Title 11, Section 202(b)(9).

3.15.2 Environmental Setting

The Projects, along with their shared gen-tie line and access roads, would be located on BLM-administered land in eastern Riverside County surrounded primarily by BLM land, but with some scattered rural residences and farms on private lands. The Projects are proposed within a Development Focus Area defined in the DRECP. The Projects would be located near several other existing solar projects and some that are under construction or approved; these are described in detail in Section 3.1.2, Cumulative Impact Scenario.

The BLM land in the vicinity of the Projects has been used for a range of recreational activities such as hiking, horseback riding, rockhounding, noncompetitive vehicle touring, and other events on designated open routes of travel. Additionally, the Projects are approximately 6 miles from Joshua Tree National Park.

The 230-kilovolt gen-tie line would be shared between the Projects. It is proposed on BLM-administered public land and exits the Project sites to the west for an estimated 1.8 miles, then runs south where it crosses Interstate (I) 10 and enters the Red Bluff Substation. The gen-tie line would be within a 150-foot-wide right-of-way. The gen-tie runs parallel to the BLM open route DC 379 until the gen-tie route turns south towards the substation. The gen-tie line would cross into the Chuckwalla SRMA for about 500 feet once it crosses the I-10 corridor. The Projects’ construction and operation traffic would use BLM routes DC 425, and DC 379. Route DC 379 would reach the site boundaries and is shared with numerous other right-of-way holders.

The study area includes recreational areas and opportunities within 20 miles of the Project sites. This is an appropriate study area for recreation because it captures all major recreation resources that contribute to baseline conditions and could be affected by activities related to the Projects.

Regional Recreation Areas and Opportunities

The Projects are located within the Desert Center area in the Chuckwalla Valley of Riverside County. There are no regional or state parks within the Chuckwalla Valley, and there are no community parks in Desert Center.

The Chuckwalla Valley Raceway is located approximately 2 miles northwest of the Project sites and is on over 1,000 acres of land. The raceway is 2.68 miles long with 17 turns for beginners to experienced racers,

and the site includes amenities such as a paddock for RV dry camping, 40 cabins for rent, and an airstrip (Chuckwalla Valley Raceway 2020).

BLM administers a range of recreational resources near the Project sites, including wilderness areas, campgrounds, long-term visitor areas, trails, interpretive sites, and a network of extensive backcountry approved travel and OHV routes as shown in Figure 3.15-1. Dispersed recreation opportunities are provided by Areas of Critical Environmental Concern (ACECs), wilderness areas, and SRMAs. In general, summer in the California desert is considered too hot for recreation, so use of BLM lands for recreation is typically concentrated in the cooler months from September to May.

Except for in designated campgrounds, camping or backpacking in the area is not common. BLM use data for the year of October 2019 to September 2020¹ shows that the area of the Palm Springs Field Office that includes eastern Riverside County received 318,700 visits for an estimated over 402,000 visitor days (BLM 2020). Of these visits, the bulk of them (303,588 visits) were for dispersed use. The two special use areas nearest to the Projects, Corn Springs Campground and Desert Lily Preserve ACEC, received fewer visits, 3,850 visits and 2,392 visits, respectively (BLM 2020).

Recreation areas within 20 miles of the Project sites are identified in Table 3.15-1 and discussed below.

Table 3.15-1. Recreation Areas and Special Designations with Recreational Opportunities

Recreation Area Type	Recreation Area Name	Direction from Project Site	Distance from Project Site (miles)	Approximate Size (acres)	Status
BLM Recreation Area	Chuckwalla Special Recreation Management Area	South	>1	228,480	Designated in the DRECP
BLM Recreation Area	Palen-Ford Playa Dunes ACEC	West, east, and southeast	2	41,370	Designated in the DRECP
BLM Recreation Area	Chuckwalla Desert Wildlife Management Area ACEC	South	>1	514,400	Expanded under the DRECP
BLM Recreation Area	Palen Dry Lake ACEC	Southeast	5	3,630	Designated
BLM Recreation Area	Chuckwalla Valley Dune Thicket ACEC	Southeast	20	2,270	Designated
BLM Recreation Area	Corn Springs ACEC	South	5	2,470	Designated
BLM Recreation Area	Alligator Rock ACEC	Southwest	2	7,750	Designated
BLM Recreation Area	Desert Lily Preserve ACEC	North	3	2,060	Designated
BLM Recreation Area	Little Chuckwalla Mountains Wilderness	South	18	28,030	Designated

¹ Portions of the recreational use data for 2019 to 2020 presented here were taken during the COVID-19 pandemic, which is not considered a typical year. To have a better understanding of the overall recreational use trends of eastern Riverside County and Corn Springs Campground and Desert Lily Preserve, use data from the previous 5 years were reviewed. While this data varied from year to year, the general visit numbers for eastern Riverside and dispersed recreation were similar for most years except 2015–2016, when substantially more visits were recorded (BLM 2020). Visits to the Corn Springs Campground and Desert Lily Preserve were similar for all years except 2015–2016, when the Desert Lily Preserve received substantially fewer visits compared with the most recent year (BLM 2020). Because the overall use trend shown in the previous 5 years did not vary widely, the most recent data was presented in this report.

Table 3.15-1. Recreation Areas and Special Designations with Recreational Opportunities

Recreation Area Type	Recreation Area Name	Direction from Project Site	Distance from Project Site (miles)	Approximate Size (acres)	Status
BLM Recreation Area	Chuckwalla Mountains Wilderness	South	5	99,550	Designated
BLM Recreation Area	Palen-McCoy Wilderness	Northeast	5	236,490	Designated
BLM Recreation Area	Corn Springs Campground	Southwest	5	9 camping units	Designated
BLM Recreation Area	Bradshaw Trail Back Country Byway	South	17	65 miles	Designated
NPS Recreation Area	Joshua Tree National Park	Northwest	6	1,017,750	Designated
NPS Recreation Area	Joshua Tree Wilderness	Northwest	6	549,500	Designated

Joshua Tree National Park

The National Park Service administers Joshua Tree National Park. The park is located approximately 6 miles west of the Project sites and covers over 1 million acres. The main activities that occur at the park are hiking, mountain biking, and rock climbing, with some wildflower viewing and bird watching. Camping is available at nine campgrounds. The eastern part of the park contains dark skies and has applied to be designated as a “dark sky park” by the International Dark Sky Association. This resource attracts stargazers and amateur astronomers. The park is open year-round, with peak visitation occurring in April. Over 2 million people visited the park in 2019 (NPS 2020).

Wilderness Areas

Recreation on wilderness lands is limited by the Wilderness Act to activities that are primitive and unconfined, depend on a wilderness setting, and do not degrade the wilderness character of the area. Motorized or mechanized vehicles or equipment for recreational purposes are not permitted in wilderness (916 USC 1133[c]). BLM regulated such recreation on lands within its jurisdiction in accordance with the policies, procedures and technologies set forth in the Code of Federal Regulations (Title 43 Code of Federal Regulations Section 6300), BLM Manual 6340 (Management of Designated Wilderness Areas), and BLM’s Principles for Wilderness Management in the California Desert.

Four wilderness areas are located within 20 miles of the Project sites. They are the Chuckwalla Mountains Wilderness, Palen-McCoy Wilderness, Joshua Tree Wilderness, and Little Chuckwalla Mountains Wilderness. These are all managed by BLM, except for the Joshua Tree Wilderness, which is managed by the National Park Service (Wilderness Connect 2020). These areas have no developed trails, parking/trailheads, or other visitor use facilities, and are generally steep, rugged mountains with no permanent natural water sources, thus limiting extensive hiking or backpacking opportunities. BLM has no visitor use counts for these areas, but usage in these wilderness areas is very light. There are five nearby mountain peaks within wilderness that are occasionally used by the Desert Peaks Section of the Sierra Club’s Angeles Chapter (BLM 2018). None of the peaks directly overlook the Project sites, but depending on the elevation and topography, the site may be visible from certain peaks.

Staff and Law Enforcement Rangers estimate there are about 100 to 200 hikers per year within all the wilderness areas near the Project sites. Vehicle camping along roads that are adjacent to the wilderness areas

is more popular than hiking. BLM states that up to 2,000 visitors per year use the area to RV camp near wilderness areas, with associated hiking, OHV use, photography, sightseeing, and other activities (BLM 2018).

Areas of Critical Environmental Concern

There are seven ACECs located near the Project sites (refer to Table 3.15-1). The individual ACEC Management Plans and the resources and values for which the ACECs were established determine the recreation activities allowed in each ACEC. Most ACECs allow low-intensity recreation that is compatible with protection of the relevant values. Chuckwalla Valley Dune Thicket ACEC is closed to OHV use. Corn Springs, Palen-Ford Playa, and Alligator Rock ACEC all overlap with the Chuckwalla SRMA, which allows limited OHV use on designated routes (BLM 2016).

Out of the seven ACECs listed in Table 3.15-1, the only ones with recreation facilities are Corn Springs and Palen-Ford Playa Dunes, and they inform visitors of the special values of the areas and associated protection measures.

Special Recreation Management Areas

An SRMA is a BLM administrated area where existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value importance, or distinctiveness, especially compared to other areas used for recreation. SRMAs are units of public land identified for directing available recreation funding and personnel to specific, structured recreation opportunities. They are managed to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation.

The gen-tie line goes into the Chuckwalla SRMA, south of I-10. This area is to provide opportunities for area residents, visitors, and commercial recreation providers to engage in motorized and non-motorized recreation activities that are compatible with recovery efforts for the desert tortoise and other resource values. The primary activities for the Chuckwalla SRMA are motorized recreation touring and other recreational activities that rely on motorized vehicles to access public lands.

The Bradshaw Trail

The Bradshaw Trail is a 70-mile Back Country Byway in southeastern Riverside County, with a small segment in Imperial County. The trail is located about 17 miles south of the Project sites. The trail runs from about 12 miles east of the community of North Shore near the Salton Sea State Recreation Area to about 14 miles southwest of Blythe near the Colorado River, on mostly public land between the Chuckwalla Mountains and the Chocolate Mountain Aerial Gunnery Range.

This trail was the first road through Riverside County, blazed by William Bradshaw in 1862 as an overland stage route beginning in San Bernardino, California, and ending at Ehrenberg, Arizona. The trail was used extensively between 1862 and 1877 to transport miners and passengers. The trail is a dirt road and users are recommended to use four-wheel drive vehicles due to presence of soft sand. Recreational activities include four-wheel driving, wildlife viewing, plant viewing, birdwatching, and scenic drives. All commercial activities require a land use or special recreation permit from BLM. Camping is limited to 14 days.

Off-Highway Vehicle Routes

Vehicle access is among the most important recreation issues in the desert according to both the CDCA Plan and the NECO Plan Amendment. The recreation program ensures that access routes necessary for recreation enjoyment are provided. In Riverside County, there are no designated open OHV areas, so OHV use on BLM land must occur on designated limited routes, as discussed below.

In limited areas, motorized vehicle access is allowed only on certain routes, including roads, ways, trails, and washes. BLM defines OHV routes as follows (BLM 2018).

- **Open Route:** Access by all types of motorized vehicles is allowed generally without restriction.
- **Limited Route:** Access by motorized vehicle is allowed, subject to limitations on the number and types of vehicles allowed and restrictions on time or season and speed limits.
- **Closed Route:** Access by motorized vehicles is prohibited except for certain official, emergency, or otherwise authorized vehicles.

If a route provides access to other routes, historical sites, or recreational areas, it is considered to have high significance. These routes may connect to areas that provide backcountry driving, photography, camping, rock hounding, and hiking opportunities in eastern Riverside County.

The Desert Center region has several OHV open routes. BLM has no means to determine an accurate user count for these routes. According to local Law Enforcement Rangers and BLM staff, use is relatively low on routes within the vicinity of the Projects, not exceeding 300 visits per year (BLM 2018). The Projects would be adjacent to or located on BLM routes DC 514, DC 515, DC 516, DC 517, DC 518, and DC 378. DC 379 and DC 425 would be used by employees to access the site.

Washes Open Zones

BLM considers washes as open unless an area is specifically designated as limited or closed. When used in this context, a “wash” is defined by BLM as having physical features that make passage of motorized vehicles possible, which establishes the navigability, in addition to having running or standing water or being dry. Use of washes within these “washes open zones” is restricted to areas considered navigable. In these open zones, navigable washes are designated open as a class, and they are not individually designated unless they are a specific route (Section 3.16 in BLM 2018).

The washes in the Projects’ area have not been inventoried or analyzed by BLM to determine their navigability.

3.15.3 Impact Analysis

Methodology

This section analyzes potential effects of the proposed Projects related to recreation and assesses the impacts to known recreational uses. The CDCA Plan, as amended, which includes a detailed inventory and designation of open routes for motorized vehicle use, was reviewed to determine impacts to open routes.

Criteria for Determining Significance

The criteria used to determine the significance of potential recreation impacts are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. The criteria were modified to include analysis of all potential impacts of the Projects. The Projects would result in a significant impact under CEQA related to recreation if they would:

- Indirectly or directly disturb recreational users, reduce, or block access to recreational areas, or change the character of a recreational area, diminishing its value (see Impact REC-1)

The following CEQA significance criteria from Appendix G were not included in the analysis:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

The proposed Projects are not near any neighborhood or regional parks. These Projects would not cause an increase in population to the area; therefore, there would be no increased use of resources near the Projects.

- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The Projects do not include new recreational facilities, as existing campgrounds or nearby lodging would be adequate to provide temporary accommodations during construction. The temporary presence of workers from the Projects' construction would not result in the need to construct or expand recreational facilities.

Applicant Proposed Measures

The following aesthetics, air quality, and noise APMs that the Applicants identified and have committed to implement as part of the proposed Projects would also avoid or substantially lessen potentially significant impacts to recreation, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM AES-4 **Night Lighting Management.** Refer to full text in Section 3.2, Aesthetics.

APM AIR-1 **Fugitive Dust Control Plan.** Refer to full text in Section 3.3, Air Quality.

APM AIR-2 **Control On-Site Off-Road Equipment Emissions.** Refer to full text in Section 3.3, Air Quality.

APM AIR-3 **Construction Activity Management Plan.** Refer to full text in Section 3.3, Air Quality.

APM N-1 **Construction Restrictions.** Refer to full text in Section 3.12, Noise.

APM N-3 **Noise Complaint Process.** Refer to full text in Section 3.12, Noise.

Environmental Impacts

Impact REC-1. Would the projects construction or operation activities directly or indirectly disturb recreational users, reduce, or block access to recreational areas, or change the character of a recreational area, diminishing its value?

LESS THAN SIGNIFICANT.

Disturbance of Recreational Users. Recreational users of specially designated lands could be disturbed by noise, traffic, and dust associated with construction vehicles and activities during both initial construction and future decommissioning. These effects may be apparent within the BLM Chuckwalla SRMA, wilderness areas, ACECs, and Joshua Tree National Park. However, visitation to these areas in the vicinity of the Projects is low and they are not close to the Project sites themselves. Joshua Tree National Park has a much higher overall visitation, but these visits are concentrated in more accessible parts of the park, which are over 6 miles northwest of the Project sites. These construction and future decommissioning effects would be further reduced by applicant proposed measures incorporated into the Projects, as defined in Sections 3.3, Air Quality, and 3.12, Noise. As a result, these impacts would be less than significant. Therefore, as part of the California Department of Fish and Wildlife's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Blocking or Precluding Recreation Activities. The presence of the fenced Arica solar arrays would directly prevent OHV use of the following BLM open routes:

- DC 514, DC 515, DC 516, DC 517, DC 518, and DC 378 are within the footprint of the Arica Project and would be closed by the Project; refer to Figure 3.15-1. These routes do not appear to serve unique recreation areas and may have been developed to provide access to remote camping locations.
- DC 511, which is used as a utility road, crosses the Victory Pass Project diagonally, but the Project would be fenced on either side of the road such that the fenceline would not cross the road, and access would remain as it currently is.
- DC 379 runs between the two Projects, but access would remain. DC 379, along with DC 425, would be used to access the Projects.

Because the blocked routes (DC 514, DC 515, DC 516, DC 517, DC 518, and DC 378) do not provide unique opportunities in the region, there are many other open routes for use in the area, and they are within an area defined by BLM as a Development Focus Area, the impact of closure would be less than significant.

Changing the Character of Recreation Areas. The solar Projects are proposed entirely on BLM-administered public land that is primarily undeveloped desert, crossed by an existing Southern California Edison transmission line. This land is designated as a Development Focus Area and is bordered on the east and the west by other existing, approved, and proposed solar projects. There are no defined recreation areas within the Projects' boundaries. As a result, the Projects would cause no direct loss or change of character of existing designated recreational facilities, nor would their development result in the increased use of other designated recreational facilities.

During operation, the presence of the Projects would present a visual change that could indirectly affect recreationists who are seeking a natural setting, in particular from BLM wilderness areas or Joshua Tree National Park. Since 2010, the Desert Center area has been transformed by large active solar projects (Desert Sunlight, Palen, Desert Harvest, and Athos Solar) and increased and existing transmission infrastructure (refer to Figure 2-4, Proposed Projects and Other Solar Projects). As a result, the modification of the region (from undisturbed desert and agriculture to more developed energy) occurred before the Projects were proposed and views from nearby sensitive areas, such as wilderness, have already been modified. In addition, as defined in Section 3.2, Aesthetics, with incorporation of APM AES-4 (Night Lighting Management), the Projects would use controlled night lighting, which would minimize the effect of the Projects on the dark sky and star gazing. As a result, while the Projects would add to the existing development in the area, the operational impacts of the Projects would be less than significant. Therefore, as part of the California Department of Fish and Wildlife's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect impacts.

Cumulative Impacts

Geographic Scope. The cumulative geographic scope for recreation is the Desert Center area in the Chuckwalla Valley. The direct and indirect impacts to recreation would be additive within this area in that they could result in direct loss of recreation and indirect impacts to the same resources. Within this area, there are multiple large and active solar projects such as Desert Sunlight, Palen, and Desert Harvest, and additional proposed and approved projects, such as Athos Solar, that are discussed in Section 3.1.2, Cumulative Impact Scenario. While other existing or proposed projects would add to the cumulative impacts, the solar facilities would be the largest contributors.

Cumulative Impacts. Each existing or proposed solar project on BLM land would result in similar impacts to recreation as those described for the Projects, primarily including loss of land that could be potentially used for passive recreation and the potential closure of open BLM routes. However, each project is located

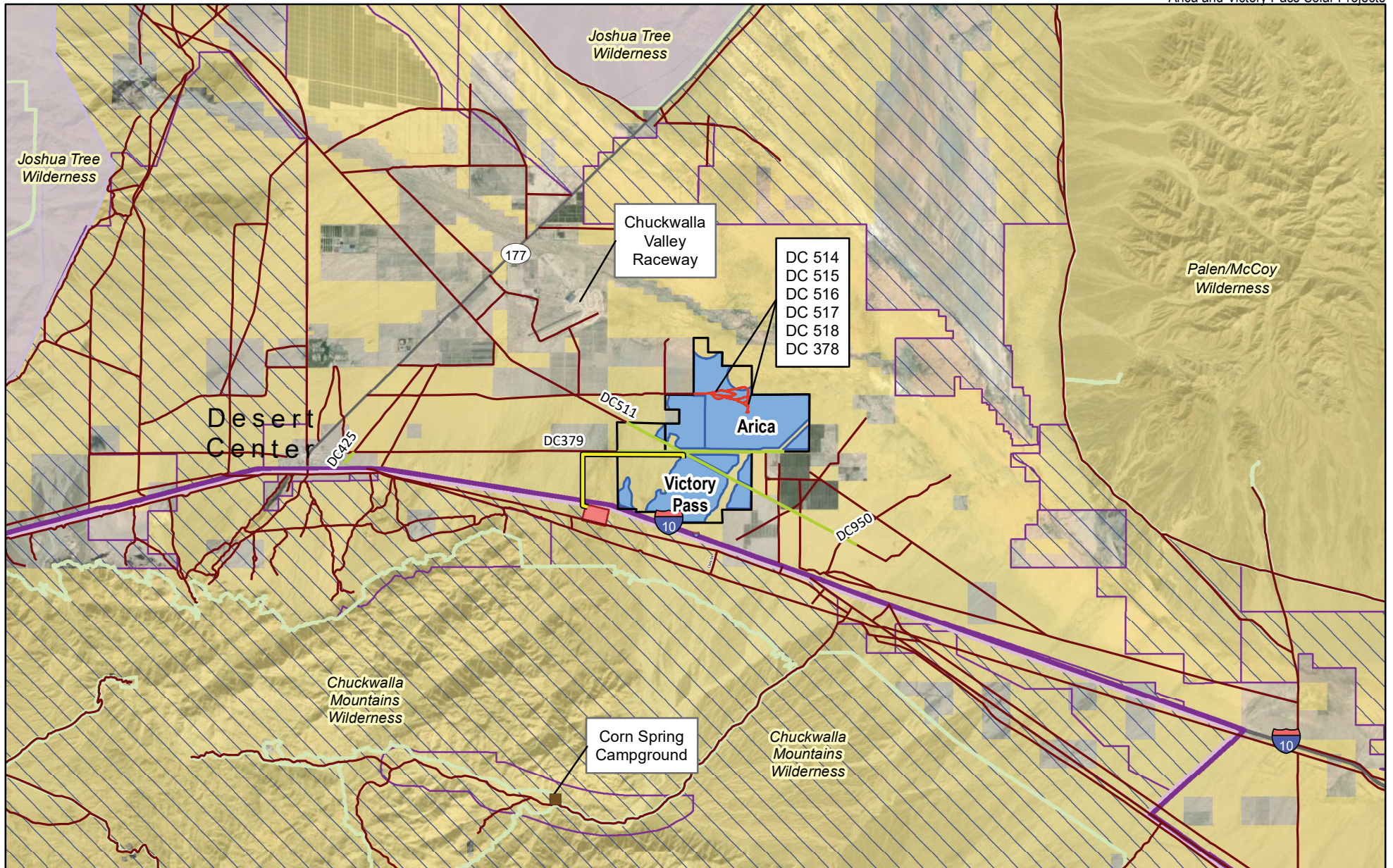
either on private land previously used for agriculture and not available to the public for recreation (Athos), or on BLM-administered land designated as Development Focus Areas under the DRECP Land Use Plan Amendment. While some of the BLM-administered land may no longer be available for recreation, the direct loss of recreational lands would be minimal compared with the land available for recreation (many millions of acres). BLM specifically protected recreation south of I-10 because this area includes the primary recreational interests.

If all the proposed solar projects in the area were developed, some cumulative loss of local Desert Center OHV routes would occur because the Palen Project, Arica Project, ~~and Oberon Project,~~ and Easley Project would require route closures. However, the Palen Solar Project mitigation protects route DC 952, which is used to access areas of recreational interest, and route DC 511, which is used as a utility access road and would remain open through the Arica and Victory Pass Projects. The Easley Project would also overlap DC 511, but given the existing use of this route by SCE, it is reasonable to assume that the route DC 511 would not be closed. The Easley Project is in the planning stages and could potentially require closure of DC 378 and DC 506. BLM would require adequate measures as part of the environmental review for proposed route closures. Desert Harvest and Desert Sunlight did not cause closure of public routes and Athos Solar Project is on private land and any routes closed by that project would not have been publicly available for recreation. The cumulative loss of OHV routes by the Projects in conjunction with the Palen, ~~and Oberon,~~ and Easley Projects would not be cumulatively significant because the routes impacted by the projects do not lead to any specific recreation area and are minimally used. Accordingly, the Projects' incremental contribution to the cumulative OHV route impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

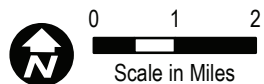
If all the proposed solar projects were developed, they would result in approximately 20,000 acres of solar development in the Desert Center area. This amount of development would substantially change the region and the vistas from nearby recreational facilities, such as wilderness areas and the Joshua Tree National Park, that are valued for their solitude and isolation. This may cause a reduction in visitation to nearby recreational areas due to this change, as visitors looking for isolated recreation opportunities may look elsewhere, causing an increase in visitation to other wilderness areas outside of Desert Center. During construction and O&M APM AES-4 (Night Lighting Management; APM AQ-1 through APM AQ-3 (Fugitive Dust Control Plan, Control On-Site Off-Road Equipment Emissions, and Construction Activity Management Plan, respectively); and APM NOI 1 (Construction Restrictions) and APM NOI-3 Noise (Complaint Process) that are incorporated into the Projects would reduce the Projects impacts to visitors to the surrounding recreation areas near the Project sites.-Since there is a large amount of wilderness and solitary recreational areas in eastern Riverside County and the California desert, it is unlikely that recreationists who choose another wilderness or solitary area outside of Desert Center would increase the use of these areas such that it would lead to or accelerate substantial physical deterioration of the region. Therefore, there would not be a significant cumulative impact under CEQA. Accordingly, the Projects' incremental contribution to the cumulative impacts on recreational areas in Desert Center caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to recreation.

3.15.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation was identified to further avoid or substantially lessen impacts to recreation.



Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020



- | | | | |
|---|--------------------------------------|--|--|
| BLM Right-of-Way Grant Application Area | Open Off-Highway Vehicle (OHV) Route | Chuckwala Special Recreation Management Area | Area of Critical Environmental Concern |
| Solar Project Facilities (Project Fencelines) | OHV Routes to Remain Open | Joshua Tree National Park | Wilderness area |
| Proposed Shared Gen-tie | OHV Routes to be Closed | BLM land | |
| Red Bluff Substation | | | |

Figure 3.15-1

Recreation Areas and BLM Open Routes

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3.16 Transportation

This section evaluates the environmental impacts to transportation that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on transportation from both of the proposed Projects as the whole of the action. The section includes a description of applicable plans, policies, and regulations; presents the environmental setting with respect to surface transportation for the proposed Projects; identifies the criteria used for determining the significance of environmental impacts; lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible; and describes the potential transportation impacts of the proposed Projects.

A detailed transportation study, Arica and Victory Pass Solar Project Draft Transportation Analysis, was prepared by Fehr & Peers to evaluate the potential traffic impacts of the Projects and is provided as Appendix J of this Draft EIR.

During the scoping effort, no party identified any public concerns related to potential transportation impacts.

3.16.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Code of Federal Regulations, Title 49, Subtitle B. This regulation includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.

State Laws, Regulations, and Policies

Senate Bill 743. Senate Bill 743, signed by the governor in 2013, changed the way transportation impacts are identified in the California Environmental Quality Act (CEQA). Specifically, the legislation directed the Governor's Office of Planning and Research to look at different metrics for identifying transportation as a CEQA impact. The updated CEQA Guidelines (OPR 2018a) and the final Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018b) identify vehicle miles traveled (VMT) as the preferred metric for transportation impact analysis moving forward. In addition, the use of roadway capacity/delay metrics, such as automobile delay and level of service (LOS), as a CEQA impact is specifically prohibited. The evaluation of construction impacts to LOS is no longer allowed under CEQA. Also, the Office of Planning and Research technical advisory indicates that any construction effects on transportation will be temporary and evaluation of VMT during the construction phase of a project can be a qualitative/high-level assessment.

California Vehicle Code. The California Vehicle Code includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Department of Transportation (Caltrans) Local Development-Intergovernmental Review. The Caltrans Local Development-Intergovernmental Review program uses the Transportation Impact Study Guide (TISG) during environmental review of land use projects and plans (Caltrans 2020). The Caltrans Local Development-Intergovernmental Review program works with local jurisdictions early and throughout their land use planning and decision-making processes, consistent with the requirements of CEQA and state planning law. Caltrans seeks to reduce single-occupancy-vehicle trips; provide a safe

transportation system; reduce per capita VMT; increase accessibility to destinations via cycling, walking, carpooling, and transit; and reduce greenhouse gas emissions. Those goals, along with standard CEQA practice, create the foundation of Caltrans review of proposed new land use projects.

The 2020 TISG replaces Caltrans' previous 2002 TISG, which was based on vehicle delay and congestion. Based on the 2020 TISG, for land use projects and plans, automobile delay is no longer considered a significant impact on the environment under CEQA per Senate Bill 743. Caltrans review of land use projects and plans is now based on VMT, consistent with changes to the CEQA Guidelines (14 CCR 15064.3[b][1]). This 2020 VMT-focused TISG provides a foundation for review of how lead agencies apply the VMT metric to CEQA project analyses. The analysis provided in Section 3.16.3 is consistent with Caltrans' 2020 TISG.

Local Laws, Regulations, and Policies

Southern California Association of Governments (SCAG) Connect SoCal – Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS). The SCAG develops the RTP, which presents the transportation vision for Los Angeles, Orange, San Bernardino, Imperial, Riverside, and Ventura Counties. Senate Bill 375 was enacted to reduce greenhouse gas emissions from automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. Under the law, SCAG is tasked with developing an SCS, an element of the RTP that provides a plan for meeting emissions reduction targets set forth by the California Air Resources Board. The SCS outlines the plan for integrating the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas in existing main streets, downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. This overall land use development pattern supports and complements the proposed transportation network that emphasizes system preservation, active transportation, and transportation demand management measures.

The 2020–2045 RTP/SCS, also known as Connect SoCal, is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path toward a more mobile, sustainable, and prosperous region by making connections between transportation networks, between planning strategies, and between the people whose collaboration can improve the quality of life for Southern Californians (SCAG 2020a). The SCAG Regional Council adopted Connect SoCal (2020-2045 RTP/SCS) on September 3, 2020.

As part of the development of Connect SoCal, SCAG adopted a set of 10 high level goals (SCAG 2020a).

- Goal #1: Encourage regional economic prosperity and global competitiveness.
- Goal #2: Improve mobility, accessibility, reliability, and travel safety for people and goods.
- Goal #3: Enhance the preservation, security, and resilience of the regional transportation system.
- Goal #4: Increase person and goods throughput and travel choices within the transportation system.
- Goal #5: Reduce greenhouse gas emissions and improve air quality.
- Goal #6: Support and equitable communities.
- Goal #7: Adapt to a changing climate and support an integrated regional development pattern and transportation network.

- Goal #8: Leverage new transportation technologies and data-driven solutions that result in more efficient travel
- Goal #9: Encourage development of diverse housing types in areas well supported by multiple transportation options.
- Goal #10: Promote conservation of natural and agricultural lands and restoration of critical habitats.

~~Regional Comprehensive Plan and Regional Transportation Plan. Southern California Association of Governments' Additionally, SCAG's~~ Intergovernmental Review section, part of the Environmental Planning Division of Planning and Policy, is responsible for performing consistency review of regionally significant local plans, projects, and programs. Regionally significant projects are required to be consistent with Southern California Association of Governments' adopted regional plans and policies, such as the Regional Comprehensive Plan and the ~~Regional Transportation Plan~~RTP/SCS. The criteria for projects of regional significance are outlined in CEQA Guidelines Sections 15125 and 15206. According to the Southern California Association of Governments Intergovernmental Review Procedures Handbook (SCAG 2012) Appendix C, Minimum Criteria for Classification of Projects as Regionally Significant, "new or expanded electrical generating facilities and transmission lines" qualify as regionally significant projects. The proposed Projects' consistency with SCAG's goals included in the current RTP/SCS is included in Section 3.16.3, Impact Analysis.

Riverside County General Plan – Circulation Element. The Riverside County General Plan Circulation Element contains the following policies applicable to the proposed Projects (County of Riverside 2020a):

- **Policy C1.8:** Ensure that all development applications comply with the California Complete Streets Act of 2008 as set forth in California Government Code Sections 65040.2 and 65302.
- **Policy C2.2:** Require that new development prepare a traffic impact analysis as warranted by the Riverside County Traffic Impact Analysis Preparation Guidelines or as approved by the Director of Transportation. Apply level of service targets to new development per the Riverside County Traffic Impact Analysis Preparation Guidelines to evaluate traffic impacts and identify appropriate mitigation measures for new development.
- **Policy C2.3:** Traffic studies prepared for development entitlements (tracts, plot plans, public use permits, conditional use permits, etc.) shall identify project related traffic impacts and determine the "significance" of such impacts in compliance with CEQA and the Riverside County Congestion Management Program Requirements.
- **Policy C2.4:** The direct project related traffic impacts of new development proposals shall be mitigated via conditions of approval requiring the construction of any improvements identified as necessary to meet level of service targets.
- **Policy C3.6:** Require private developers to be primarily responsible for the improvement of streets and highways that serve as access to developing commercial, industrial, and residential areas. These may include road construction or widening, installation of turning lanes and traffic signals, and the improvement of any drainage facility or other auxiliary facility necessary for the safe and efficient movement of traffic or the protection of road facilities.
- **Policy C3.8:** Restrict heavy duty truck through-traffic in residential and community center areas and plan land uses so that trucks do not need to traverse these areas.
- **Policy C3.9:** Design off-street loading facilities for all new commercial and industrial developments so that they do not face surrounding roadways or residential neighborhoods. Truck backing and

maneuvering to access loading areas shall not be permitted on the public road system, except when specifically permitted by the Transportation Department.

- **Policy C3.10:** Require private and public land developments to provide all on-site auxiliary facility improvements necessary to mitigate any development-generated circulation impacts. A review of each proposed land development project shall be undertaken to identify project impacts to the circulation system and its auxiliary facilities. The Transportation Department may require developers and/or subdividers to provide traffic impact studies prepared by qualified professionals to identify the impacts of a development.
- **Policy C6.1:** Provide dedicated and recorded public access to all parcels of land, except as provided for under the statutes of the State of California.
- **Policy C6.2:** Require all-weather access to all new development.
- **Policy C7.1:** Work with incorporated cities to mitigate the cumulative impacts of incorporated and unincorporated development on the countywide transportation system.

Riverside County Municipal Code Title 10, Chapter 10.08, Sections 10.08.010–10.08.180. These regulations establish requirements and permits for oversized and overweight vehicles.

Riverside County Ordinance No. 460. This ordinance specifies that all new access roads shall conform to the requirements of the Riverside County Transportation Department Subdivision Regulations.

Riverside County Ordinance No. 461. This ordinance specifies that all new access roads shall conform to the requirements of the Riverside County Transportation Department Road Improvement Standards and Specifications.

3.16.2 Environmental Setting

The Projects' area is in Riverside County, approximately 5.5 miles east of the Desert Center community. Figure 3.16-1 illustrates the roadway network that provides access to the Project sites. The Project sites are located directly north of Interstate (I) 10 and east/southeast of State Route (SR) 177. Because the Projects are in a remote area, all materials would have to be brought to the sites from long distances and personnel would have to travel from surrounding communities within Riverside County. Consequently, all Project-related traffic would use I-10 and SR-177 for regional travel. The "Projects' area" or "study area" for the traffic and transportation analysis would be the segments of I-10 and SR-177 with the greatest potential to experience an increase in traffic volume during construction and operation, and local roadways connecting to the sites. It is anticipated that most construction workers would be drawn from the Blythe/Palo Verde Valley region and the Desert Center community, with a smaller portion drawn from Imperial Valley or the greater Riverside County or San Bernardino County regions. Workers and delivery trucks would access the Project sites from SR-177, Ragsdale Road, and Bureau of Land Management (BLM) Route DC 379.

Regional and Local Roadways

Regional roadway facilities in the area and those used to access the Project sites include the following:

- **I-10** is a major east/west interstate freeway spanning the United States from Santa Monica, California, to Jacksonville, Florida. It connects Southern California to Phoenix, Arizona, and destinations further east. Within the study area, I-10 is a four-lane freeway with an interchange provided near the Project sites at SR-177. The posted speed limit on I-10 is 70 mph. In the study area, I-10 carries 26,000 average daily trips (ADT) (Appendix J).

- **SR-177** is a north/south highway running between Desert Center/I-10 and SR-62 (approximately 25 miles northeast of Desert Center). SR-177 is a two-lane road, and the posted speed limit is 65 mph. It carries approximately 2,800 average daily trips (Appendix J).
- **Ragsdale Road** is a two-lane east/west local roadway located in Desert Center. It connects SR-177 to dirt roads that leads to BLM Route DC 379.
- **BLM Route DC 379** is a dirt road in Desert Center. It can be accessed from SR-177 via an unpaved road intersecting Ragsdale Road and an unpaved roadway following the power lines and intersecting SR-177 approximately 4,500 feet north of the SR-177/Ragsdale Road intersection. It provides access to the Project sites and will be used by Project-related traffic.

Public Transportation within the Vicinity

Public Transportation Service

The nearest public bus service is offered by the Palo Verde Valley Transit Agency, which serves the Blythe Area. Route 6 travels along I-10 and serves the Desert Center Post Office once daily westbound and eastbound on Monday, Wednesday, and Friday (Palo Verde Valley Transit Agency 2020).

Pedestrian and Bicycle

Pedestrian facilities include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape amenities. Pedestrian facilities currently do not exist in the proposed Projects' study area. The regional and local roadways do not contain any existing dedicated pedestrian network or bicycle facilities (e.g., bicycle paths, lanes, or routes). However, given the rural nature of Ragsdale Road and BLM Route DC 379, limited pedestrian and bicycle use of the roadway could occur.

3.16.3 Impact Analysis

Methodology

This analysis focuses on potential impacts related to the construction, operation, maintenance, and future decommissioning of the Projects on the surrounding transportation systems and roadways. The construction phase of the Projects would include trips generated by construction workers and supplies delivered by trucks to the sites. Operation of the Projects would not generate a substantial or significant number of trips above those already generated by existing land uses in the area, which primarily consist of other solar energy facilities and rural residences. Future decommissioning activities are anticipated to be similar to construction, but less intense. This assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the existing conditions (pre-Projects) to those during construction of the Projects, as well as potential cumulative impacts. This analysis considers the effects of the Projects on transportation and traffic in the context of Caltrans and Riverside County requirements. Caltrans is responsible for permitting and regulating the use of state-administered roadways within California, including I-10 and SR-177, and the County of Riverside is responsible for regulation of the use of roadways within its jurisdictional boundaries. BLM is responsible for use of approved routes and new rights-of-way for use of routes within its jurisdiction.

Trip Generation

Construction trip generation for the Projects' was developed using information provided by the Applicants shown in Table 3.16-1. These estimates are considered "worst case," as they assume that all workers would arrive and depart during the peak hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. and

that construction of both Projects would substantially overlap. As noted in Appendix J, peak construction is estimated during month 7 of the 18-month construction timeframe. All other months would have fewer daily trips. Delivery trucks for the Projects’ represent just over 1% of the total trips generated and are expected to occur outside of peak travel hours. The distribution of these trips along the affected roadways is shown in Appendix J.

Table 3.16-1. Construction Trip Generation – Worst Case

Description	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Workers	2,032	1,016	0	1,016	0	1,016	1,016
Delivery Trucks	130	0	0	0	0	0	0
<i>Total</i>	<i>2,162</i>	<i>1,016</i>	<i>0</i>	<i>1,016</i>	<i>0</i>	<i>1,016</i>	<i>1,016</i>

Source: Appendix J.

Once operational, the Projects would generate fewer than 20 daily trips, which would be a mixture of maintenance worker commutes and some small truck trips associated with maintenance and solar panel washing activities.

Vehicle Miles Traveled

VMT is a measure used in transportation planning for a variety of purposes. It measures the amount of travel for all vehicles in a geographic region over a given period. VMT is calculated by adding up all the miles driven by all the cars and trucks on all the roadways in a region. This metric plays an integral role in the transportation planning, policymaking, and revenue estimation processes due to its ability to indicate travel demand and behavior. Riverside County has implemented Draft Traffic Impact Analysis Guidelines for VMT (County of Riverside 2020b). These guidelines were reviewed for applicability to the proposed Projects. However, the majority of this methodology guidance applies to infill development. Since such a methodology does not apply to the proposed solar facilities, the main applicable methodology guidance provided by Riverside County states that “projects generating less than 110 daily vehicle trips” are presumed to have a less-than-significant VMT impact absent substantial evidence to the contrary (County of Riverside 2020b). This threshold pertains to permanent vehicle trips associated with a project. Because the proposed Projects would generate less than 110 daily trips during operation (operation would generate less than 20 trips per day), the Riverside County Draft Traffic Impact Analysis Guidelines for VMT were considered but not used directly.

With respect to VMT generated during construction, per CEQA Guidelines Section 15064.3(b), a VMT analysis may be based on the following:

- **Qualitative Analysis:** If existing models or methods are not available to estimate the VMT for the particular project being considered, a lead agency may analyze the project’s VMT qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.
- **Methodology:** A lead agency has discretion to choose the most appropriate methodology to evaluate a project’s VMT, including whether to express the change in absolute terms, per capita, per household, or in any other measure. A lead agency may use models to estimate a project’s VMT and may revise those estimates to reflect professional judgement based on substantial evidence. Any assumptions used to estimate VMT and any revisions to model outputs should be documented and explained in the environmental document prepared for the project.

Because the Projects' would generate substantial trips only during construction, which is anticipated to take up to 18 months, a qualitative analysis for VMT has been conducted.

Level of Service Standards (Not Required Project Review)

Until July 1, 2020, the standard Caltrans and Riverside County used to measure potential traffic impacts was LOS, which measured vehicle delays. However, effective July 1, 2020, CEQA requires using VMT as the new standard to measure transportation impacts. Under CEQA, LOS analyses are no longer required and are no longer recognized as a valid methodology for analyzing potential transportation impacts.

While LOS analysis has been eliminated under CEQA, the existing Riverside County General Plan Circulation Element, Riverside County's Congestion Management Plan, and the Riverside County Environmental Assessment Form continue to contain LOS thresholds. Appendix J of this Draft EIR evaluates the potential LOS impacts to both roadway segment and intersection during construction of the Projects. Specific findings of this LOS analysis are not included within this section of the EIR. However, any applicable findings within the traffic study were incorporated into the overall qualitative analysis of potential impacts to local transportation systems during construction. Lastly, this study is considered to fulfill the traffic study requirements of the plans, ordinances, or policies establishing measures of overall effectiveness for the performance of the circulation system provided in Section 3.16.1. This supplements the analysis provided in Impact T-1.

Criteria for Determining Significance

The criteria used to determine the significance of the Project-related transportation impacts are based on the criteria identified in the CEQA Guidelines, Appendix G. The Projects would result in a significant impact related to transportation if they would:

- Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities (see Impact TRA-1).
- Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b) (see Impact TRA-2).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) (see Impact TRA-3).
- Result in inadequate emergency access (see Impact TRA-4).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to transportation to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM TRA-1 Construction Traffic Commute and Control Plan. Prior to the start of construction, the Project Applicants shall submit a Construction Traffic Commute and Control Plan for review and approval by the California Department of Transportation (Caltrans) and Riverside County, as applicable, for affected roads and intersections that would be directly affected by the construction activities and/or would require permits and approvals. The Construction Traffic Commute and Control Plan shall include, but not be limited to:

- Methods to achieve up to 50% (as feasible) reduction in workers arriving and departing outside of the peak hours (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.), including

but not limited to plans to encourage or provide ridesharing opportunities for construction workers or staggering the arrival/departure for workers to be outside of peak hours during peak construction when significant impacts to affected intersections are anticipated.

- A proposal to utilize multiple freeway exits to access the Project sites (Desert Center exit and the Corn Springs exit).
- If multiple construction projects in the immediate area occur at the same time, if the worker commutes occurring outside of peak hours cannot be met, or if conditions, such as substantial delays and off-ramp queues that spill back to the mainline, at the intersection of Interstate (I) 10 and State Route (SR) 177 warrant, include plans for working with other solar project developers in the immediate area to install a temporary signal or use manual intersection control (morning peak hour only) during the construction period at the I-10 westbound ramp at SR-177. Geometry changes shall be considered and potentially implemented in addition to signalization at the I-10 westbound ramp and SR-177. These geometry changes would include a 50-foot westbound right turn pocket and a southbound 50-foot right turn pocket. If manual intersection control is used in the morning peak hour, the southbound right turn pocket would likely not be needed because delays and queues along Ragsdale Road would not result in undesirable conditions.
- While not required to reduce impacts, methods to reduce vehicle miles traveled by construction employees and construction-related truck trips would be included, where feasible, such as encouraging hiring of local construction workers.
- The locations and use of flaggers, warning signs, barricades, delineators, cones, arrow boards, etc., established according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual.
- The locations of any road or traffic lane segments that would need to be temporarily closed or disrupted due to construction activities.
- The locations where guard poles, netting, or similar means to protect transportation facilities for any construction or conductor installation work requiring the crossing of a local street or highway are proposed.
- Provisions for ensuring detours or safe movement of vehicles, pedestrians, and bicycles through all affected facilities.
- A defined method to maintain close coordination, prior to and during construction, with adjacent solar project developers, Caltrans, and Riverside County to minimize cumulative impacts of multiple simultaneous construction projects affecting shared portions of the circulation system. Coordination with adjacent development projects to spread work shifts into multiple hours (instead of peak hour) or the installation of additional temporary traffic signals or manual traffic control officers during peak hours to mitigate the temporary impacts.

APM TRA-2 Employee Carpool Incentive Program. During the construction phase of the Projects, the Applicants shall offer employees incentives to carpool to the Project sites.

APM TRA-3 Public Outreach Campaign. During the construction phase of the Projects, the Applicants shall implement an outreach campaign (signage, direct mail, website, recorded telephone update line, newspaper notices, etc.) to notify the public of potential delays during times when truck escorts are proposed.

APM TRA-4 Repair Roadways and Transportation Facilities Damaged by Construction Activities. If roadways, sidewalks, medians, curbs, shoulders, or other such transportation features are damaged by Project construction activities, as determined by the affected public agency, such damage shall be repaired and restored to their pre-Project condition. Prior to construction, the Project Applicants shall confer with the California Department of Transportation (Caltrans) and Riverside County, as applicable, regarding the roads within 500 feet in each direction of Project access points (where heavy vehicles will leave public roads to reach the Project sites). At least 30 days prior to construction, or as requested by Caltrans or Riverside County, the Project Applicants shall photograph or video record all affected roadway segments and shall provide Caltrans and Riverside County with a copy of these images, if requested.

At the end of major construction, the Project Applicants shall coordinate with each affected jurisdiction to confirm what repairs are required. Any damage demonstrable to the Projects is to be repaired to the pre-construction condition within 60 days from the end of all construction, or on a schedule mutually agreed to by the Project Applicants and the affected jurisdiction. If multiple projects are using the transportation features, the Project Applicants will pay its fair share of the required repairs. The Project Applicants shall provide Caltrans and Riverside County (as applicable) proof when any necessary repairs have been completed.

Environmental Impacts

Impact T-1. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

LESS THAN SIGNIFICANT.

Consistency with SCAG Connect SoCAL – RTP/SCS. The 2020-2045 RTP/SCS charts a path toward a more mobile, sustainable, and prosperous region by making key connections between transportation networks, planning strategies, and people (SCAG 2020a). As part of the development of Connect SoCal, SCAG adopted a set of 10 high level goals. Table 3.16-2 presents a consistency discussion of the proposed Projects relative to these 10 goals.

Table 3.16-2. Consistency Analysis with SCAG RTP/SCS

<u>Connect SoCal Goal</u>	<u>Consistency Discussion</u>
<u>Goal #1: Encourage regional economic prosperity and global competitiveness.</u>	<u>The construction and operation of the Projects include the procurement of goods and services and worker wages that would occur both locally and regionally, resulting in economic benefits.</u>
<u>Goal #2: Improve mobility, accessibility, reliability, and travel safety for people and goods.</u>	<u>The Projects would have no impact on this goal but would ensure the safety of people and goods during construction and operation by following existing transit laws. Applicant Proposed Measure (APM) TRA-1 through APM TRA-4 would reduce effects of the additional goods and people required during construction and would ensure roads and transportation facilities were repaired at the end of construction.</u>

Table 3.16-2. Consistency Analysis with SCAG RTP/SCS

Connect SoCal Goal	Consistency Discussion
Goal #3: Enhance the preservation, security, and resilience of the regional transportation system.	The Projects would have no effect on security of the transportation network. APM TRA-4 (Repair Roadways and Transportation Facilities Damaged by Construction Activities) would ensure any damage and deterioration attributed to the Projects would be repaired.
Goal #4: Increase person and goods throughput and travel choices within the transportation system.	The Projects would not impact the transportation system as a whole but would increase use of roads during construction. There are limited travel choices in the Desert Center region, but the Projects would encourage carpooling of construction workers (APM TRA-1 and TRA-2), which would provide some travel choice.
Goal #5: Reduce greenhouse gas emissions and improve air quality.	The Projects would develop renewable energy, which would reduce greenhouse gas emissions and improve air quality by offsetting the need for conventional power generation.
Goal #6: Support healthy and equitable communities.	The Projects would develop renewable energy, which would reduce greenhouse gas emissions and improve air quality by offsetting the need for conventional power generation. Economic benefits, from the procurement of goods and services and worker wages, would occur both locally and regionally during the Projects' construction and operation. The Applicants are committed to using union labor and would request that the engineer, procurement, and construction contractor hold local job fairs to attract labor from the nearby communities and include employment opportunities for tribal members, access to any necessary job training programs to ensure performance and experience requirements can be met, and an opportunity for tribal enterprises to bid on sourcing construction materials.
Goal #7: Adapt to a changing climate and support an integrated regional development pattern and transportation network.	The Projects would have no effect on regional development patterns of the transportation network. The Projects would develop renewable energy, which would reduce greenhouse gas emissions and improve air quality by offsetting the need for conventional power generation.
Goal #8: Leverage new transportation technologies and data-driven solutions that result in more efficient travel.	The Projects will design a Traffic Commute and Control Plan that would use data to determine which times are best to avoid at given intersections to avoid inefficient travel. There are limited travel choices in the Desert Center region, but the Projects would include carpooling of construction workers (APM TRA-1 and TRA-2), which would provide for more efficient travel. With APM-TRA-1, impacts would be less than significant.
Goal #9: Encourage development of diverse housing types in areas well supported by multiple transportation options.	As solar projects, the Projects would generate temporary and short-term construction trips and nominal permanent operational trips for the solar sites. Therefore, the Projects would have no effect on housing development.
Goal #10: Promote conservation of natural and agricultural lands and restoration of critical habitats.	The Projects are located on lands allocated by BLM for renewable development and avoid lands allocated by BLM for conservation, all in accordance with BLM's DRECP, which is designed to balance conservation and renewable energy development. The Projects include APMs and would implement mitigation to reduce significant effects to natural habitat.

Source: SCAG 2020b.

As shown in Table 3.16-2, the construction and operation of the Projects would be consistent with the goals of SCAG's RTP/SCS and would result in less-than-significant impacts.

Roadway Network. Construction of the Projects would result in workers traveling to/from the site and deliveries of equipment and materials generating temporary vehicle trips to the area. The estimated maximum addition of 2,162 daily trips (2,032 daily passenger vehicle commute trips and 130 truck delivery

trips during construction) would temporarily increase traffic volumes on I-10 and SR-177 and may reduce their performance. Given the existing daily traffic on I-10 (26,000 vehicles), an additional 2,162 trips (8.3% increase in daily traffic volumes) would be noticeable but is considered less than significant.

For SR-177 and Ragsdale Road, the increase in daily traffic volumes during construction would be substantial and could result in substantial delays in the Desert Center area. Incorporation of APM TRA-1 (Construction Traffic Commute and Control Plan) into the Projects, which requires measures to reduce temporary impacts, including means to achieve a substantial percentage of the construction workforce commute during off-peak times, to potentially develop/install improvements for SR-177, and/or to promote carpooling, would reduce potential impacts. In addition, the Project Applicants have included APMs to offer incentive to employees who carpool (APM TRA-2) and would implement an outreach campaign to notify the public of potential delays during times when truck escorts are proposed (APM TRA-3), which would also reduce impacts. With these APMs incorporated, temporary impacts would be reduced and construction of the Projects would have a less-than-significant impact to applicable plans, ordinances, or policies as provided in Section 3.16.1. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Operation and maintenance of the Projects is expected to generate less than 20 trips per day, which is considered a nominal increase to existing daily traffic volumes. Furthermore, all access roads would be designed consistent with applicable County of Riverside and other standards. Therefore, operation would not disrupt any transportation facilities and would result in less-than-significant impacts to an applicable plan, ordinance, or policy as provided in Section 3.16.1. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Future decommissioning impacts are anticipated to be similar to those of construction, and with incorporation of APM TRA-1 through APM TRA-4, impacts would be less than significant. The actual impacts would depend on the proposed future decommissioning action and final use of the sites. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Transit, Bicycle, and Pedestrian Use. The only public transit stop in the region is in Desert Center. There are no designated pedestrian and bicycle facilities in the study area. Construction of the solar facilities is not expected to require any temporary lane closures on I-10 that could restrict the movements of Palo Verde Valley Transit Agency buses. However, construction of the Projects would require large vehicle travel on I-10. APM TRA-1 (Construction Traffic Commute and Control Plan) requires a plan be reviewed and approved by Caltrans and Riverside County that would include provisions for ensuring safe movement of all vehicles along I-10. With the incorporation of this measure into the Projects, impacts during construction would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

The Project area is not located near office uses, employment centers, or existing/planned residential sites. Thus, the opportunities for alternative transportation to serve construction workers is unavailable. While the Project would not be transit friendly, it would not impact an applicable plan, ordinance, or policy addressing public transportation facilities. Furthermore, APM TRA-1 (Construction Traffic Commute and Control Plan) would ensure the safe movement of bicycles and pedestrians. Once constructed, maintenance activities would occur as needed at the solar facilities but are not expected to restrict transit, pedestrian, or bicycle movements. Impacts would be less than significant as they pertain to an applicable

plan, ordinance, or policy as provided in Section 3.16.1. Therefore, with incorporation of APM TRA-1 as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact T-2. Would the project conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?

LESS THAN SIGNIFICANT. The proposed Projects would result in temporary traffic trips during construction. Truck trips associated with common materials and equipment deliveries would likely come from within the Palm Springs, Blythe, and/or Riverside-San Bernardino area, with some specialized materials trips likely originating from the Ports of Long Beach and Los Angeles. Many temporary workers needed for construction are expected to reside within a 60–90-minute drive time of the sites. This assumption is based on observations regarding worker commute habits during construction monitoring efforts for recent similar renewable energy and transmission projects in the California desert. However, it is likely that some construction workers would come from outside a reasonable commute area and seek temporary housing proximate to the work area.

As shown in Table 3.16-1, construction of the Projects would include a peak of 2,162 daily trips (1,032 daily worker commutes and 130 daily truck trips). Per CEQA Guidelines Section 15064.3(b)(3), a qualitative VMT analysis of construction trips is appropriate. Due to the remote location of the Projects, some construction truck trips may require high VMT to access the site. For example, some materials trips could originate from the Port of Long Beach to Desert Center. All construction-related truck trips would be temporary and only in volumes necessary to deliver equipment and materials to the site. No unnecessary travel would be allowed. Upon completion of construction, all truck trips and worker commute trips would cease. At this time, there are no known applicable VMT thresholds of significance for temporary construction trips.

The Applicants have included a traffic measure to offer incentive to employees who carpool (APM TRA-2). This APM would help reduce VMT. Additionally, APM TRA-1 (Construction Traffic Commute and Control Plan) requires the Applicants to prepare a Construction Traffic Commute and Control Plan for review by affected jurisdictions. The plan shall provide specifics regarding how the Applicants would encourage or provide ridesharing opportunities for construction workers and reduce VMT whenever feasible. Therefore, while the proposed Projects would include temporary construction trips that may include high VMT, the Project Applicants would seek to reduce VMT. With incorporation of APMs into the Projects, this would be a less-than-significant transportation impact. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Once constructed, operation and maintenance of the Projects would generate very few vehicle trips. It is estimated average daily operational traffic volumes associated with the Projects would be 20 trips or less, with the majority being passenger vehicles. Per Caltrans guidelines, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant operational VMT impact (Caltrans 2020).

With respect to a qualitative analysis for compliance with the Regional Comprehensive Plan and the Regional Transportation Plan, it is assumed permanent operational workers would either be in, or seek permanent residence within, a 30-mile commute. Based on U.S. Census data for the area (Census Tract 469, City of Blythe, Desert Center area), approximately 28% of those residing within these areas have a daily work commute ranging between 20 and 40 minutes in duration (U.S. Census Bureau 2020). Therefore, the estimated commute time and VMT for operational workers is within a reasonable range typical of the remote desert communities nearest to the Project sites. Due to the remote location of the

sites, limited residential and transit opportunities to the site, and low number of daily trips (20 daily trips), Projects' operation is not considered to result in high VMT that could adversely affect transit or transportation planning for the area. Therefore, operational-related trips would not affect existing transit uses or corridors and would cause a less-than-significant transportation impact. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Future decommissioning impacts are anticipated to be similar to those of construction, and with incorporation of APM TRA-1 (Construction Commute and Control Plan) and APM TRA-2 (Employee Carpool Incentive Program) into the Projects, impacts would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact T-3. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

LESS THAN SIGNIFICANT. Construction traffic would access the Desert Center area from SR-177 at the Ragsdale Road exit, then use BLM Route DC 379 to directly access the Project sites. Due to the flat topography, both SR-177 and the local roadways accessing the site have a relatively straight horizontal alignment, with good visibility in all directions. All new internal site roads would be private. During construction, all truck drivers would adhere to California Vehicle Code regulations pertaining to licensing, size, weight, and load of vehicles operated on highways and local roads; safe operation of vehicles; and the transport of any hazardous materials. Traffic on freeways and public roads would be of the same vehicle types (passenger vehicles and heavy trucks) that occur and are allowed under existing conditions.

APM TRA-1 requires the preparation of a Construction Traffic Commute and Control Plan to be reviewed and approved by Caltrans and Riverside County. This plan would provide provisions for ensuring safe movement of vehicles, pedestrians, and bicycles through all affected public roadway facilities. With the incorporation of this measure, hazard impacts from Projects-related vehicle use of public roadways would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

The movement of heavy trucks and equipment on public roadways providing access to the sites could potentially result in indirect effects from the Projects that damage road surfaces, shoulders, curbs, sidewalks, signs, and light standards. APM TRA-4 (Repair Roadways and Transportation Facilities Damaged by Construction Activities) is proposed to ensure any damage and deterioration attributed to the Projects would be repaired. With the incorporation of this measure, hazard impacts from indirect roadway damage due to the Projects would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Average daily operational traffic volumes associated with the Projects would be approximately 20 trips per day, with the majority being passenger vehicles. This number of operational daily trips would have a negligible effect on public roadway safety and would not damage roadway surfaces. Less than significant roadway hazards would occur from the Projects' operation. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Future decommissioning impacts are anticipated to be similar to those of construction, and with incorporation of APM TRA-1 and APM TRA-4 into the Projects, impacts would be less than significant. Therefore, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the

action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect impacts.

Impact T-4. Would the project result in inadequate emergency access?

LESS THAN SIGNIFICANT. Construction of the solar facilities is not expected to require any temporary lane closures that could restrict the movements of emergency vehicles. The Projects would have controlled access points for ingress and egress into the sites, with all access roads designed to Riverside County standards that allow for adequate emergency vehicle access and movement. Riverside County Fire Department would review the access and determine its adequacy. Therefore, impacts during construction would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Once constructed, maintenance activities would occur as needed at the solar facilities but are not expected to require any temporary travel lane closures that could restrict emergency vehicle movements. As the solar facilities would be staffed, entrance into the site through closed gates would be available. Impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Future decommissioning impacts are anticipated to be similar to those of construction. Therefore, impacts to emergency access would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

Geographic Scope. The geographic scope of the cumulative analysis for the transportation and traffic vehicle trips analysis are the key Projects' segments of I-10 and SR-177 that provide access to the Project sites. This geographic area was selected because cumulative projects would increase impacts only if they used the same roadway segments at the same time as the proposed Projects. Therefore, the cumulative projects considered within the traffic and transportation geographic extent include the Oberon Project (refer to Table 3.1-2 in Section 3.1.2, Cumulative Impact Scenario). While other cumulative projects may use the same segments of I-10 and SR-177, they would not be constructed at the same time (refer to Tables 3.1-1 and 3.1-2 in Section 3.1.2, which list existing and reasonably foreseeable projects in the region). Most of the Projects in the Desert Center area are built (transmission lines, Red Bluff Substation, and Desert Sunlight Project), are in construction (Desert Harvest and Palen Projects), or have been approved and are completing pre-construction work (Athos Project).¹

Cumulative Impacts. As discussed, the Projects' operations would result in negligible daily trips to study area roadways. Therefore, the cumulative impact analysis focuses on traffic volumes generated during construction of the proposed Projects. Impact TRA-1 and Impact TRA-2 consider the Projects' direct contribution to the affected circulation system. Both impacts conclude that direct impacts would be less than significant with incorporation of APM TRA-1 (Construction Traffic Commute and Control Plan), APM TRA-2, and APM TRA-3 into the Projects. Construction of the Oberon Project, if it were to occur at the same time, would result in an increase in trips and VMT. Cumulatively significant impacts due to increased transportation hazards or damaged roads could occur if simultaneous construction activities resulted in

¹ According to Soft Bank Energy (<https://www.sbenergy.com/projects>), the Athos Project is anticipated to start operations between November 2021 and March 2022, before peak construction of the Arica and Victory Pass Projects. The Athos Project is currently under construction.

significant volumes of heavy truck trips that affected safe use of a roadway or damaged transportation facility surfaces.

With incorporation of APMs into the Projects, the Projects' contribution to the potentially significant cumulative impact would be reduced to less than cumulatively considerable. APM TRA-1 (Construction Traffic Commute and Control Plan) requires the Projects to define methods to maintain close coordination with Caltrans and Riverside County, prior to and during construction, to minimize cumulative impacts of multiple simultaneous construction projects affecting shared portions of the circulation system. Furthermore, the Projects' construction, operation, or future decommissioning would not increase VMT beyond what is typical in the rural desert area, and incorporation of APM TRA-1 (Construction Traffic Commute and Control Plan) into the Projects would ensure plans for carpooling are incorporated into construction. In addition, APMs are incorporated into the Projects to offer incentive to employees who carpool (APM TRA-2) and to implement an outreach campaign to notify the public of potential delays during times when truck escorts are proposed (APM TRA-3), which would also help reduce cumulative effects related to transportation.

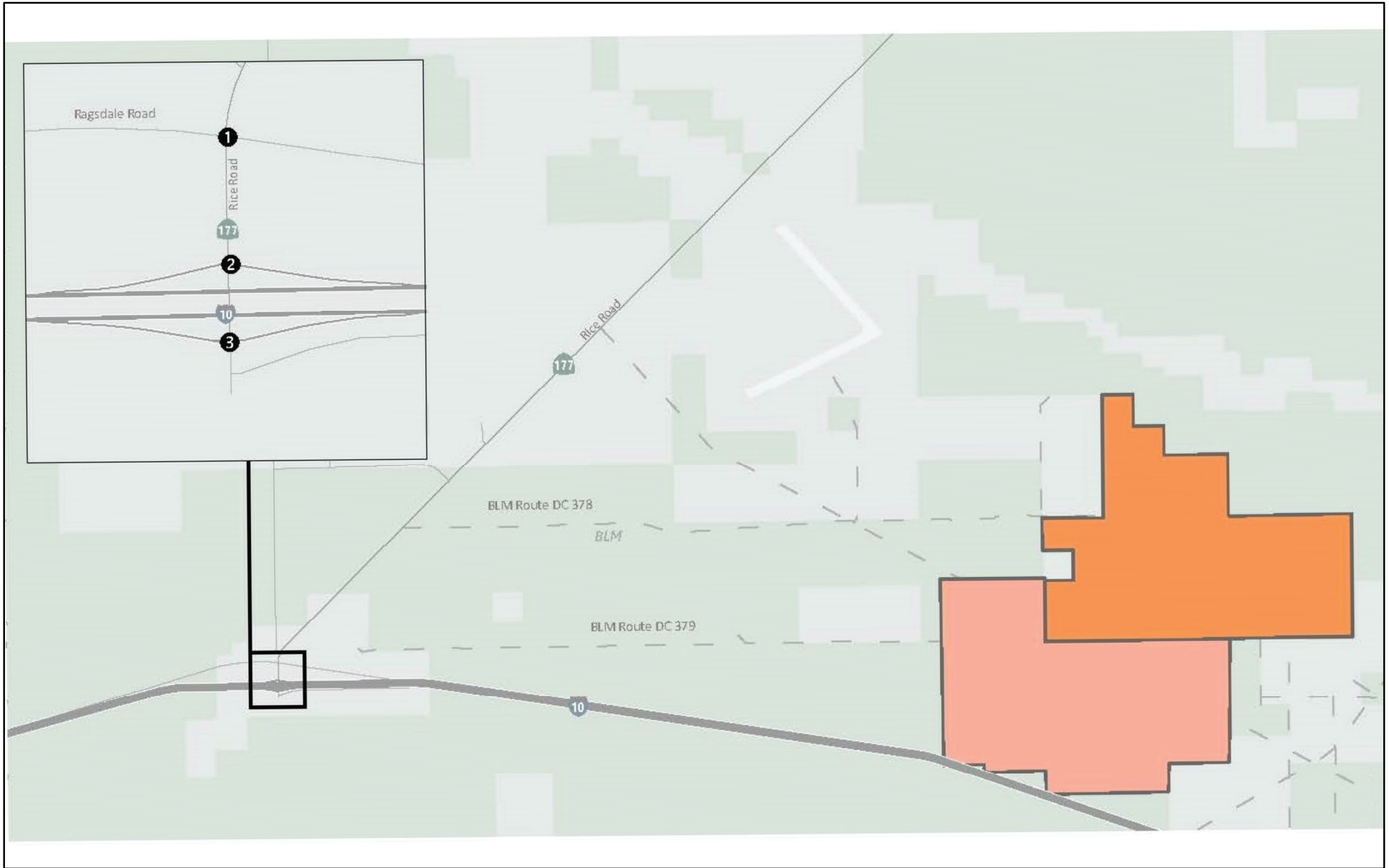
APM TRA-1 (Construction Traffic Commute and Control Plan) also requires the Applicants to reduce temporary motorist hazards in a variety of ways, including by ensuring the safe movement of vehicles, pedestrians, and bicycles. Construction and future decommissioning of the solar facilities are not expected to require any temporary lane closures that could restrict the movements of public transit, pedestrians, or bicycles. Construction and future decommissioning of the proposed Projects would require large vehicles to travel on local roadways to access the site. However, APM TRA-1 (Construction Traffic Commute and Control Plan), which is incorporated into the Projects, includes provisions for ensuring the safe movements of oversize vehicles on public roadways. The Oberon Project and any other cumulative projects would also be required to abide by regulations regarding lane closures to reduce any potential impacts. Accordingly, the Projects' incremental contribution to the cumulative transportation impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

Because there are few roadways in the Desert Center area, it is likely that cumulative projects would use the same roadways as the proposed Projects. If the Projects and any cumulative projects were to result in damage and deterioration to the same roadways, this could result in an indirect cumulatively significant impact to the roadways. APM TRA-4 (Repair Roadways and Transportation Facilities Damaged by Construction Activities) is proposed to ensure any indirect damage and deterioration attributed to the Projects would be repaired. Projects in the cumulative scenario are expected to include similar road repair measures in their project approvals. With implementation of similar road repair measures for the cumulative projects and incorporation of APM TRA-4 into the Projects, the cumulative hazard impacts on transportation facilities would be less than significant. Accordingly, the Projects' incremental contribution to the cumulative road repair impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to transportation.

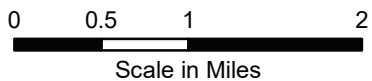
3.16.4 Mitigation Measures

In addition to APMs, no other potentially feasible mitigation were identified to further avoid or substantially lessen impacts to transportation.

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Source: Fehr & Peers 2020



- Arica BLM ROW Grant Application Area
- Victory Pass BLM ROW Grant Application Area
- Public Land
- Airport Runways

- Study Intersections
- Unpaved Access Roads

Figure 3.16-1

Site Access and Transportation Study Area Intersections

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3.17 Tribal Cultural Resources

This section evaluates the environmental impacts to tribal cultural resources (TCRs) that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes potential effects to TCRs for both of the proposed Projects as the whole of the action. This section describes the regulatory framework for TCRs and describes available information regarding TCRs in and surrounding the Projects' area from existing reports and as provided to CDFW through ongoing consultation with California Native American tribes. The section also identifies the criteria used to determine whether impacts to TCRs are significant or potentially significant and identifies Applicant Proposed Measures (APMs) that would be incorporated into the Projects and other potentially feasible mitigation measures, where appropriate, to avoid or substantially lessen potentially significant impacts to the extent feasible. Cultural resources are addressed separately in Section 3.5 of the Environmental Impact Report.

TCRs are a defined class of resources under state law; they are described in more detail in Section 3.17.1, Regulatory Framework, under state regulations. TCRs include sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a tribe. To qualify as a TCR, the resource must either (1) be listed on, or be eligible for listing on, the California Register of Historical Resources (CRHR) or other local historic register; or (2) constitute a resource that the lead agency, at its discretion and as supported by substantial evidence, determines should be treated as a TCR (California Public Resources Code [PRC], Section 21074[a]). California Native American tribes that are traditionally and culturally affiliated with a geographic area can provide lead agencies with expert knowledge of their TCRs.

The California Environmental Quality Act (CEQA), as amended in 2014 by Assembly Bill (AB) 52, requires a lead agency to send a formal notice and invitation to consult about a proposed project to all tribal representatives who request such notice. The purpose of this consultation is to obtain tribal information and recommendations regarding the significance of TCRs, the significance of the project's impacts on TCRs, and, if necessary, potentially feasible project alternatives or mitigation measures that may avoid or substantially lessen significant or potentially significant effects to TCRs to the extent feasible. (Refer to PRC Section 21080.3.2[a].) CDFW also consults with California Native American tribes consistent with its Tribal Communication and Consultation Policy (No. 2014-07) (CDFW 2014).

Issues raised during scoping for the Projects related to TCRs include concern about impacts to known and unknown TCRs, including the potential for impacts to landscape, and the need for appropriate mitigation.

3.17.1 Regulatory Framework

Numerous laws and regulations require state and local agencies to consider the effects a project may have on cultural resources and, for purposes of CEQA, on tribal cultural resources. These laws and regulations prescribe required agency process, define the responsibilities and obligations of the various agencies proposing related action, and describe the relationship between and related requirements governing the interaction among other involved agencies and interested stakeholders.

Federal Laws, Regulations, and Policies

Both the National Environmental Policy Act and National Historic Preservation Act analyze and protect cultural resources. These acts are described in detail in Section 3.5, Cultural Resources.

State Laws, Regulations, and Policies

Both historical resources and unique archaeological resources must be considered under CEQA as described in detail in Section 3.5.

Assembly Bill 52

AB 52 (which amended Section 5097.94 of, and added Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3 to, the PRC) established a process and related requirements governing state and local agency consideration of California Native Americans as a part of required public review of proposed projects under CEQA. The goal of AB 52, among other things, is to promote the involvement of California Native American tribes in the decision-making process, especially to identify resources significant to tribes and feasible ways to avoid or substantially lessen significant or potentially significant impacts to those resources. To reach this goal, AB 52 established a formal role for tribes in the CEQA process and formally recognized the unique expertise California Native American tribes may provide as substantial evidence to identify the locations, types, and significance of TCRs within their traditionally and culturally affiliated geographic area (PRC Section 21080.3.1[a]). CEQA defines a California Native American tribe as a "Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission." This definition does not distinguish between federally recognized and non-federally recognized tribal groups and is therefore more inclusive than the federal definition of "Indian tribe" (PRC Section 21073).

CEQA lead agencies are required to consult with tribes about potential TCRs in the project area, the potential significance of project impacts on those resources, the development of project alternatives, and the type of environmental document that should be prepared. AB 52 specifically states that a project that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment (PRC Section 21084.2).

CEQA Section 21074(a)(1), which incorporates by reference PRC Section 5024.1(c), defines TCRs to include either of the following:

- 1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - a. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
 - b. Included in a local register of historical resources as defined in Public Resources Code section 5020.1(k).
- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code section 5024.1(c). In applying the criteria set forth in 5024.1(c) for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

A cultural landscape that meets one or both of the two criteria highlighted above is also a TCR under CEQA Section 21074(b), where the landscape is geographically defined in terms of the size and scope of the landscape. Likewise, historical resources, unique archaeological resources, and "non-unique archaeological resources," as defined by CEQA, that conform with one or both of the two criteria highlighted above are also TCRs under CEQA Section 21074(c). All of these resources, including cultural landscapes, can be significant and TCRs because of their sacred and/or cultural tribal value rather than being important for their scientific value, as determined by a CEQA lead agency, including CDFW.

CDFW Tribal Communication and Consultation Policy

CDFW adopted a Tribal Communication and Consultation Policy to help establish and foster tribal relationships (CDFW 2014). The policy is the foundation of CDFW's efforts to work cooperatively, communicate effectively, and consult with tribes. It establishes a formal process for engaging in government-to-government consultations. The policy implements and builds on Executive Order B-10-11 and the California Natural Resources Agency Tribal Consultation Policy. Through implementation of this policy and through additional means, including entering into memoranda of agreement with individual tribes, CDFW seeks to establish a positive, cooperative relationship with tribes. While the primary purpose of this policy is to establish effective tools for communicating with tribes and a formal process for engaging in government-to-government consultations with tribes, CDFW seeks and encourages collaborative relationships with tribes, including for the co-management of resources, where appropriate.

Local Laws, Regulations, and Policies

Because the Projects are on federal land administered by BLM, they are not required to meet local regulations. However, the Section 3.5 lists policies outlined in the Multipurpose Open Space Element of the County of Riverside General Plan that address cultural resources and that were reviewed (County of Riverside 2015).

3.17.2 Environmental Setting

Prehistoric Setting

The Project sites are near the boundary of the Colorado and Mojave deserts and are located along a known prehistoric and historic travel corridor. Scholars suggest multiple groups were present in the region at various times. Groups in the region originated from portions of the Mojave Desert, the interior Colorado Desert, and the Colorado River, as well as more distant locations, such as the peninsular ranges or the Southwest. Therefore, the area's archeological record also may reflect affinities with any of these regions. Please refer to Section 3.5 for a detailed description of the prehistory of the Project sites.

Ethnographic Setting

There is archaeological evidence that ancestors of the Yuman-speaking groups have been in the area for some time. However, these were not the only people who would have used this area. Ethnographic information indicates that several other Native American groups, such as the Cahuilla and Chemehuevi, at least traversed the vicinity of the Projects.

Native use of the Chuckwalla Valley area in the eighteenth and early nineteenth centuries was conditioned by its location as a frontier or boundary zone between the Halchidoma to the east and the Takic groups, the Cahuilla, to the west. The Halchidoma were linked to the desert division of the Cahuilla and the mountain division of the Serrano by ties of political friendship and long-distance exchange. Thus, the Chuckwalla Valley area formed a geographical link between these groups and formed a major travel corridor for communication between them. In addition to this east-west travel, the Chuckwalla Valley also provided a corridor for north-south travel between the territories of two Colorado River groups who were enemies of the Halchidoma, the Mohave (also spelled Mojave) and the Quechan. Traveling parties from either one of these two groups going up or down the Colorado River had to veer away westward from the Palo Verde Valley to avoid the Halchidoma. This often took them through the Chuckwalla Valley region.

Ethnohistorical and ethnographic sources for the Chuckwalla Valley area have been limited by the fact that the area was not regularly visited by non-native people until the 1860s. This was due in part to the

fact that water and feed management on the eastern California deserts posed a severe challenge to successful horse or mule travel to the Colorado River and Arizona by non-native people. In addition, the boundaries and areas of settlement of native groups in the region have changed over time. Thus, ethnohistoric information and archaeological data may outline different patterns of occupation and territoriality. Nevertheless, it can be said with confidence that most groups living in the vicinity of the Projects when the Spanish first made forays into the area spoke languages in the Yuman family of the Hokan language stock. These include the Halchidoma, Mohave, and Quechan. Surrounding groups are Uto-Aztec speakers; the Chemehuevi speak a language of the Numic branch and the Cahuilla are Takic-speakers. The final desiccation of Lake Cahuilla is thought to have caused major disruptions in the population in the Colorado Desert, perhaps contributing to the persistent warfare reported along the lower Colorado and Gila rivers.

Native American groups having historical tribal territories falling within the vicinity of both Projects include the Quechan, Halchidoma, Mohave, Chemehuevi, and the Desert Cahuilla. Please refer to Section 3.5 for a description of the tribal territories associated with the Chuckwalla Valley.

Identified Tribal Cultural Resources

Landscape as Tribal Cultural Resource

CDFW, through ongoing discussion with consulting tribes, has determined in its independent lead agency judgment that the Cahuilla Traditional Use Area Tribal Cultural Landscape is a TCR, as provided by PRC Section 21074(b). This Environmental Impact Report (EIR) refers to this cultural landscape TCR hereafter as a Tribal Cultural Landscape (TCL). The TCL overlays the Projects' area and, in combination with the resource-specific TCRs discussed below and listed in Tables 3.17-1 and 3.17-2, is connected culturally by California Native Americans to the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D (CA-RIV-053T) to the south, and the Palen Dunes/Palen Lake Traditional Cultural Property (TCP) to the east of both Project sites. These geographic references define the size and scope of the TCL from a tribal values perspective, in CDFW's independent lead agency judgment, giving broader context to the resources identified in the 1-mile buffer area around the Project sites where the cultural resources records search was completed. Describing the TCL with these geographic references reflects CDFW's ongoing consultation with California Native American tribes and CDFW's intent as lead agency to acknowledge the tribal significance of TCRs on and nearby the Project sites in the broader context of landscape. The TCL, in turn, from a geographic perspective, is an area where Native Americans intersected various other use areas nearby, including the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D (CA-RIV-053T) to the south, and the Palen Dunes/Palen Lake TCP to the east. Therefore, the Cahuilla Traditional Use Area TCL defines a specific area of Native American traditional use, which includes the Project sites and its connection for California Native Americans to the broader region.

CDFW has received information from consulting tribes that the TCL connects California Native Americans to the land through song and teaching about morality and represents knowledge that can be passed from generation to generation. The TCL's significance can be appropriately described through the lens of long-held traditional songs and accounts, which are embedded with references to places, plants and animals, directions, geographic locations, and teachings. Precontact systems of trails linking various Native American populations across the Southern California landscape from the desert to the coast run through the landscape and can still be identified today. The trail systems are included in traditional songs and stories that define the landscape for consulting tribes. The California Energy Commission has been studying prehistoric trails and related sites in the broader region of the Palen Solar Project, located just east of the Project sites,

in a study titled Prehistoric Trails Network Cultural Landscape, which acknowledges the interconnectedness of California and other Native American populations in the Southern California region (Schaefer and Laylander 2011). Consulting tribes have informed CDFW in the past that the Mule Mountains, McCoy Mountains, Palen Mountains, Eagle Mountains, and Big Maria Mountains and the Palo Verde and Chuckwalla Valleys represent a connected landscape intersected by trails that ancestral peoples used for trade, subsistence, medicine, and religious purposes. These areas are important for local tribes as physical evidence, among other things, of the significant tribal connection to the land for thousands of years.

While the Cahuilla Traditional Use Area TCL setting and environment may be altered by construction of multiple utility-scale energy projects, including the removal of culturally important physical elements (i.e., archaeological evidence), California Native Americans retain their spiritual connection to the land and a sense of stewardship. California Native Americans maintain a traditional responsibility to protect and preserve the landscape and culturally important elements, including plants and animals and associations with historical events.

The Project sites, as part of the Cahuilla Traditional Use Area TCL, include 14 prehistoric sites (5 within the APE), 6 multi-component sites (2 within the APE), and 30 isolated finds (11 within the APE) within the records search buffer. Tables 3.17-1 and 3.17-2 list the sites that CDFW individually considers TCRs under PRC Section 21074(a)(1)(A), or those under PRC Section 21074(a)(2) that qualify for listing in the CRHR under Criterion 1 (events important to Native American prehistory and history) and Criterion 4 (the importance of tribal values conveyed by archaeological materials), regardless of the inability of these same resources to qualify for CRHR listing under archaeological values alone. CDFW's lead agency analysis of impacts in the direct effects APE considers impacts to individual TCRs and to the broader Cahuilla Traditional Use Area TCL. The integrity criteria of feeling, association, location, design, setting, and materials still significantly apply to this area from a tribal cultural perspective, albeit the integrity criterion of workmanship does not remain significantly applicable in a number of instances. The association of this cultural landscape with culturally important physical elements and the surrounding landscape remains intact. The relationships among the cultural landscape's components and with other culturally important places in the area still convey the historical character of cultural associations through relationships among components of the larger regional cultural landscape and the period of significance.

Tribal Cultural Resources in the Direct Effects Area of Potential Effect

A total of three prehistoric lithic scatters, one lithic scatter overlapped by a historic refuse deposit, and six isolated prehistoric artifacts were identified within the direct effects area of potential effect (APE) for the Arica Solar Project (Table 3.17-1). Within the Victory Pass Solar Project APE, two prehistoric sites (both are lithic scatters) and five isolated lithic artifacts were identified (Table 3.17-2). None of these resources were determined to be eligible for listing in the National Register of Historic Places or CRHR under any significance criteria for archaeological values. However, as stated earlier, CDFW, through consideration of cultural resource studies conducted in the general vicinity, and importantly through ~~ongoing~~ consultation with California Native American tribes, has determined that all prehistoric sites, the prehistoric components of the multi-component sites, and all prehistoric isolated finds retain tribal values that reflect a long history of Native American presence in the area. These sites and isolated artifacts convey tribal ties to the landscape represented in the Cahuilla Traditional Use TCL, as individual TCRs given their association with the TCL, and their connection to nearby TCRs, such as the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D (CA-RIV-053T) to the south, and the Palen Dunes/Palen Lake TCP to the east; each of these is discussed at length in the indirect effects assessments completed for the Arica Solar and Victory Pass Solar Projects (Knabb et al. 2020a, 2020b). Moreover, it is possible and perhaps likely that additional isolated artifacts will be identified

during construction of the Projects. CDFW expects in its lead agency discretion, currently informed by the expertise of consulting tribes, among other substantial evidence, that these additional isolated artifacts may be TCRs, despite their inability to qualify for National Register of Historic Places or CRHR listing under archaeological significance criteria.

Tribal Cultural Resources in the Indirect Effects Area of Potential Effect

In addition to resources identified within the direct effects APE, a number of TCRs were specifically identified within the indirect effects APE for the Projects, which extends south of the Project sites (Knabb et al. 2020a, 2020b). These include three historic properties with heightened cultural sensitivity and values that could be indirectly affected by the proposed Projects: Chuckwalla Mountains Petroglyph District to the southwest, the Coco-Maricopa Trail Segment D (CA-RIV-053T) to the south, and the Palen Dunes/Palen Lake TCP to the east. As discussed above, CDFW has determined that the Cahuilla Traditional Use Area TCL is a TCR for purposes of CEQA Section 21074, highlighting the significance of the Project sites in the broader landscape. This cultural landscape TCR, referred to in this EIR as the TCL, manifests locally within the Projects' APEs in the prehistoric Native American sites and isolates listed in Tables 3.17-1 and 3.17-2. The geographic boundary of the TCL is contained within the records search buffer around the direct effects APE for both Projects and intersects the indirect effects APE (e.g., North Chuckwalla Valley Petroglyph District, etc.).

The visual assessments for the Projects found that construction would not have a significant indirect impact on properties located within the indirect effects APE, as resources located there would continue to convey their historical significance. However, as discussed in Section 3.17.3, Impact Analysis, CDFW finds at this time that the Projects' indirect effects on the tribal values conveyed by the Cahuilla Traditional Use Area TCL and individual TCRs would not be insubstantial. CDFW expects its ~~ongoing~~ CEQA lead agency consultation with California Native American tribes; input received by CDFW during required public review of this EIR; and BLM's separate, ongoing federal tribal consultation, for both Projects located on federal land administered by BLM, may provide additional information to further inform this important determination.

Table 3.17-1. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Arica Solar Project Study Area (Records Search Radius and APE)

Primary No.	Trinomial No.	Age	Location	Description	Tribal Cultural Values: CRHR Eligibility Determination
33-019468	CA-RIV-9907/H	Multi-component	APE	Prehistoric component: 3 brownware ceramic sherds Historic Component: military associated sparse scatter of ceramic sherds and cans	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-KJ-011	Prehistoric	APE	Lithic scatter: 28 lithic artifacts in a single concentration representing a single cobble reduction	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-KJ-055	Prehistoric	APE	Lithic scatter: 100 pieces of quartz lithic debris in a single concentration representing a single cobble reduction	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-001	Prehistoric	APE	Lithic scatter: 5 lithic artifacts in a single concentration	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-009/H	Multi-component	APE	Prehistoric component: 1 piece of debitage and 1 Chione shell Historic Component: military refuse scatter and possible hearth	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-IO-001	Prehistoric	APE	Isolate: Basalt proximal biface fragment (possible Western Stemmed)	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-IO-002	Prehistoric	APE	Isolate: Granitic bifacial mono and one piece of weathered flaked stone debitage	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-1. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Arica Solar Project Study Area (Records Search Radius and APE)

Primary No.	Trinomial No.	Age	Location	Description	Tribal Cultural Values: CRHR Eligibility Determination
	19-386-WH-IO-003	Prehistoric	APE	Isolate: One large Colorado Beige rim sherd	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-IO-007	Prehistoric	APE	Isolate: One Colorado Beige body sherd	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-IO-009	Prehistoric	APE	Isolate: Seven ceramic sherds from a single Colorado Beige vessel	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-WH-IO-023	Prehistoric	APE	Isolate: Fine-grained volcanic core	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-000695	CA-RIV-695	Prehistoric	Records Search Area	Lithic scatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-013645		Prehistoric	Records Search Area	Lithic scatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
330013647		Prehistoric	Records Search Area	Lithic scatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-1. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Arica Solar Project Study Area (Records Search Radius and APE)

Primary No.	Trinomial No.	Age	Location	Description	Tribal Cultural Values: CRHR Eligibility Determination
33-019473	CA-RIV-9912/H	Multi-Component	Records Search Area	Lithic scatter and historic period refuse deposit	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-017884		Prehistoric	Records Search Area	Isolate: Gray quartz cobble	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-020435		Prehistoric	Records Search Area	Isolate: Groundstone	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-023651		Prehistoric	Records Search Area	Isolate: Quartz shatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-028548		Prehistoric	Records Search Area	Isolate: Interior quartz flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-2. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Victory Pass Solar Study Area (Records Search Radius and APE)

Primary	Trinomial	Age	Location	Site Description	Tribal Cultural Values: CRHR Eligibility Determination
33-013647	—	Prehistoric	APE	Lithic scatter; includes porphyry cores and 10 debitage	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
—	19-386-KJ-055	Prehistoric	APE	Lithic scatter; contains 100 quartz debitage in a small area	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-KJ-IO-046	Prehistoric	APE	Isolate: Red CCS primary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-KJ-IO-062	Prehistoric	APE	Isolate: Grey volcanic primary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-KJ-IO-020	Prehistoric	APE	Isolate: Fine grained grey metavolcanic tertiary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
	19-386-KJ-IO-021	Prehistoric	APE	Isolate: Weathered granitic primary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-2. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Victory Pass Solar Study Area (Records Search Radius and APE)

Primary	Trinomial	Age	Location	Site Description	Tribal Cultural Values: CRHR Eligibility Determination
	19-386-KJ-IO-023	Prehistoric	APE	Isolate: Porphyritic core	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-000053	CA-RIV-53T	Prehistoric	Records Search Area	Coco-Maricopa Trail segment	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-015101		Prehistoric	Records Search Area	Lithic scatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018302		Prehistoric	Records Search Area	Lithic scatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018330		Prehistoric	Records Search Area	Lithic scatter	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-019816		Prehistoric	Records Search Area	Rock ring and rock features	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-2. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Victory Pass Solar Study Area (Records Search Radius and APE)

Primary	Trinomial	Age	Location	Site Description	Tribal Cultural Values: CRHR Eligibility Determination
33-013648	CA-RIV-9091/H	Multi-Component	Records Search Area	Lithic scatter and historic period rock cairns	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018313	CA-RIV-9415/H	Multi-Component	Records Search Area	Lithic scatter and historic period mining area	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-019468	CA-RIV-9907/H	Multi-Component	Records Search Area	Ceramic scatter and historic period rock features	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-01388		Prehistoric	Records Search Area	Isolate: Ceramic sherd	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-013390		Prehistoric	Records Search Area	Isolate: Basalt flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-013391		Prehistoric	Records Search Area	Isolate: Basalt flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-2. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Victory Pass Solar Study Area (Records Search Radius and APE)

Primary	Trinomial	Age	Location	Site Description	Tribal Cultural Values: CRHR Eligibility Determination
33-013392		Prehistoric	Records Search Area	Isolate: Basalt core and three flakes	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-014179		Prehistoric	Records Search Area	Isolate: Basalt flakes	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-017955		Prehistoric	Records Search Area	Isolate: Basalt flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018558		Prehistoric	Records Search Area	Isolate: Quartz primary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018559		Prehistoric	Records Search Area	Isolate: Quartz primary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018560		Prehistoric	Records Search Area	Isolate: Quartz secondary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-2. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Victory Pass Solar Study Area (Records Search Radius and APE)

Primary	Trinomial	Age	Location	Site Description	Tribal Cultural Values: CRHR Eligibility Determination
33-018561		Prehistoric	Records Search Area	Isolate: Chert interior flake and quartz secondary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018562		Prehistoric	Records Search Area	Isolate: Chert simple flake tool and quartz primary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018575		Prehistoric	Records Search Area	Isolate: Quartz secondary flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018585		Prehistoric	Records Search Area	Isolate: Quartz flake	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-018586		Prehistoric	Records Search Area	Isolate: Multi-directional core	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values
33-020409		Prehistoric	Records Search Area	Isolate: Multi-directional core	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

Table 3.17-2. Tribal Cultural Resources of the Cahuilla Traditional Use Area Tribal Cultural Landscape Within the Victory Pass Solar Study Area (Records Search Radius and APE)

Primary	Trinomial	Age	Location	Site Description	Tribal Cultural Values: CRHR Eligibility Determination
33-028527		Prehistoric	Records Search Area	Isolate: Ceramic sherd	CRHR: Eligible Criterion 1, associated with significant tribal events on landscape; Eligible Criterion 4, information potential of artifacts for tribal values

3.17.3 Impact Analysis

Methodology

Information presented in this section was gathered through CDFW's ongoing consultation under CEQA with California Native American tribes that have cultural affiliations with the Projects' area.

California Environmental Quality Act Tribal Consultation and the California Department of Fish and Wildlife's Communication and Consultation Policy

Per CEQA requirements, tribal cultural resources are primarily identified through outreach to the Native American Heritage Commission (NAHC) and government-to-government consultation between CDFW as lead agency and the appropriate California Native American tribes. On June 23, 2020, CDFW sent a request to the NAHC for a search of its Sacred Lands File and a list of tribes that may be affiliated with the Projects' area. The NAHC performed a records search of the Sacred Lands File, which was negative, and provided a list of Native American tribes that may have knowledge of cultural resources in the Projects' area. On August 4, 2020, CDFW provided notification of the Projects under CEQA Section 21080.3.1 and CDFW's Tribal Communication and Consultation Policy to the 19 tribes identified by the NAHC. The notification letters included a description of the Projects and potential impacts on tribal interests, and invited consultation pursuant to CEQA and CDFW's Tribal Communication and Consultation Policy. Four tribes responded requesting consultation: Agua Caliente Band of Cahuilla Indians, the Quechan Tribe of the Fort Yuma Reservation (Quechan), the Soboba Band of Luiseño Indians (Soboba), and the Colorado River Indian Tribes (CRIT).

The Agua Caliente Band of Cahuilla Indians responded via email on September 4, 2020, that the Projects are within the tribe's traditional use area. The Quechan requested formal consultation via email on August 31, 2020. The Soboba requested formal consultation via a letter on September 10, 2020. The CRIT requested formal consultation via email on November 3, 2020. CDFW reached out via email and phone calls to the four tribes to arrange meetings. CDFW met via Team Meetings with the CRIT on November 18, 2020, the Soboba on April 19, 2021, and the Quechan on April 23, 2021. In addition, per the request of the CRIT, Soboba, and Quechan, CDFW provided copies of the Class III Cultural Resources Report via an FTP site to these tribes on June 23, 2021. CDFW has incorporated information and the Applicants have proposed APMs as a result of the consultations and discussions with the tribes in the EIR. The potentially feasible measures identified during the consultation process with the tribes to date would avoid or substantially lessen the Projects' impacts on the TCL and TCRs to some extent. During the Draft EIR public review period (August 6, 2021, to September 20, 2021) CDFW continued discussions with Tribes. ~~CDFW tribal consultation is ongoing.~~

Criteria for Determining Significance

The following significance criteria for the identified TCL and TCRs are derived from Appendix G of the CEQA Guidelines. Impacts to the TCL and identified TCRs are considered significant if the proposed Projects would:

- Cause a substantial adverse change in the significance of a Tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
 - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k); or

- A resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, considering the significance of the resource to a California Native American tribe.

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to TCRs, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM TCR-1 Cultural Sensitivity Training. Prior to the commencement of grading or other activities that disturb previously undisturbed earth or soils, interested tribes shall be invited to prepare the content of a cultural sensitivity training module that will be included in the worker environmental awareness program (WEAP) training for all construction personnel and project biologists. Training will include a brief description of tribal history and cultural affiliation of the Projects' location and the surrounding area and the resources that could potentially be identified during earthmoving activities. The first presentation of this training may be videotaped or otherwise recorded for use in future trainings. If interested tribes are unable to prepare a cultural sensitivity training module suitable for inclusion in the WEAP training prior to the commencement of earthmoving activities, the Applicants are not obligated to delay such activities.

APM TCR-2 Tribal Monitoring. Prior to any grading or other activities that disturb previously undisturbed earth or soils within the Project area, the Applicants shall hire as many tribal monitors as may reasonably be necessary to facilitate observation of all such activities by one monitor (i.e., if one tribal monitor designated by tribal representatives from tribes that request monitors to observe all such ground disturbing activities cannot observe all of the activities on a given day because they will happen simultaneously in different areas of the Project, then more than one monitor will be needed for that day). These monitors shall be known as the Tribal Observers for this Project, and shall have the authority to identify resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, has determined are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 (i.e., which CDFW has identified as tribal cultural resources).

APM TCR-3 Long-Term Preservation Plan. Consultation under Assembly Bill 52 is ongoing and may yet reveal new resources that the California Department of Fish and Wildlife (CDFW), in its discretion and supported by substantial evidence, may determine are significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 and recommendations of the tribes. Such tribal cultural resources (TCRs) so identified, even if not located within the footprint of the Projects, may nevertheless be impacted indirectly as a result of Project operations and decommissioning. To address these potential indirect impacts, the Applicants will develop a Long-Term Preservation Plan (LTPP) in consultation with consulting tribes, prior to the Projects' commencement of operations. The LTPP will require post-construction monitoring/condition assessments for the CDFW-identified TCRs on a quarterly basis for the first year of Project operations and will specify procedures for addressing unanticipated effects to TCRs covered under the LTPP. The LTPP shall identify the responsible entity for care, maintenance, and guidance in the event the TCR resources are vandalized or damaged by the Applicants or their agents or employees. The LTPP shall include reporting to the Bureau of Land Management.

APM TCR-4 Identification of Human Remains. For human remains discovered on Bureau of Land Management (BLM) administered land, the plan for securing the discovery site and subsequent actions shall be included in the Monitoring and Treatment Plan required under APM CUL-3. In the event of a discovery, BLM must be contacted immediately. California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. If the discovery is determined to be subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 and Title 43 Code of Federal Regulations Part 10), the plan will describe the necessary process for notification of tribes and subsequent steps as required by law and regulations (i.e., development and implementation of a NAGPRA Plan of Action, which would be separate from the Monitoring and Treatment Plan required under APM CUL-3 and its contents and consultation process directed by NAGPRA).

For human remains discovered on state or private lands, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code (PRC), Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission (NAHC) shall be contacted within the period specified by law. The NAHC shall identify the Most Likely Descendant, who shall then make recommendations to and engage in consultation with the property owner concerning the treatment of the remains as provided in PRC Section 5097.98. The landowner may reach an agreement with the Most Likely Descendant for treating and disposing of human remains pursuant to California Environmental Quality Act Guidelines Section 15064.5(d). Human remains from other ethnic/cultural groups with recognized historical associations to the Project area shall also be subject to consultation between appropriate representatives from that group and the California Department of Fish and Wildlife.

Environmental Impacts

Impact TCR-1. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
- A resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, considering the significance of the resource to a California Native American tribe.

SIGNIFICANT AND UNAVOIDABLE. CDFW has determined pursuant to PRC Section 21074(a)(2) and (b) that the Cahuilla Traditional Use Area TCL, which includes both Project sites and the Projects' record search area, is part of a broader interconnected landscape of traditional Native American use that is significant from a tribal cultural perspective. CDFW, by extension under PRC 21074(a)(1), also determined this TCL to be eligible for CRHR listing under Criterion 1 (events important to Native American prehistory and history) and Criterion 4 (important tribal values information conveyed by archaeological materials). This TCL is represented in the direct effects APE by 7 prehistoric archaeological sites and 11 isolated prehistoric artifacts that are individually eligible for the CRHR under Criterion 1 for their association with significant tribal events on the landscape and

Criterion 4 for the value of archaeological information to tribal concerns; these sites and artifacts are also considered TCRs (refer to Tables 3.17-1 and 3.17-2). In addition, the potential exists for archaeological resources possessing tribal values that may qualify as TCRs, to be encountered during ground-disturbing activities for both Projects. The following impact analysis considers the Projects' potential to cause direct and indirect adverse changes first to the TCL, and then to individual TCRs.

Project-related ground-disturbing construction activities could directly impact the TCL by displacing or altering its physical manifestations that convey tribal values, including known TCRs, and those that may be discovered during construction. Such alterations change the physical features of the Project sites and may adversely affect culturally important physical elements such as animal habitat, trail systems, waterways, and other cultural sites. Direct impacts may also damage and displace artifacts. Such construction activities could further deteriorate the setting of the TCL and diminish the integrity and alter the significance-conveying characteristics of the TCL under the CRHR. Increased awareness of the cultural resources and increased public access could result in direct damage through vandalism or inadvertent damage. The Projects may result in auditory and visual impacts, thus reducing the ambient character of the desert beyond what has already been impacted~~visibility of the desert~~. The APMs identified earlier would reduce these effects to some extent, but not to an extent that construction of the Projects and their physical presence in the landscape would result in an insubstantial change in the significance of the TCL. As noted above, CDFW expects its ongoing CEQA lead agency consultation with California Native American tribes; input received by CDFW during required public review for this EIR; and BLM's separate, ongoing federal tribal consultation for both Projects located on federal land administered by BLM, may provide additional information to further inform this important determination. Likewise, because no other potentially feasible mitigation measures, including those identified in Section 3.17.4, would avoid or substantially lessen this potentially significant impact, approval of the Projects is expected at this time to cause a significant unavoidable impact to the TCL.

The Project activities that would cause adverse changes to the TCL would have the same effect on individual TCRs, including those known within the Projects' APEs and those that may be discovered during construction, operations and maintenance (O&M), and future decommissioning activities. CDFW has received information from consulting tribes that prehistoric archaeological materials, including those at known prehistoric sites and isolated artifacts, convey ancestral ties to the land. For these reasons, CDFW has determined that all prehistoric sites and isolates are TCRs under PRC Section 21074(a)(2) and, by extension under Section 21074(a)(1), eligible for CRHR listing under Criteria 1 and 4 (refer to earlier discussion). The APMs identified earlier would reduce these effects to some extent, but not to an extent that construction of the Projects and their physical presence in the landscape would result in an insubstantial change in the significance of individual TCRs. As noted above, CDFW expects its ongoing CEQA lead agency consultation with California Native American tribes; input received by CDFW during required public review of this EIR; and BLM's separate, ongoing federal tribal consultation for both Project located on federal land administered by BLM, may provide additional information to further inform this important determination. Likewise, because no other potentially feasible mitigation measures, including those identified in Section 3.17.4, would avoid or substantially lessen this potentially significant impact, approval of the Projects is expected at this time to cause a significant unavoidable impact to the individual TCRs.

Avoidance of direct impacts is the preferred measure to address the potential for adverse effects on CRHR-eligible or -listed resources; this can be accomplished by preventing any direct ground disturbance of the resource through Project design, establishment of protective fencing, worker training, monitoring, and other measures. To the extent complete avoidance of direct effects is not feasible, the Applicants have incorporated APMs into the Projects that would avoid or substantially lessen significant impacts, again to some extent. APM TCR-1 requires cultural sensitivity training for all construction personnel. APM TCR-2

requires tribal monitoring and APM TCR-3 requires preparation of a Long-Term Preservation Plan that would require periodic visitation to protected cultural resources to determine if intentional or inadvertent damage due to O&M or increased public access is occurring. In addition, Potentially Feasible Mitigation Measure (PFMM) TCR-1 (Cultural Sensitivity Training), PFMM TCR-2 (Tribal Monitoring), and PFMM TCR-3 (Long-Term Preservation Plan), if implemented, along with APM TCR-1 through APM TCR-3 incorporated into the Projects, would further reduce significant impacts. APM TCR-4 provides a plan for addressing the discovery of human remains during Project implementation. PFMM TCR-4 (Tribal Cultural Resources Management Plan), if implemented, provides procedures for unanticipated effects to identified TCRs and procedures for post-review discoveries, including evaluating significance and determining whether avoidance is feasible or whether mitigation through data recovery or other method is necessary.

Most impacts are expected to occur during construction, since O&M and future decommissioning activities would generally be confined to the same areas impacted by construction. However, O&M and decommissioning impacts, and impacts resulting from public visitation and vandalism, are possible, particularly to unknown resources or through inadvertent and unanticipated damage to known resources. APM TCR-1 through APM TCR-4 and, if implemented, PFMM TCR-1 through PFMM TCR-4 apply to construction, O&M, and future decommissioning. Incorporation of the APMs into the Projects and, if implemented, the PFMMs would assist in avoiding or lessening adverse effects to TCRs to some extent during all phases of the Projects, but not, in CDFW's lead agency opinion at this time, to a less-than-significant level under CEQA.

Indirect effects associated with construction and the physical presence of the Projects are those that affect the setting, feel, and overall regional character of a resource. The Cahuilla Traditional Use Area TCL extends beyond the direct effects APE and into the indirect effects APE, and several resources associated with this TCL (such as the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D [CA-RIV-053T] to the south, and the Palen Dunes/Palen Lake TCP to the east) also intersect the indirect effects APE. Indirect effects studies were completed for the Arica and Victory Pass Solar Projects, and it was ~~found~~ recommended that indirect effects from construction of the Projects would not have a significant indirect impact on cultural resources because they would continue to convey their significant values (Knabb et al. 2020a, 2020b). However, these BLM Applicant-prepared studies did not contain information from CDFW's tribal consultation process because they were prepared by the BLM under federal regulations and guidance, and, accordingly, The reports did not analyze impacts to the TCL or individual TCRs in light of that information. CDFW has determined that construction of additional infrastructure of the Projects would incrementally increase impacts to the TCL and individual TCRs within the indirect effects APE and cause an adverse change in the ability of these resources to convey their tribal significance in a small but measurable way. Therefore, in CDFW's lead agency opinion, while the APMs incorporated into the Projects and PFMMs, if implemented, are expected to avoid or lessen the Projects' indirect effects to the TCL and individual TCRs to some extent during all phases of the Projects, those effects are considered at this time to be significant and unavoidable under CEQA.

APM TCR-1 requires cultural sensitivity training for all construction personnel and APM TCR-2 requires tribal monitoring during construction. APM TCR-3 requires preparation of a Long-Term Preservation Plan that requires periodically assessing unanticipated effects to historic properties in the direct effects APE and indirect effects APE that have been avoided (such as the North Chuckwalla Mountains Petroglyph District TCP). The Long-Term Preservation Plan will specify actions to be taken if unanticipated effects, such as vandalism, are identified. In addition, PFMM TCR-1 through PFMM TCR-3, if implemented, along with APM TCR-1 through APM TCR-3 incorporated into the Projects, would further reduce significant impacts. APM TCR-4 requires proper identification and treatment of human remains. Indirect effects to

archaeological resources and places of traditional cultural importance could occur. ~~Flash floods, the effects of which would likely be magnified due to soil erosion caused by the proposed Projects, could cause disturbance of surface or subsurface cultural resources located downslope of the APE.~~

Application of APM CUL-9 (recording of features in the indirect effects APEs for the Projects) would reduce this indirect impact to some extent, but not to a point where construction of the Projects and their physical presence in the landscape would result in an insubstantial change in the significance of the TCL and TCRs. CDFW has determined at this time, accordingly, including information gained from BLM's separate but ongoing review, that approval of the Projects would result in a significant unavoidable indirect impact to the TCL and individual TCRs.

Cumulative Impacts

Geographic Scope. The geographic area for the cumulative analysis is eastern Riverside County and includes the projects identified in Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario. This geographic area for the cumulative analysis is defined by the area within which the TCRs are expected to be similar to those that occur on the Project sites because of their proximity and because similar environments, landforms, and hydrology would result in similar land use and, thus, site types. Cumulative projects in Tables 3.1-1 and 3.1-2 include 14 large-scale solar energy projects, 2 electrical substation projects, 5 transmission line projects, 1 energy corridor project, and 1 energy storage project. These projects all involved or will involve grading or other excavation that has the potential to impact the TCL and TCRs.

Cumulative Impacts. An analysis of cumulative impacts takes into consideration the entirety of impacts that both proposed Projects could have on the TCL and TCRs in conjunction with any effects that could occur as a result of the past, present, and reasonably foreseeable projects considered in the cumulative scenario (refer to Tables 3.1-1 and 3.1-2). Cumulative impacts on the TCL or TCRs could occur if other projects, in conjunction with the proposed Projects, have or would have impacts on TCRs that, when considered together, would be significant. Given the number of completed solar projects in the Projects' area (that have been mitigated at the project level), completed projects have already had a significant impact on cultural and historic resources. This analysis considers whether the incremental contribution of impacts caused by the proposed Projects would be cumulatively considerable and significant for purposes of CEQA.

All projects in the geographic area are subject to applicable laws and regulations that provide for the identification and mitigation of significant impacts. These regulations minimize impacts to TCRs by preservation of significant resources through avoidance where feasible, or with the incorporation of APMs to reduce significant impacts specific to each resource that cannot otherwise be avoided by project redesign. Direct cumulative impacts to TCRs include the cumulative and permanent loss of known and as-yet-undiscovered significant resources. However, the TCRs identified within the Projects' APEs will be appropriately treated through incorporation of APM TCR-1 through APM TCR-4 and PFMM TCR-1 through PFMM TCR-4, if implemented, which would reduce the Projects' potential to impact buried unknown resources to some extent, but not to a less-than-significant level. Cumulatively considerable direct effects to the PTNCL would also be reduced to some extent but not to a less-than-significant level through implementation of APM CUL-9. Also, the same activities that result in cumulatively measurable impacts to the PTNCL would adversely affect the Cahuilla Traditional Use Area TCL by indirectly altering the setting and feel through modifications to the natural landscape and directly altering the physical properties of the resource through displacement of artifact-bearing deposits. Incorporation of APM TCR-1 through APM TCR-4 and APM CUL-9 into the Projects and PFMM TCR-1 through PFMM TCR-4, if implemented, would further reduce some of these impacts, but not to a less-than-significant level under CEQA. Therefore, even with incorporation of APMs and PFMMs, if implemented, the Projects incremental contribution to the related impacts from the other cumulative projects would be

cumulatively considerable and the proposed Project would result in a significant cumulative impact to the TCL and TCRs.

CDFW has determined that the PTNCL, considered culturally significant, would be visually impacted by the proposed Project in a small but measurable way from the installation of additional industrial components (an indirect effect); therefore, a cumulatively considerable impact would occur to this TCR. Accordingly, the Projects' incremental contribution to the cumulative indirect effects to the PTNCL resources, in combination with other past, present, and probable future projects, would be cumulatively considerable and significant.

3.17.4 Mitigation Measures

These PFMMs would further avoid or substantially lessen the Projects' significant and unavoidable impacts to TCRs, but not to below a level of significance.

PFMM TCR-1 Cultural Sensitivity Training. As part of APM TCR-1, prior to the commencement of ground-disturbing activities, the Applicants shall require all project personnel to attend a cultural sensitivity training provided by the Soboba Band of Luiseño Indians. The training will be included as part of the worker environmental awareness program training, and include a brief description of Tribal history and cultural affiliation of the Project's location and the surrounding area; what resources could potentially be identified during earthmoving activities; the protocols that apply in the event unanticipated cultural resources or wildlife species of Tribal cultural patrimony are identified, including who to contact and appropriate avoidance measures until the impacts can be properly evaluated; and any other appropriate protocols. This is a mandatory training and all project personnel must attend prior to beginning work on site.

PFMM TCR-2 Tribal Monitoring. The Applicants, as part of APM TCR-2, shall enter into a contract with and retain monitors designated by the Soboba Band of Luiseño Indians. The Applicants shall also enter into contracts with other tribes that request to be part of the tribal monitoring efforts. These monitors shall be known as the Tribal Monitors for the Project and shall be on site to identify tribal cultural resources (TCRs), which include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe. The Tribal Monitors, in conjunction with the Archeological Monitor(s), shall have the authority to temporarily divert, redirect, or halt the ground disturbing activities to allow the Tribal Monitors to identify, evaluate, and potentially recover the TCR(s).

PFMM TCR-3 Long-Term Preservation Plan. The Long-Term Preservation Plan (LTPP) prepared by the Applicants as part of APM TCR-3 shall include measures to avoid and minimize impacts to contributing elements of tribal cultural resources (TCRs) during construction, include requirements for post-construction monitoring/condition assessment procedures to address unanticipated effects to TCRs, and require coordination with consulting tribes for any Project design modifications that may affect a TCR. The LTPP, with respect to any TCR that is vandalized or damaged, shall include required consultation with the Tribal Monitors regarding appropriate management of the TCR. An objective of the LTPP shall be to maximize retention of TCRs in proximity to important tribal locations, which may include preservation in place and minimizing impacts to plant and wildlife resources and from excess light.

PFMM TCR-4 Tribal Cultural Resources Management Plan. Prior to the initiation of ground-disturbing activities, the Applicants shall retain a Secretary of the Interior-qualified archaeologist,

who, in consultation with the consulting tribes and the U.S. Fish and Wildlife Service (USFWS), will develop a Tribal Cultural Resources Management Plan (CRMP). The CRMP shall address the procedures for avoidance or minimization of impacts to tribal cultural resources, consistent with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(b). The CRMP shall consider Project impacts on tribal values as identified by consulting tribes, and as those impacts relate to indirect and direct impacts to TCRs. The CRMP shall cover all Project activities across the entire Project site and for the life of the Project. For Historic Properties located on lands administered by the Bureau of Land Management (BLM), actions identified within the CRMP shall be implemented where permissible according to BLM guidelines.

The CRMP shall include, but not be limited to, the following elements, and shall be consistent with all other Applicant Proposed Measures identified in this EIR, including treatment requirements developed as part of a Memorandum of Agreement:

- Preparation and implementation of a data recovery plan to be used to guide the data recovery excavation of tribal cultural resources (considered historical resources under CEQA) that cannot be avoided, and any other tangible tribal cultural resources that may be encountered during construction where data recovery is an appropriate method for mitigating tribal values. The data recovery plan shall include, minimally, a regional cultural setting, appropriate regional research questions, field and limited laboratory methods for the data recovery effort, and non-destructive methods for analysis and reporting requirements. The data recovery plan shall include treatment measures that focus on recovering information related to tribal values. The treatment measures shall be developed through the Native American Heritage Commission–listed traditionally culturally affiliated tribes and BLM as the landowner. Treatment measures may include detailed resource documentation, preparation of interpretative or educational materials, reburial of artifacts that convey tribal values, or other measures identified in coordination with the tribes.
 - For data recovery affecting tribal cultural resources on BLM-administered land, a BLM-issued Archaeological Resources Protection Act permit shall be required for fieldwork.
 - Following implementation of data recovery excavation and other treatment protocols, a report documenting the methods and results of the data recovery and treatment program shall be prepared by a Secretary of the Interior–qualified archaeologist following Archaeological Resources Management Report guidelines. The final report shall be submitted to the California Department of Fish and Wildlife.

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3.18 Utilities and Service Systems

This section evaluates the environmental impacts to utilities and service systems that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects on utilities and service systems from both of the proposed Projects as the whole of the action. The section describes the applicable regulations, presents an overview of existing conditions that influence utilities and service systems, identifies the criteria used for determining the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the Projects' potential impacts on utilities and services.

During the scoping effort, no party identified any public concerns related to potential utilities or service systems impacts.

3.18.1 Regulatory Framework

Federal Laws, Regulations, and Policies

There are no federal regulations, plans, or standards for utilities and service systems that apply to the proposed Projects.

State Laws, Regulations, and Policies

California Integrated Waste Management Act of 1989. Assembly Bill 939 codified the California Integrated Waste Management Act of 1989 in the California Public Resources Code and established a hierarchy to help the California Integrated Waste Management Board and local agencies implement three major priorities under the Integrated Waste Management Act: source reductions, recycling and composting, and environmentally safe transformation and land disposal. Waste diversion mandates are included under these priorities. After the California Integrated Waste Management Board was abolished in 2010, its duties and responsibilities were transferred to the California Department of Resources Recycling and Recovery (CalRecycle), but all other aspects of the act remain unchanged.

The act requires all local and county governments to adopt a waste reduction measure designed to manage and reduce the amount of solid waste sent to landfills. This act established solid waste reduction goals of 25% by the year 1995 and 50% by the year 2000. Senate Bill 1016 (2007) streamlines the process of goal measurement related to Assembly Bill 939 by using a disposal-based indicator: the per capita disposal rate. The per capita disposal rate uses only two factors: the jurisdiction's population (employment can be considered in place of population in certain circumstances) and the jurisdiction's disposal as reported by disposal facilities. CalRecycle encourages reduction measures through the continued implementation of reduction measures, legislation, infrastructure, and support of local requirements for new developments to include areas for waste disposal and recycling on site.

California Department of Toxic Substances Control. The Department of Toxic Substances Control is a department of the California Environmental Protection Agency and is the primary agency in California that regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in California. The Department of Toxic Substances Control regulates hazardous waste in California primarily under the authority of Resource Conservation and Recovery Act and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage,

transportation, disposal, treatment, reduction, cleanup, and emergency planning. The Department of Toxic Substances Control recently finalized revisions to its hazardous waste regulations (revisions in 22 CCR Division 4.5, Chapters 10, 11, and 23) that will allow photovoltaic solar panels to be managed as “universal waste” beginning on January 1, 2021. By being classified as universal waste, photovoltaic solar panels will now be subject to a streamlined set of standards that are intended to ease the regulatory burden and promote recycling.

California Code of Regulations (Title 27). Title 27 (Environmental Protection) of the California Code of Regulations defines regulations and minimum standards for the treatment, storage, processing, and disposal of solid waste at disposal sites. The State Water Resources Control Board maintains and regulates compliance with Title 27 of the California Code of Regulations by establishing waste and site classifications and waste management requirements for solid waste treatment, storage, or disposal in landfills, surface impoundments, waste piles, and land treatment units. The compliance of the proposed Projects would be enforced by the Colorado River Regional Water Quality Control Board Region 7 and CalRecycle. Compost facilities are regulated under Title 14 of the California Code of Regulations, Division 7, Chapter 3.1, Sections 17850 through 17895, by CalRecycle. Permit requests, Reports of Waste Discharge, and Reports and Disposal Site Information are submitted to the Regional Water Quality Control Board and CalRecycle, and are used by the two agencies to review, permit, and monitor these facilities.

California Green Building Standards Code (Section 5.408). In 2007, the California Building Standards Commission developed the California Green Building Standards Code (CALGreen) to meet the goals of Assembly Bill 32, which established a comprehensive program of cost-effective reductions of greenhouse gases to 1990 levels by 2020. Section 5.408, Construction Waste Reduction, Disposal, and Recycling, outlines protocols and standards and describes the intent, compliance methods, and enforcement methods for each code requirement to minimize waste and encourage recycling (CBSC 2019).

Local Laws, Regulations, and Policies

Countywide Integrated Waste Management Plan. The County of Riverside (County) Countywide Integrated Waste Management Plan demonstrates the County’s compliance with the California Integrated Waste Management Act’s solid waste planning requirements. The Summary Plan element of the Countywide Integrated Waste Management Plan presents goals and policies and measures to divert 50% of solid waste from landfills and is updated annually. The Countywide siting element is required to demonstrate that at least 15 years of disposal capacity is available to serve all jurisdictions within the County. If the County’s annual report to CalRecycle shows there is less than 15 years of remaining disposal capacity, the County must identify new or expanded solid waste disposal and transformation facilities necessary to provide the required permitted disposal capacity (14 CCR 18755).

Riverside County Board of Supervisors Resolution 91-474. Resolution 91-474 establishes standards governing the use of portable toilets and applies requirements for disposal of associated liquid wastes. The resolution provides specifications regarding the number of portable toilets required at a given site and the duration of use of such facilities on site. At minimum, weekly maintenance of portable toilets is required.

3.18.2 Environmental Setting

Solid Waste Services

Table 3.18-1 lists the capacities of the active landfills near the Desert Center area. The closest landfill to the Project sites is the Desert Center Landfill, located approximately 7.5 miles northwest.

Table 3.18-1. Landfill Capacities

Landfill Name	Total Capacity (yd. ³)	Remaining Capacity (yd. ³)	Remaining Capacity (%)	Maximum Throughput (tons/day)	Distance to Projects' Sites
Blythe Sanitary Landfill (Cease operation estimated 2047)	6,229,670	3,834,470	61.55	400	35.8 miles east
Desert Center Sanitary Landfill (Cease operation estimated 2107)	409,112	127,414	31.14	60	7.5 miles northwest

Sources: CalRecycle 2020a, 2020b.

Utilities

Water in the Desert Center area is primarily provided from well water or Riverside County Service Area (CSA) 51, which is one of the County's 60 CSAs that provide utility and public services to unincorporated areas. CSA 51's administrative office is located at 26251 Parkview Drive, Desert Center. CSA 51 operates 365 days a year and provides water to approximately 350 people annually from two wells (SWRCB 2016). These two groundwater wells pump at rates of 1,100 gallons per minute and 1,200–1,500 gallons per minute, with water stored temporarily in Lake Tamarisk. Both wells typically operate on a 10-hour workday, 5 days a week. The lower volume well can pump 660,000 gallons in a typical workday, and the higher volume well can pump 720,000–900,000 gallons in a typical workday, for a combined maximum of 1,560,000 gallons per workday (BLM 2018). In 2015, CSA 51 withdrew a total of 786 acre-feet to meet community needs and sold no water outside the community. Based on the 10-hour workday and 5-day workweek described above, community demands in 2015 therefore required the two wells to pump a combined 985,000 gallons per day (BLM 2018). Wastewater is generally collected in septic tanks and is not transported and treated at a centralized treatment plant. Southern California Edison provides electricity to the Desert Center and surrounding areas (CEC 2020a). Southern California Gas provides natural gas to the area (CEC 2020b). Telecommunications are provided by AT&T, T-Mobile, Verizon, and Sprint (CPUC 2020).

3.18.3 Impact Analysis

Methodology

This section considers the potential impact to and disruption of utilities and service systems in the Desert Center area during construction, operation, and future decommissioning of the Projects. Utilities and service systems may experience minor impacts. However, the Projects would provide a beneficial effect on the overall utility system by generating a total of up to 465 megawatts of renewable electricity.

Criteria for Determining Significance

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the proposed Projects would have significant impacts on utilities and service systems if they would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects (see Impact USS-1);
- Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years (see Impact USS-2);

- Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals (see Impact USS-3);
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste (see Impact USS-4).

The following CEQA significance criteria from Appendix G was not included in the analysis:

- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

The Projects would not be connected to a public sewer system so they would not cause waste that would be treated in an existing wastewater treatment plant. A septic system and leach field would be located at the operations and maintenance (O&M) building to serve the Projects' sanitary and wastewater treatment needs. Additionally, one or two small aboveground portable sanitary waste facilities may be installed to retain wastewater for employee use. If installed, these facilities would remain on site for the duration of the Projects. These facilities would be installed in accordance with state requirements and emptied as needed by a contracted wastewater service vehicle.

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APM as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to utilities and service systems, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM USS-1 Waste Recycling Plan (WRP). Prior to issuance of a notice to proceed, the Project Applicants shall submit a WRP to the California Department of Fish and Wildlife and the Bureau of Land Management. At a minimum, the WRP must identify the materials (e.g., solar panels, cardboard, concrete, asphalt, wood) that will be generated by construction and development; the projected amounts of each; the applicable state and local laws and regulations governing waste disposal and recycling (e.g., Department of Toxic Substances Control regulations regarding photovoltaic modules); the measures/methods that will be taken to recycle, reuse, and/or reduce the amount of materials; the facilities and/or haulers that will be utilized; and the targeted Projects-specific recycling or reduction rate. During construction, the Project sites shall each have, at a minimum, two bins: one for waste disposal and the other for the recycling of Construction and Demolition (C&D) materials. Additional bins are encouraged to be used for further source separation of C&D recyclable materials and shall be provided if required by applicable state and local laws. The Project Applicants shall maintain accurate records (receipts or other types of verification) for recycling of C&D recyclable materials and solid waste disposal; arrangements for such receipts can be made through the franchise hauler. These receipts will be retained to demonstrate compliance with the approved WRP if requested by the agencies and must clearly identify the amount of waste disposal and C&D materials recycled.

Environmental Impacts

Impact USS-1. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

LESS THAN SIGNIFICANT. The Projects would not require or result in the relocation or construction of new water, wastewater treatment, or natural gas facilities during construction, operation, maintenance, and future decommissioning because they would not be connected to a public sewer system and would not use natural gas.

The Projects would construct two new electric solar power facilities that include redundant telecommunications connections. The primary telecommunications line would be attached to existing distribution lines and telecommunications infrastructure and the Projects' substations. Existing infrastructure includes a fiber-optic cable running along the Interstate 10 corridor; additionally, new facilities would be constructed for the Palen and Athos solar facilities adjacent to the proposed Projects. The precise locations of interconnection of the telecommunication facilities would be determined during final design for the proposed Projects. As such, with the existing facilities nearby and proposed facilities being constructed adjacent to the proposed Projects, no substantial construction efforts would be required regarding telecommunications facilities and structures. Furthermore, no relocation of existing telecommunications structures would occur.

Construction of the proposed Projects would require minimal ground-disturbing activities due to the relatively flat and nearly level ground surface present at the sites. Grading would be required for installation of the photovoltaic panels, inverter pads, substation, driveways, and other improvements, including the gen-tie and access roads. Since most of the site has nearly level topography, no mass grading would be required; however, much of the solar facility would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. Within each solar array, limited cut and fill would be used to cut soil from high areas and fill low spots to ensure an even grade. It is anticipated that this method would reduce the amount of soil to be hauled off site to a landfill, with preliminary engineering indicating that no or very minimal cut would be hauled off site. The overall topography and drainage patterns would remain unchanged, and sheet flow would be maintained where possible to allow water to exit the sites in existing natural contours and flows. The Projects would avoid the largest washes that cross the sites. Grading could alter naturally occurring drainage patterns and result in soil erosion, sedimentation, long-term siltation, and increased stormwater runoff. Vegetation removal for road clearance and construction areas decreases the ability of the soil to absorb water, which also increases stormwater runoff from such disturbed areas. Future decommissioning would also require minimal ground-disturbing activities. However, ground-disturbing associated with future decommissioning would be required for site restoration, which would improve stormwater runoff to approximate pre-Project conditions. The Plan of Development prepared for each Project includes a Decommissioning and Reclamation Plan (Appendix L of each Plan of Development) that will be implemented during the decommissioning phase of the Projects. Most of the original grades and natural drainage features at the Projects' area would be maintained and minimal, if any, storm drainage control features would be required. As part of the Projects, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared by a qualified engineer or erosion control specialist and would be implemented before construction and before future decommissioning. The SWPPP would be designed to reduce potential impacts related to erosion and surface water quality during construction and future decommissioning activities and throughout the operational life of the Projects. In addition, the SWPPP would include best

management practices (BMPs), which would include dewatering procedures, stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed. The SWPPP and associated BMPs are not considered to be a mitigation measure for Impact USS-1; they are implemented as part of the Projects' activities in compliance with state and federal regulations. The SWPPP and BMPs would ensure that the Projects would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Therefore, impacts related to construction or relocation of service utilities would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact USS-2. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

LESS THAN SIGNIFICANT. During construction of both solar facilities, the shared gen-tie line, and access roads, it is anticipated that a total of up to 650 acre-feet of water per Project would be used over the approximately 18-month construction timeframe for dust suppression, soil compaction, sanitation, and other purposes. Similar water use is expected during future decommissioning activities. This amount does not include potable water, which would instead be supplied by a potable water provider (e.g., water bottles, coolers). Most water (approximately 369 acre-feet for Victory Pass and 397 acre-feet for Arica) would be used in the second year of construction. Restroom facilities for the construction workforce would be provided by portable units to be serviced by licensed providers. Water for construction- and decommissioning-related dust control would be obtained from several potential sources including an on-site or off-site groundwater well or trucked from an off-site water purveyor. Construction and decommissioning water use would be temporary, and it is not anticipated that quantities would exceed currently available water supplies during normal year, dry year, or multiple dry year scenarios. Impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant water supply impacts during construction and decommissioning.

During the 35–50-year life of the Projects, each Project would be estimated to use 15 to 25 acre-feet annually, or up to 50 acre-feet annually total. O&M water would be required for panel washing and maintenance and for substation restroom facilities. No wastewater would be generated during panel washing, as the water would be absorbed into the surrounding soil or would evaporate. Water would also be used for fire safety and as part of the incorporation of APMs into the Projects and implementation of BMPs.

Water required for O&M may be provided by on-site wells, purchased and trucked in from off site and stored in storage tanks, or a combination of these sources. The estimated volumes of water use would be nominal in comparison to the estimated groundwater basin surplus (see Section 3.10, Hydrology and Water Quality), especially after construction. Given the minimal amount of water used during O&M, there would be sufficient water supplies available to serve the Projects during normal, dry, or multiple dry year scenarios. Impacts would be less than significant. Therefore, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant water supply impacts during O&M.

Impact USS-3. Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

LESS THAN SIGNIFICANT. The Projects would generate solid waste during construction, O&M, and future decommissioning. The County must comply with CALGreen, which includes mandatory recycling. Section 5.408 of CALGreen requires that 65% of the nonhazardous waste be recycled or salvaged for reuse. Section

5.408.3 (excavated soil and land clearing debris) requires that 100% of trees, stumps, rocks, and associated vegetation and soils resulting from land clearing be reused or recycled (CBSC 2019).

The Project sites consist of relatively flat topography. Cut and fill soils associated with construction-related grading activities are anticipated to be limited, as cut and fill would be completed only within specific arrays to limit slope to within 3% to produce a consistent grade in each solar field area. As such, minimal import and export of soils to a landfill would be necessary. Construction materials would be sorted on site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. It is anticipated that at least 75% of construction waste would be recyclable. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and composted. Within the solar fields, roadways, and areas around the O&M building, management of vegetation would include composting and retaining on site. Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at the municipal county landfills. Hazardous waste and electronic waste would not be placed in a landfill but would be transported to a hazardous waste handling facility (e.g., electronic-waste recycling). All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

Non-hazardous waste generated during operation of the Projects would be limited to office uses associated with the proposed O&M building and include paper, aluminum, food, and plastic and would be managed similarly to during construction, with non-hazardous items being recycled where possible or otherwise disposed of at the municipal county landfills. A potable water supplier would provide potable water to the O&M building.

During operations, if needed, and during future decommissioning, solar panels would be removed and placed in secure transport crates or container boxes for storage, and transported to another facility for reuse, material recycling, or disposal. As noted, solar panels are managed as universal waste and would need to be disposed of under the appropriate California standards applicable at the time.

During future decommissioning, the infrastructure would be disassembled, removed, and salvaged or recycled according to the regulations in place at the time. As noted in Chapter 2, Description of the Proposed Projects, all materials would be recycled to the greatest extent possible in appropriate recycling facilities.

The closest landfill to the Projects' area is the Desert Center Sanitary Landfill (located approximately 7.5 miles northwest), with a remaining capacity of 127,414 cubic yards. It is estimated to operate until year 2107. The other nearest landfill is the Blythe Sanitary Landfill (located approximately 36 miles east), which has over 3.8 million cubic yards remaining (see Table 3.18-1). Although the nearest landfills are projected to have sufficient capacity (as shown in Table 3.18-1), the Projects' solid waste may combine with other existing and future projects' solid waste that would be disposed at these landfills. APM USS-1 would require the preparation and implementation of a Waste Recycling Plan to preserve landfill capacity and support efforts to recycle, reuse, and/or reduce the amount of recyclable material going to the landfill during construction, O&M, and future decommissioning. Incorporation of APM USS-1 into the Projects would reduce potential significant impacts regarding solid waste generation to a less-than-significant level. Additionally, the Projects would comply with applicable federal, state, and local regulations related to solid waste, and sufficient capacity is anticipated at the two nearest waste disposal sites. Therefore, impacts related to solid waste would be less than significant. As a result, with incorporation of APM USS-1 as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact USS-4. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

LESS THAN SIGNIFICANT. As described in Impact USS-3, construction, O&M, and decommissioning of the Projects would comply with and attain the goals outlined in CALGreen Section 5.408. At least 75% of construction waste would be recyclable, and it is anticipated that most of this waste would be recycled to meet the goals of CALGreen. Compliance with the requirements and standards of CALGreen would further the state's goals to minimize waste, increase recycling efforts, and reduce greenhouse gases. Waste reduction and recycling efforts would minimize the Projects' impacts to the surrounding landfills in the area as well. Additionally, waste reduction actions during all phases of the Projects would help the local and County governments meet the goals of the California Integrated Waste Management Act of 1989 and comply with regulations outlined in Title 27 of the California Code of Regulations.

During operation of the Projects, the relatively small number of permanent workers would generate minimal amounts of solid waste (most likely in the form of paper, aluminum, food, and plastic) such that the waste would be handled sufficiently by existing waste management services and facilities. Disposal of wastes associated with construction, O&M, and decommissioning of the Projects would be performed in accordance with local, state, and federal regulations, and excess materials and waste would be recycled or reused to the maximum extent practicable. As such, the Projects would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, impacts would be less than significant. As a result, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

Geographic Scope. The geographic scope of the cumulative impacts analysis includes the service areas of each of the providers serving the proposed Projects. This geographic scope would include all projects listed in Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario.

Cumulative Impacts. The proposed Projects and other projects in the cumulative scenario, together, could temporarily increase demand for solid waste disposal in eastern Riverside County due to simultaneous increases in solid waste during construction and future decommissioning. However, the Projects would not contribute to a cumulatively considerable impact to utilities because the proposed Projects and all cumulative projects would be required to comply with the same state and local requirements for waste diversion, recycling, and landfill capacity in Riverside County. Furthermore, with incorporation of APM USS-1 into the Projects, the Projects' contribution of solid waste at the nearby landfills would be further reduced. As such, the total volume of waste disposed at the Blythe and Desert Center Sanitary Landfills under the cumulative scenario is not expected to exceed the permitted capacity and therefore, would not result in a cumulatively considerable or significant impact. Accordingly, the Projects' incremental solid waste-related impact during construction, O&M, and future decommissioning, when combined with the contributions of past, present, and reasonably foreseeable future projects, would not be cumulatively considerable or significant.

Cumulative operational impacts to utilities would not be cumulatively considerable. The Projects would utilize an on-site well or water trucked from an off-site water purveyor and would not generate wastewater. There is no potential for the Projects to contribute to cumulative impacts to water or wastewater systems. Accordingly, the Projects' incremental water and wastewater systems-related impact during construction, O&M, and future decommissioning, when combined with the contributions of past, present, and reasonably foreseeable future projects, would not be cumulatively considerable or significant.

Regarding water supply, construction and decommissioning water use would be temporary, and it is not anticipated that quantities would exceed currently available water supplies during normal year, dry year, or multiple dry year scenarios. During operation, the Projects would require very minimal water supplies for panel washing, maintenance, substation restroom facilities, and fire safety. The Projects would incrementally contribute to a cumulative demand for water supplies. However, the majority of cumulative projects are other solar energy facilities and/or supporting utility infrastructure projects (i.e., transmission lines and substations), which would result in similar temporary and minimal water demand as the Projects. Accordingly, the Projects' incremental water supply-related impact during construction, O&M, and future decommissioning, when combined with the contributions of past, present, and reasonably foreseeable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulatively considerable impacts relative to utilities and service systems.

3.18.4 Mitigation Measures

In addition to the APM, no other potentially feasible mitigation were identified to further avoid or substantially lessen impacts to utilities and service systems.

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3.19 Wildfire

This section evaluates the environmental impacts related to wildfire hazards that may result directly or indirectly from California Department of Fish and Wildlife (CDFW) issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). This includes the effects related to wildfire from both of the proposed Projects as the whole of the action. This section describes applicable regulations and existing conditions that influence risks associated with wildfire, identifies the criteria used to determine the significance of environmental impacts, lists Applicant Proposed Measures (APMs) that would be incorporated into the Projects to avoid and or substantially lessen to the extent feasible potentially significant impacts to the extent feasible, and describes the Projects' potential impacts related to wildfire.

The section also considers the scoping comments received related to wildfire, such as the recommendation for a fire management plan, and fire prevention best management practices that are clearly outlined in the analysis to prevent on-site fires and potential spread of wildfires to adjacent lands.

3.19.1 Regulatory Framework

Federal Laws, Regulations, and Policies

Federal Wildland Fire Management Policy. On Bureau of Land Management (BLM) administered lands in the California desert, BLM implements Federal Wildland Fire Management policies and objectives in coordination with state and other federal agencies as part of the California Desert Interagency Fire Management Organization. The Federal Wildland Fire Management Policy was developed by a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. The policy acknowledges the essential role of fire in maintaining natural ecosystems, but also prioritizes firefighter and public safety first in every fire management activity and focuses on risk management as a foundation for all fire management activities. The policy promotes basing responses to wildland fires on approved Fire Management Plans and land management plans, regardless of ignition source or the location of the ignition.

National Electric Safety Code and American National Standards Institute Guidelines. A variety of line and tower clearance standards are used throughout the electric transmission industry. Nationally, most transmission line owners follow the National Electric Safety Code rules or American National Standards Institute Guidelines, or both, when managing vegetation around transmission system equipment. The National Electric Safety Code deals with electric safety rules, including transmission wire clearance standards, whereas the applicable American National Standards Institute code deals with the practice of pruning and removal of vegetation.

National Fire Protection Association (NFPA) Standard 855. NFPA 855 was created to address the rise in the use of new technologies in modern energy storage systems (ESSs) and the fire and life safety hazards associated with them. NFPA standardizes criteria for fire protection of ESS installations based on the technology used in the ESS, environmental setting, size and separation of ESS installations, and the fire suppression and control systems in place. It also considers ventilation, detection, signage, listings, and emergency operations responding to ESS emergencies (NFPA 2020).

International Fire Code. The International Fire Code contains regulations to safeguard life and property from fires and explosion hazards. It includes regulations for general precautions, emergency planning and preparedness, fire department access and water supplies, automatic sprinkler systems, fire alarm systems, special hazards, and the storage and use of hazardous materials (International Code Council 2021).

North American Electric Reliability Corporation Reliability Standards. In compliance with Section 215 of the Federal Power Act, North American Electric Reliability Corporation developed mandatory and enforceable reliability standards such as emergency preparedness and operations; facilities design, connections, and maintenance; personnel performance, training, and qualifications; and protection and control. These standards would ensure reliable energy production, as well as safe operation and maintenance practices (NERC 2021).

National Fire Plan. The National Fire Plan was developed in 2020 to guide swift and organized response to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity. The National Fire Plan addresses firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. The National Fire Plan provides technical, financial, and resource guidance and support for wildland fire management across the United States (Forests and Rangelands 2021).

Federal Energy Regulatory Commission Standards. The Federal Energy Regulatory Commission requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, the minimum clearances required in state regulations are greater than the federal requirement. In California for example, the state has adopted General Order 95 rather than the North American Electric Reliability Corporation Standards as the electric safety standard for the state. Federal Energy Regulatory Commission standards are not discussed further.

National Electric Safety Code 2017. The National Electric Safety Code covers basic provisions related to electric supply stations, overhead electric supply and communication lines, and underground electric supply and communication lines. The code also contains work rules for construction, maintenance, and operational activities associated with electric supply and communication lines and equipment. The code, which must be adopted by states on an individual basis, is not applicable in the State of California. As stated previously, the State of California has adopted its own standard (General Order 95) rather than a general national standard. The National Electric Safety Code is not discussed further.

Institute of Electrical and Electronics Engineers Standards 516-2009. The Institute of Electrical and Electronics Engineers is a leading authority in setting standards for the electric power industry. Standard 516-2009, Guide for Maintenance Methods on Energized Power Lines, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

State Laws, Regulations, and Policies

California Fire Plan. The 2018 Strategic California Fire Plan directs each California Department of Forestry and Fire Protection (CAL FIRE) Unit to prepare a locally specific Fire Management Plan. These documents assess the fire situation within each of CAL FIRE's 21 units and six contract counties. The plans include stakeholder contributions and priorities and identify strategic areas for pre-fire planning and fuel treatment, as defined by the people who live and work with the local fire problem. The plans are required to be updated annually.

California Public Utilities Commission (CPUC) General Order No. 95. CPUC General Order No. 95 formulates for the State of California requirements for overhead line design, construction, and maintenance, the application of which will ensure adequate service and secure safety to persons engaged in the construction, maintenance, operation or use of overhead lines and to the public in general.

Assembly Bill (AB) 1054. Assembly Bill 1054 provides for a Wildfire Fund, which electrical corporations may access upon meeting specific requirements. Electrical corporations must opt into the fund, make financial commitments, and maintain a safety certificate from the CPUC, among other conditions. In July

2019, Southern California Edison (SCE) opted into the Wildfire Fund, which requires it to satisfy a burden of proof test and obtain a safety certification by satisfying the conditions of Public Utilities Code Section 8389(e)(1-7).

Public Utilities Code Section 8389(e)(1-7). This section specifies the requirements for an electrical corporation to obtain a safety certification by documenting the following: an approved wildfire mitigation plan, good standing, an established safety committee composed of members with relevant safety experience, an executive incentive compensation structure to promote safety as a priority, an established board-of-director-level reporting to the commission on safety issues, a compensation structure for new or amended contracts for executive officers, and implementation of its approved wildfire mitigation plan.

California Fire Code 2019 Section 1206. California Fire Code 2019 Section 1206 outlines requirements for energy storage systems designed to provide electrical power to a building or facility. Permits shall be obtained prior to the installation and operation of energy storage systems, and construction documents shall provide information related to fire safety, such as the location and layout of the room in which the stationary storage battery system is to be installed; details on hourly fire-resistance-rated assemblies provided; quantities and types of storage batteries and battery systems; manufacturer's specifications, ratings, and listings of storage batteries/systems; details on energy management systems; location and content of signage; details on fire-extinguishing, smoke detection, and ventilation systems; and rack storage arrangement, including seismic support criteria. Additionally, this section establishes standards for the design of stationary storage battery systems, arrays, and signage to enhance fire safety and detect and extinguish fires.

California Public Resources Code, Sections 4294 and 4293. These sections specify requirements related to fire protection and prevention in transmission line corridors. California Public Resources Code, Section 4292, states that any person that owns, controls, operates, or maintains any electrical transmission or distribution line has primary responsibility for fire protection of such areas, and shall maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such a pole or tower. California Public Resources Code, Section 4293, states that any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, or grass covered land which has primary responsibility for the fire protection of such area, shall maintain a clearance of the respective distances.

California Public Resources Code, Section 4292. This section requires that a minimum firebreak of 10 feet in all directions from the outer circumference of a pole or tower be established around any pole that supports a switch, transformer, lightning arrester, line junction, or end or corner pole. All vegetation shall be cleared within the firebreak.

California Public Resources Code, Section 4293. This section establishes the minimum vegetation clearance distances (between vegetation and energized conductors) required for overhead transmission line construction. Minimum clearances are discussed as follows:

- A minimum radial clearance of 4 feet shall be established for any conductor of a line operating at 2,400 or more volts but less than 72,000 volts.
- A minimum radial clearance of 6 feet shall be established for any conductor of a line operating at 72,000 or more volts but less than 110,000 volts.
- A minimum radial clearance of 10 feet shall be established for any conductor of a line operating at 110,000 or more volts but less than 300,000 volts.

- A minimum radial clearance of 15 feet shall be established for any conductor of a line operating at 300,000 or more volts.

Specific requirements applicable to the construction and operation of the proposed Projects include those from the following sections in California Public Resources Code, Division 4, Chapter 6:

- Section 4427 – Operation of fire-causing equipment
- Section 4428 – Use of hydrocarbon-powered engines near forest, brush, or grass-covered lands without maintaining firefighting tools
- Section 4431 – Gasoline-powered saws and firefighting tools
- Section 4442 – Measures, requirements, and exemptions for spark arresters

California Government Code. California Government Code Sections 51175 through 51189 provide guidance for classifying lands in California as fire hazard areas and requirements for management of property within those lands. CAL FIRE is responsible for classifying Fire Hazard Severity Zones (FHSZs) based on statewide criteria and makes the information available for public review. Furthermore, local agencies must designate, by ordinance, Very High FHSZs within their jurisdiction based on the recommendations of CAL FIRE.

CPUC General Orders (GOs) 128 and 165. GO 128 establishes rules governing the construction of underground electric and communication lines to promote and safeguard public health and safety. GO 165 establishes requirements for inspections of electric distribution and transmission facilities (excluding those facilities contained in a substation) in rural, high fire threat areas in order to ensure safe and high-quality electrical service.

CPUC GO 95: Rules for Overhead Transmission Line Construction. CPUC GO 95 governs the design, construction, and maintenance of overhead electrical lines. Rule 31.1 generally states that this should be done in accordance with accepted good practices for the given location conditions known at the time by the persons responsible for the design, construction, and maintenance of the overhead electrical lines and equipment. Rule 35 of GO 95 requires the following clearances between bare-line conductors and vegetation in high fire-threat areas:

- Four-foot radial clearances for any conductor of a line operating at 2,400 volts or more, but less than 72,000 volts
- Six-foot radial clearances for any conductor of a line operating at 72,000 volts or more, but less than 110,000 volts
- Ten-foot radial clearances for any conductor of a line operating at 110,000 volts or more, but less than 300,000 volts
- Fifteen-foot radial clearances for any conductor of a line operating at 300,000 volts or more

CPUC Fire Threat Zones. In 2018, CPUC approved a statewide Fire-Threat Map (CPUC 2021), which delineates a High Fire-Threat District and is intended to assist with implementation of new fire prevention rules. The map delineates areas in the state where there is an elevated risk and an extreme risk (including likelihood and potential impacts on people and property) from utility-associated wildfires. The Fire-Threat Map helps prioritize fire hazard areas to allow for implementation of new fire-safety regulations adopted by CPUC in December 2017. Electric investor-owned utilities must file an annual report that contains a fire-prevention plan containing specified information for its overhead electric facilities in the High Fire-Threat District. Increased vegetation management and new fire regulations also apply to the High Fire-

Threat District. The Project sites are not located in an area designated as having elevated or extreme fire threat (CPUC 2021).

Power Line Fire Prevention Field Guide 2021 Edition. The Power Line Fire Prevention Field Guide outlines procedures to minimize the risk of wildfire caused by electrical power lines and equipment. CAL FIRE, the state's three investor-owned utilities (Pacific Gas and Electric Company, SCE, and San Diego Gas and Electric), and other California electric utilities have mutually developed the comprehensive field guide for their personnel. In addition to safety of the public, the guide details fire hazard reduction maintenance procedures for the safety of conductors and certain hardware.

California Department of Forestry and Fire Protection. CAL FIRE is tasked with reducing wildfire-related impacts and enhancing California's resources. CAL FIRE responds to all types of emergencies, including wildland fires and residential/commercial structure fires. In addition, CAL FIRE is responsible for the protection of approximately 31 million acres of private land within the state and, at the local level, is responsible for inspecting defensible space around private residences. CAL FIRE is responsible for enforcing State of California fire safety codes included in the California Code of Regulations and the California Public Resources Code. Section 1254 of the California Environmental Quality Act (CEQA) Guidelines identifies minimum clearance requirements required around utility poles.

CAL FIRE also inspects utility facilities and makes recommendations regarding improvements in facility design and infrastructure. Joint inspections of facilities by CAL FIRE and the utility owner are recommended by CAL FIRE so that each entity may assess the current state of the facility and successfully implement fire prevention techniques and policies. Violations of state fire codes discovered during inspections are required to be brought into compliance with the established codes. If a CAL FIRE investigation reveals that a wildfire occurred as a result of a violation of a law or negligence, the responsible party could face criminal and/or misdemeanor charges (CAL FIRE 2020). For cases where a violation of a law or negligence has occurred, CAL FIRE has established the Civil Cost Recovery Program, which requires parties liable for wildfires to pay for wildfire-related damages.

CAL FIRE maps FHSZs based on fuel loading, slope, fire history, weather, and other relevant factors as directed by California Public Resources Code, Sections 4201–4204, and California Government Code Sections 51175–51189. FHSZs are ranked from Moderate to Very High and are categorized for fire protection within a Federal Responsibility Area, State Responsibility Area, or Local Responsibility Area under the jurisdiction of a federal agency, CAL FIRE, or local agency, respectively.

Mutual Aid Agreements. There are multiple regional, state, and local agreements and operating plans currently in use that provide for mutual aid between and among federal, state, and local fire agencies. The statewide mutual aid system exists to ensure that adequate resources, facilities, and other supports are provided to jurisdictions whenever resources prove to be inadequate for a given situation. Each jurisdiction controls its own personnel and facilities but can give and receive help whenever needed.

Local Laws, Regulations, and Policies

Riverside County General Plan. The intent of the Safety Element of the Riverside County General Plan is to reduce death, injuries, property damage, and economic and social impact from hazards. The Safety Element contains a section on fire hazards, which addresses building code and performance standards, as well as wind-related hazards and long-range fire safety planning. The section includes policies to support the effort, such as preventive measures, development guidelines, and response time expectations.

The following policies included in the Safety Element generally relate to the proposed Projects with respect to hazards and hazardous materials (County of Riverside 2019).

- **Policy S 5.1.** Develop and enforce construction and design standards that ensure that proposed development incorporates fire prevention features through the following:
 - All proposed development and construction within Fire Hazard Severity Zones shall be reviewed by the Riverside County Fire and Building and Safety departments.
 - All proposed development and construction shall meet minimum standards for fire safety as defined in the Riverside County Building or County Fire Codes, or by County zoning, or as dictated by the Building Official or the Transportation Land Management Agency based on building type, design, occupancy, and use.
 - In addition to the standards and guidelines of the California Building Code and California Fire Code fire safety provisions, continue to implement additional standards for high-risk, high occupancy, dependent, and essential facilities where appropriate under the Riverside County Fire Code (Ordinance No. 787) Protection Ordinance. These shall include assurance that structural and nonstructural architectural elements of the building will not impede emergency egress for fire safety staffing/personnel, equipment, and apparatus; nor hinder evacuation from fire, including potential blockage of stairways or fire doors.
 - Proposed development and construction in Fire Hazard Severity Zones shall provide secondary public access, in accordance with Riverside County Ordinances.
 - Proposed development and construction in Fire Hazard Severity Zones shall use single loaded roads to enhance fuel modification areas, unless otherwise determined by the Riverside County Fire Chief.
 - Proposed development and construction in Fire Hazard Severity Zones shall provide a defensible space or fuel modification zones to be located, designed, and constructed that provide adequate defensibility from wildfires.
- **Policy S 5.4.** Limit or prohibit development or activities in areas lacking water and access roads.
- **Policy S 5.6.** Demonstrate that the proposed development can provide fire services that meet the minimum travel times identified in Riverside County Fire Department Fire Protection and EMS Strategic Master Plan.
- **Policy S 7.14.** Regularly review and clarify emergency evacuation plans for dam failure, inundation, fire and hazardous materials releases.
- **Policy S 7.15.** Develop a blueprint for managing evacuation plans, including allocation of buses, designation and protection of disaster routes, and creation of traffic control contingencies.

Furthermore, Policy C 3.24 of the County's General Plan Circulation Element requires the provision of safe and efficient routes for emergency vehicles (County of Riverside 2020a). In the event of an emergency requiring evacuation and emergency vehicle access, the Riverside County Sheriff's Department, in collaboration with the Transportation and Land Management Agency, city law enforcement, California Department of Transportation, and California Highway Patrol, would establish evacuation routes.

Riverside County Fire Department (RCFD) Technical Policy TP 15-002. RCFD TP 15-002, titled Solar Energy Generating System Fire Apparatus Access Roads, is a standard that was developed to assist with the design of fire apparatus access roads from public roadways to a Solar Energy Generating System (i.e., solar facility). It addresses secondary access road requirements, which shall be determined by the County Fire Marshal given the specific conditions of a solar project. Each Solar Energy Generating System project will be reviewed on a

case-by-case basis to determine secondary fire apparatus access requirements to facilitate emergency operations and to minimize the possibility of an access point being subject to congestion or obstruction during an emergency incident. This standard states that the secondary access road shall not be less than 20 feet in width and shall have an unobstructed vertical clearance of no less than 13.5 feet. The grade of the access road shall not exceed 15%. The access road shall be designed, constructed, and maintained to support the imposed load of fire apparatus weighing at least 75,000 pounds and constructed to Riverside County Transportation Standards. A registered engineer shall certify the design and construction of the access road based on the fire apparatus-imposed load of 75,000 pounds (RCFD 2020).

Desert Center Area Plan. The Wildland Fire section of the Hazards section of the Desert Center Area Plan addresses wildland fire susceptibility for improved public safety in the Desert Center area. The following policy included in the Desert Center Area Plan generally relates to the proposed Projects with respect to public services and utilities (County of Riverside 2015).

- **Policy DCAP 10.1.** Protect life and property from wildfire hazards through adherence to the Fire Hazards section of the General Plan Safety Element.

3.19.2 Environmental Setting

The Project sites are in the central portion of Chuckwalla Valley in the Colorado Desert, east of Joshua Tree National Park in Southern California. The Project sites are located on land administered by BLM in Riverside County, north of Interstate (I) 10 and approximately 5.5 miles east of Desert Center, California. The gen-tie line would traverse I-10 from the north to connect to the existing SCE Red Bluff 500/220 kilovolt Substation to the south. Both Projects are sited on primarily undeveloped land currently crossed by an existing SCE transmission line and an existing gen-tie line for the Palen Solar Project. The Project sites and gen-tie line are located within the Riverside East Solar Energy Zone of BLM's Western Solar Plan, and as a Development Focus Area under the Desert Renewable Energy Conservation Plan, both of which incentivize and allow for development of solar energy generation and appurtenant facilities within their boundaries. No major urbanized areas are located within 30 miles of this area, and the Project sites are in a remote location.

The presence of dense, dry fuels and a warm, arid climate characterizes Southern California as having one of the most fire-prone landscapes in the world. Factors influencing wildfire behavior and magnitude include (but are not limited to) forest structure, fuel conditions, terrain, climate, weather, and ignition sources. Weather is one of the most significant biophysical factors of wildfire behavior. Wet winters and dry summers with mild seasonal changes characterize the Southern California climate. The summer months of Southern California are arid and warm, with very little precipitation. This climate pattern is occasionally interrupted by extreme periods of hot weather, drought, winter storms, or dry, easterly Santa Ana winds. Drought and Santa Ana winds are unique weather conditions that occur in Southern California that drive catastrophic wildfires. Santa Ana winds bring hot, dry desert air from the east into the region during late summer and fall, which increases wildland fire hazards during these seasons. Dry vegetation, low humidity, and high air temperature can combine to produce large-scale fire events. As Santa Ana winds blow westward toward denser development, fires driven by these winds have the potential to result in a greater risk of property damage. Much of Riverside County is considered to be at risk from wildfires (County of Riverside 2019).

Fire Hazard Areas

CAL FIRE is responsible for mapping fire hazard areas throughout the state and provides these maps through the Fire and Resource Assessment Program database. As depicted in these maps, wildfire suppression and

prevention responsibility is geographically divided by Federal, State, and Local Responsibility Areas and further categorized into FHSZs, which are ranked as Moderate, High, and Very High. FHSZs are determined by a region's land cover, vegetation, terrain, climate, fire history, and several other factors that contribute to the fire environment. This information is provided to the public and local agencies to incorporate the fire hazard mapping into local planning efforts. The County of Riverside has adopted a fire hazard map in the General Plan Safety Element (County of Riverside 2019, Figure S-11). The General Plan Safety Element identifies areas with rugged topography and flammable vegetation as being susceptible to fire hazards (County of Riverside 2019). The Project sites lack dense flammable vegetation and steep slopes, and according to CAL FIRE's fire hazard maps, the Project sites are located within a Moderate FHSZ in Local and Federal Responsibility Areas (CAL FIRE 2020). According to the Wildfire Susceptibility Map in the General Plan Safety Element, Very High FHSZs in Local, State, and Federal Responsibility Areas are concentrated in the western portions of Riverside County (County of Riverside 2019).

Slope/Terrain

The landscape of the surrounding areas consists of varying elevation, from less than 400 feet above mean sea level at Ford Dry Lake (approximately 15 miles southwest of the Project sites) to over 3,000 feet above mean sea level in the mountains that enclose the Chuckwalla Valley. The topography of the immediate area is relatively flat and nearly level, as the Project sites are located in the central portion of the Chuckwalla Valley, a low-elevation expanse of the Colorado Desert. The elevations of both Project sites, including the shared gen-tie line and access roads, range from approximately 500 feet on the north boundary to 800 feet above mean sea level at the Red Bluff Substation.

Vegetation/Land Cover and Surrounding Land Uses

Vegetation communities at the Project sites are further detailed in Section 3.4, Biological Resources, and generally consist of scattered creosote bush scrub, desert saltbush scrub, and desert dry wash woodland. Additionally, desert pavement, which consists of sandy and gravelly mixed alluvium with various rocks and gravel, rather than vegetation, is found within portions of the Project sites.

Land uses in the vicinity of the Project sites include agriculture, scattered residences, renewable energy development, energy transmission, historical military operations, and recreational uses. Several other solar farms exist in the vicinity of the Project sites. The existing Desert Sunlight and Desert Harvest solar projects are northwest of the Project sites, the Palen Solar Project (under construction) is located a mile east of the Project sites, parcels of the approved Athos Solar Project are located immediately east and west of the Project sites, and the proposed Oberon Solar Project is located approximately 1,000 feet west of the Project sites.

Climate/Weather

The Project sites are near Desert Center, which experiences an average annual high temperature of above 100°F and an annual low temperature of 63°F (U.S. Climate Data 2021). Wind speeds average approximately 7 miles per hour (Area Vibes 2021). Climate change would result in a small but general increase in temperature, and higher temperatures and droughts are likely to increase the severity, frequency, and extent of wildfires during operation, maintenance, and future decommissioning of the Projects (EPA 2016).

Emergency Response

Fire protection services in the Riverside County are provided by a combination of federal (U.S. Forest Service, BLM Fire), state (CAL FIRE), and local agencies (RCFD). There are 101 fire stations located throughout Riverside County that serve unincorporated communities, partner cities, and the State of California under the California Master Mutual Aid Agreement (County of Riverside 2020b). Because the Projects are not located in a State Responsibility Area, CAL FIRE would not be responsible for fire management or suppression activities in the Projects' area unless the area's responsible entity has been depleted (e.g., during a widespread natural disaster or State of Emergency) (Cal OES 2010). Emergency fire response to the project sites would be expected to come from BLM Fire and/or RCFD. As described in Section 3.14, Public Services, the nearest RCFD/CAL FIRE station to the Projects is Station 49 – Lake Tamarisk Station, located at 43880 Lake Tamarisk, Desert Center, about 5.5 miles west of the Project sites.

The RCFD Protection and Emergency Medical Services Strategic Master Plan discusses topics including, but not limited to, descriptions of emergency services including available equipment, personnel, appropriate facilities, and capacity to assist and support wildfire suppression emergency service needs. The Riverside County Emergency Operations Plan outlines the functions, responsibilities, and regional risk assessments of Riverside County for emergencies such as wildfire events and determines the planned response for managing these incidents. The plan addresses initial and extended emergency response and recovery processes (County of Riverside 2019).

The BLM Fire and Aviation Program is responsible for fire and fuels management and protection of federal lands identified as Federal Responsibility Areas within the United States. The Fire and Aviation program includes fire suppression, preparedness, predictive services, fuels management, fire planning, community assistance and protection, prevention and education, and public safety (BLM 2020). BLM establishes fire prevention orders and restrictions to assist with wildland fire prevention efforts throughout the public lands within the California Desert District, which consists of Inyo, Imperial, Kern, Mono, Los Angeles, San Bernardino, San Diego, and Riverside Counties.

3.19.3 Impact Analysis

The Projects' potential impacts regarding wildfire hazards are evaluated in this section. This section includes a description of the methodology of the impact analysis, lays out criteria for determining the significance of the Projects' impacts and cumulative impacts, and lists APMs that would be incorporated into the Projects to avoid and minimize potentially significant impacts.

Methodology

Wildfire hazards associated with the proposed Projects are evaluated based on landscape characteristics and the Projects' ability to ignite or exacerbate wildfire risk. Potential existing hazards are based on review of the Projects' locations on CAL FIRE maps to determine their location within FHSZs. Although the Projects would not be in a Very High or High FHSZ, the potential for wildfires is still present due to the electrical components of the Projects and the arid climate. Therefore, this analysis identifies design features and compliance with existing safety procedures, standards, and regulations that would be part of the Projects.

Criteria for Determining Significance

The criteria used to determine the significance of the Projects' wildfire impacts are based on the criteria identified in the CEQA Guidelines, Appendix G. Project-related impacts would be considered significant if the projects are in or near State Responsibility Areas or lands classified as Very High FHSZs and would:

- Substantially impair an adopted emergency response plan or emergency evacuation plan (see Impact F-1).
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire (see Impact F-2).
- Require the installation or maintenance of associated infrastructure (Such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment (see Impact F-3).
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes (see Impact F-4).

Applicant Proposed Measures

The Applicants identified and have committed to implement the following APMs as part of the proposed Projects to avoid or substantially lessen potentially significant impacts to wildfire, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

- APM BIO-4** *Refer to full text in Section 3.4, Biological Resources.*
- APM BIO-10** *Refer to full text in Section 3.4, Biological Resources.*
- APM HAZ-1** **Hazardous Materials Management Plan.** *Refer to full text in Section 3.9, Hazards and Hazardous Materials.*
- APM HAZ-4** **Health, Safety, and Noise Plan.** *Refer to full text in Section 3.9, Hazards and Hazardous Materials.*
- APM HWQ-1** **Drainage Erosion and Sedimentation Control Plan (DESCP).** *Refer to full text in Section 3.10, Hydrology and Water Quality.*
- APM HWQ-4** **Flood Protection.** *Refer to full text in Section 3.10, Hydrology and Water Quality.*
- APM TRA-1** **Construction Traffic Commute and Control Plan.** *Refer to full text in Section 3.16, Transportation.*
- APM FIRE-1** **County Fire Department Technical Policy (T) 15-002 Compliance.** The Applicants shall ensure that circulation and access for fire protection purposes within the site and at the entrance are provided, with roads not less than 20 feet consistent with County Fire Department Technical Policy TP 15-002. Compliance with the requirement shall be documented in the construction documents.
- APM FIRE-2** **Water Tank Installation - Riverside County Fire Department Compliance.** The Applicants shall install water tanks if required by Riverside County Fire Department (RCFD). The required volume of water for fire use shall be based on the County Fire Marshall's requirement following review of the Project plans. RCFD-approved number of water tanks and volume shall be included in the construction documents.

- APM FIRE-3 Maintenance Truck Equipment.** The Applicants shall ensure all maintenance trucks are equipped with a fire extinguisher or other fire-fighting equipment in accordance with state and federal regulations. Compliance with this measure shall be documented in monitoring logs provided to California Department of Fish and Wildlife and Bureau of Land Management.
- APM FIRE-4 Occupational Safety and Health Administration and California Code of Regulations Compliance.** The Applicants shall ensure that welding and all construction hot work abides by the appropriate Occupational Safety and Health Administration and California Code of Regulations standards (8 CCR 4846). Compliance with this measure shall be documented in monitoring logs provided to California Department of Fish and Wildlife and Bureau of Land Management.
- APM FIRE-5 Fire Management and Prevention Plan.** The Applicants shall prepare and implement a Fire Management and Prevention Plan to ensure the safety of workers and the public during construction, operation and maintenance, and future decommissioning activities for the Projects. The owner must provide the Fire Management and Prevention Plan to the Bureau of Land Management (BLM) for review and approval and to the Riverside County Fire Department (RCFD) for review and comment before construction. The Fire Management and Prevention Plan shall include, but not be limited to, the following elements:
- Procedures for minimizing potential ignition, including, but not limited to, vegetation clearing, parking requirements/restrictions, idling restrictions, smoking restrictions, proper use of gas-powered equipment, and hot work restrictions.
 - Work restrictions during Red Flag Warnings and High to Extreme Fire Danger days.
 - All internal combustion engines used at the Projects' sites shall be equipped with spark arrestors. Spark arrestors shall be in good working order.
 - Once initial two-track roads have been cut and initial fencing completed, light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.
 - Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees.
 - Equipment parking areas and small stationary engine sites shall be cleared of all flammable materials.
 - Smoking shall be prohibited in all vegetated areas and within 50 feet of combustible materials storage and shall be limited to paved areas or areas cleared of all vegetation.
 - Each construction site (if construction occurs simultaneously at various locations) shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.
 - The Applicants shall coordinate with BLM and RCFD to create a training component for emergency first responders to prepare for specialized emergency incidents that may occur at the Projects' sites.
 - All construction workers, plant personnel, and maintenance workers visiting the plant and/or transmission lines to perform maintenance activities shall receive training on fire prevention procedures, the proper use of fire-fighting equipment, and procedures to

be followed in the event of a fire. Training records shall be maintained and be available for review by BLM and RCFD. Fire prevention procedures shall be included in the Project's Worker Environmental Awareness Program (Mitigation Measure BIO-2).

- Vegetation near all solar panel arrays, ancillary equipment, and access roads shall be controlled through periodic cutting and spraying of weeds, in accordance with the Weed Management Plan.
- BLM and RCFD shall be consulted during plan preparation and fire safety measures recommended by these agencies included in the plan.
- The plan shall list fire prevention procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations.
- All on-site employees shall participate in annual fire prevention and response training exercises with BLM and RCFD.
- The plan shall list all applicable wildland fire management plans and policies established by state and local agencies and demonstrate how the Project will comply with these requirements.
- The Applicants shall designate an emergency services coordinator from among the full-time on-site employees who shall perform routine patrols of the site during the fire season equipped with a portable fire extinguisher and communications equipment. The Applicants shall notify BLM and RCFD of the name and contact information of the current emergency services coordinator in the event of any change.
- Remote monitoring of all major electrical equipment (transformers and inverters) will screen for unusual operating conditions. Higher than nominal temperatures, for example, can be compared with other operational factors to indicate the potential for overheating which under certain conditions could precipitate a fire. Units could then be shut down or generation curtailed remotely until corrective actions are taken.
- Fires ignited on site shall be immediately reported to BLM and RCFD.
- The engineering, procurement, and construction contract(s) for the project shall provide reference to or clearly state the requirements of this measure.

Environmental Impacts

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones:

Impact F-1. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

LESS THAN SIGNIFICANT. The Project sites are not located in or near a High or Very High FHSZ or a State Responsibility Area. The proposed Projects would be located in a remote area with existing, approved, and proposed solar projects in their vicinity. According to the County of Riverside's Circulation Plan, the

nearest freeway¹ is I-10 (adjacent to the Project sites), and the nearest major highways² are Kaiser Road and Eagle Mountain Road, approximately 5.5 miles and 8.4 miles from the Project sites, respectively. These three roads are considered the nearest routes for evacuation purposes (County of Riverside 2019). The Riverside County Emergency Operations Plan addresses wildfire as one of the most common hazard incidents faced by the County of Riverside. In the event of a wildfire emergency requiring evacuation and emergency vehicle access, the Riverside County Sheriff's Department would establish evacuation routes and Project occupants would comply with all evacuation orders (County of Riverside 2020a).

Access to the Projects would be from State Route (SR) 177, approximately 8 miles west of the access gates. Access would be provided by existing BLM open routes and agricultural roads. Construction, operation and maintenance (O&M), and future decommissioning traffic would exit I-10 at SR-177, take SR-177 to Ragsdale Road, to BLM route DC 425, and then to BLM route DC 379. Route DC 379 would then reach the site boundaries. Construction of the Projects would not require the construction of any new access roads and is not anticipated to require any temporary lane closures or obstructions that could restrict the movements of emergency vehicles. Refer to Section 4.16, Transportation, for an analysis of traffic-related impacts during the Projects' construction.

During O&M, primary access to both Projects' sites would be provided from SR-177. No permanent or temporary road closures that could restrict emergency vehicle movements are anticipated during O&M of the solar facilities. The solar facilities would be monitored by on-site staff and/or from off site and the Project sites would be equipped with a Knox-Box to allow emergency personnel to access the sites in the event of an emergency. The Project sites would be secured by 6-foot-tall chain-link perimeter fences with 1-foot barbed wire to prevent vandalism, damage, or theft of Project components, and a locked gate at the ingress/egress. As such, access on Kaiser Road, Eagle Mountain Road, I-10, other public roads, and to the Project sites would be unobstructed, and construction and operation of the solar facilities would not impair any emergency access routes.

Construction of the gen-tie line structures would cause a temporary disturbance within the construction corridor estimated at a width of 150 feet, but this disturbance would not obstruct any public rights-of-way. Existing access roads would be used where feasible to connect to the gen-tie line structures, but if not sufficient, new access spur roads (up to 24 feet in width), both temporary and permanent, would be established. I-10 would not require any temporary lane closures during stringing of the wire across the highway to connect the gen-tie line to the SCE Red Bluff 500/200 kilovolt Substation. Once operational, the gen-tie line is not expected to cause any future lane closures that would impair movement on public roadways.

In accordance with APM TRA-1, a Construction Traffic Commute and Control Plan would be prepared to reduce potential impacts to traffic, which would help to ensure that emergency access routes would not be impeded. Further, circulation and access to the Project sites would be provided in accordance with APM FIRE-1 and would be reviewed and approved by RCFD prior to Project implementation. Therefore, installation, O&M, and future decommissioning of the Projects would not restrict the movement of emergency vehicles and would not impair any adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant. Therefore, with incorporation of APM FIRE-1 as

¹ A freeway is defined as a highway upon which the abutter's rights of access are controlled and which provides separated grades at intersecting streets (County of Riverside 2020a).

² A major highway is defined as a highway intended to serve property zoned for major industrial and commercial uses, or to serve through traffic. Intersections with other streets or highways may be limited to approximately 660-foot intervals.

part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Impact F-2. Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

LESS THAN SIGNIFICANT WITH MITIGATION. According to CAL FIRE's FHSZ mapping and the County of Riverside General Plan Safety Element, the Projects are not located in or near a High or Very High FHSZ or a State Responsibility Area. The Project sites are located in a Moderate FHSZ within Local and Federal Responsibility Areas. The Project sites are in a remote, largely undeveloped area. The surrounding area includes active and fallow agricultural fields, scattered residences, electrical transmission lines, and solar development. Project occupants during construction would be limited to temporary presence of workers, and during operation up to 6 workers for each Project would be present to perform daily visual inspections and minor repairs. Intermittently, up to 15 workers may be required for repairs or replacement of equipment and panel cleaning. The Projects would not significantly alter slopes or create wind patterns that would facilitate wildfire spread. Due to the presence of scarce vegetation and relatively flat terrain, the potential for the Projects to exacerbate wildfire risks and expose project occupants to the hazards of a wildfire is considered low.

Because vegetation on the sites is already scarce, complete vegetation clearance would not be required. Prior to construction, vegetation would be disced under, mulched or composted, and retained on site within the solar fields, roadways, and areas around the O&M building. Vegetation would be cleared for construction of the drainage controls, including berms if needed. This reduction of vegetation would further reduce the availability of flammable fuels around the Project sites. Construction of the Projects would involve preparation, installation, and testing of electrical components such as cables, inverters, wiring, modules, and a transformer. Wires would be buried at a minimum of 18 inches below grade, minimizing the potential for faulty wiring to ignite a fire. All electric inverters and the transformer would be constructed on concrete foundation structures or steel skids and tested prior to use to ensure safe operations and avoid fire risks. Prior to wire setup, work areas would be cleared of vegetation to reduce the risk of ignition from any vehicles or equipment. Small quantities of hazardous chemicals such as fuels and greases would be stored at the sites during construction. They would be stored in appropriate containers in an enclosed and secured location with secondary containment to prevent leakages and accidental fires. In accordance with APM FIRE-2, water tanks would be installed on site as required by RCFD, and APM FIRE-3 would ensure that all trucks are equipped with fire-fighting equipment. Additionally, APM FIRE-4 would ensure that all welding and hot work is conducted in accordance with fire safety best practices.

Each Project may include operation of an up to 200 MW energy storage system that would consist of batteries housed in storage containers. The storage system would be installed following all applicable design, safety, and fire standards for the installation of energy storage systems, including, but not limited to, NFPA Standard 855 (Standard for the Installation of Stationary Energy Storage Systems) and Section 1206 of the California Fire Code. NFPA Standard 855 includes criteria for fire prevention and suppression associated with ESS installations, such as setbacks and proper design of sprinkler systems. It considers ventilation, detection, signage, listings, and emergency operations responding to ESS emergencies (NFPA 2020). Implementation and compliance with these design and safety regulations would ensure wildfire risk associated with the Projects is reduced.

Furthermore, as described in Section 2.2.8, Fire Safety, fire safety measures would be implemented as part of the Projects. Section 2.2.8 notes that Fire Safety Plans would be created for both Projects and would include

standards for construction and operation. Each plan would comply with applicable BLM and Riverside County regulations and would be developed in coordination with RCFD. Section 2.2.8 does not specify how the plans would safeguard human life, prevent personnel injury, preserve property, and minimize downtime due to fire or explosion. Of concern are fire-safe construction, reduction of ignition sources, control of fuel sources, availability of water, and proper maintenance of firefighting systems. Because of this, the Applicants have incorporated APM FIRE-5 into the Projects to specify what elements are to be included in the Fire Management and Prevention Plans to ensure the impact is less than significant.

Both Fire Plans would include the following steps to identify and control fires and similar emergencies:

- Electrical equipment that is part of the Project would be energized only after the necessary inspection and approval, so there is minimal risk of any electrical fire during construction.
- Project staff would monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks.
- Transformers located on site would be equipped with coolant that is biodegradable and contains no polychlorinated biphenyls or other toxic compounds.

The Projects' location, components, and safety measures would ensure the safe construction, operation, and future decommissioning of the solar facilities. Future decommissioning activities are anticipated to be similar to construction, but less intense. Once operational, up to six workers for each Project are anticipated to perform daily visual inspections and minor repairs to ensure all components of the Projects are in proper condition. Other O&M activities would be limited to inspections, repairs, and panel washing, which would require on-site water use, and would not involve the handling, usage, or production of flammable materials. Fire risk during construction and operation of the solar facilities would be minimal and further reduced with APM FIRE-1 through APM FIRE-5. Each Project facility would be monitored by on-site O&M personnel and/or remotely. Security at the solar facilities would be provided by a 6-foot-tall wire fence with 1-foot barbed wire to prevent vandalism, damage, or theft of Project components. A Knox-Box would be installed at both Project sites to allow emergency personnel to access the sites in the event of an emergency.

The gen-tie transmission structures would be constructed to have either tubular steel monopoles or lattice structures and would not exacerbate fire risks due to the nonflammable nature of their foundations. Because the gen-tie poles would be between 100 and 140 feet tall, the gen-tie line would not contact any low-growing desert vegetation and would not exacerbate fire risk during hazardous weather conditions. Construction of the gen-tie transmission line and structures would use existing access roads where feasible. New temporary and/or permanent access roads may be constructed if needed. The lack of substantial vegetation within the gen-tie corridor would pose a minimal wildfire risk during construction and operation of the gen-tie line. As described previously, fire safety measures would be implemented to ensure that construction and operation of the Project components, including the gen-tie line, are implemented in accordance with applicable fire protection and environmental, health, and safety requirements.

As such, with incorporation of APM FIRE-1 through APM FIRE-5 into the Projects, construction, operation, and future decommissioning of the solar facilities, gen-tie transmission line, and access roads would not exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. Additionally, the following APMs that would be incorporated as part of the Projects would further reduce the wildfire risk: APM HAZ-1 would ensure that hazardous (i.e., potentially flammable) materials are properly stored; APM HAZ-4 requires the preparation of a Health, Safety and Noise Plan which includes fire protection equipment maintenance, guidance, and documentation; APM BIO-10 restricts the use of vehicles and equipment to paved areas, existing roads,

or previously disturbed areas, which would preclude vehicles from driving atop vegetation and reduce the likelihood for vegetation ignitions. Furthermore, implementation of mitigation measure (MM) BIO-4 requires the preparation of a Weed Management Plan and MM BIO-5 requires preparation of a Vegetation Resources Management Plan, which would reduce the likelihood for highly flammable invasive plants and guide management of native vegetation near project facilities to prevent overgrowth and reduce fire risk. Therefore, with incorporation of APMs and implementation of MM BIO-4 and MM BIO-5 as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts with mitigation.

Impact F-3. Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

LESS THAN SIGNIFICANT WITH MITIGATION. The proposed Projects would construct utility-scale solar photovoltaic (PV) electrical generating and storage facilities that would deliver electricity to the statewide transmission grid. Construction of the solar facilities would require the installation of infrastructure to support the generation, delivery, and storage of electricity. Prior to construction, vegetation would be disced, mulched or composted, and retained on site. The reduced amount of already-sparse vegetation would minimize the potential for ignition.

Construction activities would involve the temporary use of heavy construction equipment and vehicles to install the solar facilities' components over the course of approximately 18 months. Although the solar facilities are in a remote desert setting and would not occur within a High or Very High FHSZ, the electrical components still pose a risk of fire if they become damaged or tampered with. Electrical components that may pose a risk of fire include voltage transformers, batteries, substations, and the switchyard. Because these components are in a sparsely vegetated and remote location away from densely populated areas, the potential for faulty electrical equipment to substantially exacerbate fire risks for populated areas is minimal. Additionally, assembly and installation of the electrical equipment would meet existing electrical and safety standards. Certified electricians and utility journeymen would be part of the construction workforce to ensure that all electrical equipment is assembled properly. The Projects' substations would be secured with a barbed wire chain-link fence to comply with electrical codes and would include communication systems to comply with Federal Energy Regulatory Commission and California Independent System Operator/Utility monitoring and control requirements to ensure safe operation. If both Projects include the installation of batteries, the batteries would be housed in enclosed storage containers constructed on level cement or concrete foundations. The enclosures would contain any accidental fires and prevent them from spreading and causing further damage. Most of the solar facilities' equipment would consist of solar PV panels and their mounting systems, which would be assembled from materials that are not combustible or flammable and the fire emergence risk in PV systems is very low (TUV Rheinland Energie und Umwelt GmbH 2015).

Regular O&M of the solar facilities would involve daily visual inspections and maintenance when needed to address damage or deterioration of equipment. Because O&M activities would ensure that all equipment is in working condition at both Projects, they would minimize accidents and potential fires that may occur. Additionally, fire safety measures would be implemented during operations, which may include installation of one or more aboveground water storage tank(s) adjacent to the O&M facility, sprinkler systems, an FM200 fire suppression system (or equivalent), and portable carbon dioxide fire extinguishers mounted at the power conversion system units. As indicated in APM FIRE-1, additional water storage tanks would be installed if required by RCFD, which would ensure adequate water availability. Furthermore, APM FIRE-2 through APM FIRE-4 would ensure construction and operation of the Projects are implemented with fire safety best practices, including defensible space requirements,

proper circulation and fire road widths, and firefighting equipment. These safety measures, along with the incorporation of Project Fire Management and Prevention Plans (APM FIRE-5), would provide safe operating conditions and fire response protocols to minimize the risk of wildfire. Furthermore, as discussed in response to Impact F-2, additional APMs (APM HAZ-1, APM HAZ-4 and APM BIO-10) as well as MM BIO-4 and MM BIO-5 would be implemented which would further reduce fire risk. Future decommissioning activities, as with construction, would involve the temporary use of heavy construction equipment and vehicles during the removal of the solar facilities' components and would be similar to impacts during construction. As such, construction, operation, and future decommissioning of the solar facilities would have a less-than-significant impact regarding the installation or removal of utilities that may exacerbate fire risk. Therefore, issuance of the Permits would result in less-than-significant impacts.

Construction of the gen-tie line and structures would occur within a corridor approximately 150 feet wide. Wire setup sites within this corridor would be cleared and graded to ensure enough clearance for large equipment used for the wire stringing operation. Removal of potentially flammable materials and vegetation would occur in work areas, such as wire setup, puller, and tensioner sites and access spur roads within the construction corridor, to reduce the risk of wildfire during construction. The gen-tie transmission lines would be supported by either tubular steel monopoles or lattice structures and would not exacerbate fire risks due to the nonflammable nature of their foundations. Construction of the gen-tie transmission line and structures would use existing access roads where feasible. New temporary and/or permanent access roads may be constructed if needed in areas without existing access roads, and construction of all permanent access roads would comply with RCFD specifications. The lack of substantial vegetation within the gen-tie corridor would pose a minimal wildfire risk during construction and operation of the gen-tie line. As described previously, fire safety measures (APM FIRE-1 through APM FIRE-5, APM HAZ-1, APM HAZ-4, APM BIO-10) as well as MM BIO-4 and MM BIO-5 would be implemented to ensure that construction and operation of the Projects' components, including the gen-tie line, are implemented in accordance with applicable fire protection and environmental, health, and safety requirements. As such, construction and operation of the Projects' shared gen-tie line would not exacerbate wildfire risks and impacts would be less than significant. Therefore, issuance of the Permits would result in less-than-significant impacts.

Construction, O&M, or future decommissioning of the proposed Projects would not directly or indirectly require new or expanded infrastructure other than that which is planned as part of the project. As discussed in Section 3.18, Utilities and Service Systems, no new utility connections, water/wastewater facilities, or other service utilities would be required for the Projects. Given that the activities involved with installation or maintenance of associated infrastructure would require ground disturbance and the use of heavy machinery associated with trenching, grading, site work, and other construction and maintenance activities, the installation of related infrastructure would potentially result in temporary or ongoing impacts to the environment. However, the installation and maintenance of the solar facilities, roads, gen-tie line, and staging areas/laydown yards and vegetation clearance are part of the proposed Projects analyzed herein. As such, any potential temporary or ongoing environmental impacts related to these components of the Projects have been accounted for and analyzed in this EIR as part of the impact assessment conducted for the entirety of the Projects. In addition, the Projects would be required to comply with all regulatory requirements; APMs that are incorporated as part of the Projects, specifically those listed in the biological resources section (Section 3.4), hazards and hazardous materials section (Section 3.9), hydrology and water quality section (Section 3.10), and transportation section (Section 3.16); and mitigation measures outlined in the biological resources (Section 3.4) of this EIR for the purposes of avoiding or substantially lessening potential impacts associated with trenching, grading, site work, and the use of heavy machinery to the extent feasible. No adverse physical effects beyond those already disclosed and addressed would occur as a result of implementation of the Projects or associated infrastructure. Therefore, the installation and maintenance of associated infrastructure would not

exacerbate wildfire risk or result in impacts to the environment beyond those already disclosed throughout this document, and impacts would be less than significant. As a result, with incorporation of APMs and implementation of MM BIO-4 and MM BIO-5 as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts with mitigation.

Impact F-4. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

LESS THAN SIGNIFICANT. The Projects would be in a Moderate FHSZ in a remote desert setting. There are no major densely populated cities or communities in the vicinity of the Projects. The solar facilities would be constructed and operated on a nearly level surface and would require minimal grading prior to installation of the solar PV panels. As discussed in Section 3.7, Geology and Soils, slope stability is affected by slope steepness, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium.³ The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. Another indication of unstable slopes is the presence of old or recent landslides or debris flows. As previously discussed, the Project sites are relatively flat with a slight descending slope to the northeast that ranges from 500 to 800 feet above mean sea level (refer to Appendix F-2 of this EIR). The Riverside County General Plan maps the Projects' area as having no potential for seismically induced slope instability and as having slope grades of less than 15% (County of Riverside 2019).

Slope failures, mudflows, and landslides are common in areas where steep hillsides and embankments are present, and such conditions would be exacerbated in a post-fire environment where vegetative cover has been removed. Vegetation plays a vital role in maintaining existing drainage patterns and the stability of soils. Plant roots stabilize the soil and leaves, stems, and branches intercept and slow water, allowing it to more effectively percolate into the soil. Removal of surface vegetation reduces the ability of the soil surface to absorb rainwater, and can allow for increased runoff that may include large amounts of debris and mud flows. If hydrophobic conditions exist after a fire, the rate of surface water runoff is increased since water percolation into the soil is reduced. The potential for surface runoff and debris flows therefore increases significantly for areas recently burned by large wildfires (Moench and Fusaro 2012). A review of historical fire data revealed that no major fires have occurred on the Project sites since 1950 (CAL FIRE 2021). As such, the solar facility sites and shared gen-tie line are in an area that has a low risk of downslope or downstream flooding, landslides, or post-fire slope instability due to the Project sites' location on relatively flat terrain and lack of post-fire conditions on site.

Pre-construction activities would include obtaining information on stormwater modeling and grading design to avoid or minimize changes to existing stream channel configurations. Grading would be required for the inverter pads, substation, driveways, and other improvements such as access roads if needed. Because the ground surface at both Project sites is nearly flat and nonflammable solar PV panels would be installed on most of the Projects' area, it is unlikely that the Projects would expose people or structures to downslope or downstream flooding, landslides, post-fire slope instability, or drainage changes. In the event of a wildfire, the Projects would also not expose a substantial population of people to risks associated with post-fire slope instability because the Projects are in a remote area. Additionally, APM BIO-4 calls for implementation of erosion and sedimentation best management practices, implementation of APM HWQ-1 would require preparation of a Drainage Erosion and Sedimentation Control Plan and APM HWQ-4 would ensure that structures are located outside flood zones and designed such that flood flows

³ Colluvium is poorly sorted, primarily gravity deposited sediment (a mixture of clay, silt, sand, and gravel) that has accumulated on and at the base of slopes.

would not be impeded. These APMs would ensure that the project would not expose people or structures to significant risks associated with flooding, landslides or drainage changes. As such, impacts regarding downslope or downstream flooding or landslides as a result of post-fire slope instability would be less than significant. Therefore, with incorporation of APMs as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant impacts.

Cumulative Impacts

Geographic Scope. The geographic scope for the cumulative impact analysis of wildfire impacts is the area of Desert Center. Given the sparsely vegetated landscape and its low potential to ignite and facilitate wildfires, the greatest potential for cumulative impacts relating to wildfire hazards would primarily be from projects in close vicinity to the proposed Projects. Tables 3.1-1 and 3.1-2 in Section 3.1.2, Cumulative Impact Scenario, list existing and reasonably foreseeable projects in the region. Projects within the Desert Center region include the following: Desert Sunlight Solar Farm, SCE Red Bluff Substation, Palen Solar Project, Desert Southwest Transmission Line, Desert Harvest Solar Project, Athos Solar Project, and the Oberon Solar Project, and the Easley Solar & Green Hydrogen Project. The available CAL FIRE Incident Data (2013–2020) was reviewed for the Desert Center region and no incidents were noted in the region. This supports the conclusion that the risk of wildfire in the region is low.

Cumulative Impacts. Projects in the cumulative scenario would be required to comply with fire hazard policies and include their own fire management plan during construction, O&M, and future decommissioning. Furthermore, incorporation of APM FIRE-1 (County Fire Department Technical Policy [T] 15-002 Compliance), APM FIRE-2 (Water Tank Installation - Riverside County Fire Department Compliance), APM FIRE-3 (Maintenance Truck Equipment), APM FIRE-4 (Occupational Safety and Health Administration and California Code of Regulations Compliance), and APM FIRE-5 (Fire Management and Prevention Plan) would reduce the severity of the Projects’ contribution to the cumulative wildfire impacts. In addition, the vegetation in this region is low-growing and scarce, which reduces the potential risk of fire for the Projects and other past, present, and probable future projects. Accordingly, the Projects’ incremental contribution to the cumulative wildfire impacts caused by other past, present, and probable future projects would not be cumulatively considerable or significant.

In addition, the proposed Projects would not result in cumulatively significant impacts related to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan because no aspect of the Project would interfere with emergency response (e.g., construction, O&M, and decommissioning are not expected to require any temporary lane closures that could restrict the movements of emergency vehicles). Accordingly, the Projects’ incremental contribution to the cumulative impacts to emergency response caused by other past, present, and probable future projects would not be cumulatively considerable or significant. Therefore, issuance of the Permits would not result in cumulative considerable impacts relative to wildfire.

3.19.4 Mitigation Measures

MM BIO-4 Integrated Weed Management Plan. Refer to full text in Section 3.4, Biological Resources.

MM BIO-5 Vegetation Resources Management Plan. Refer to full text in Section 3.4, Biological Resources.

No other potentially feasible mitigation measures were identified to further avoid or substantially lessen impacts to wildfire.

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4 Alternatives

Section 15126.6(a) of the California Environmental Quality Act (CEQA) Guidelines states that an Environmental Impact Report (EIR) “shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives.” An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives governed by the rule of reason that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The CEQA Guidelines state that factors that may be considered when determining the feasibility of alternatives are “site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context) and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent)” (14 CCR 15126.6[f][1]).

Additionally, the No Project Alternative must be analyzed. The EIR must explain the rationale for selecting the alternatives to be discussed, identify those that were not carried forward because they were infeasible, and briefly explain why these were not carried forward. The “environmentally superior” alternative to the project must be identified and discussed (see Section 4.2, Comparison of Alternatives). If the environmentally superior alternative is the No Project Alternative, the EIR must identify an additional environmentally superior choice among the other alternatives.

Several options were considered to determine potential alternatives that might produce fewer significant impacts, or reduce the severity of those significant impacts, compared to the proposed Arica Solar Project and Victory Pass Solar Project (Projects), including the No Project Alternative. Possible alternatives were assessed as to whether they would satisfy the following:

- The alternative is technically feasible.
- The alternative would avoid or substantially lessen any of the significant impacts of the proposed Projects.
- The alternative would attain most of the basic proposed Projects’ objectives.

As noted in Section 1.2, Project Objectives, the applicants’ seven objectives for the Projects are as follows:

- To construct and operate solar photovoltaic (PV) energy facilities using the best-fit PV technology and storage to provide a renewable and reliable source of electrical power to California utilities
- To comply with the Bureau of Land Management’s (BLM’s) “all-of-the-above” energy strategy to improve the management of energy resources found on federal lands in a balanced way to ensure the nation’s economic and energy security and quality of life
- To locate the Projects on lands with high solar insolation and relatively flat terrain at sufficient scale to maximize operational efficiency
- To minimize environmental impacts and land disturbance by locating the Projects in areas prioritized for solar development, in proximity to an established utility corridor, where the Projects could share a gen-tie line with each other, and with existing road access, all of which would result in the Projects avoiding sensitive environmental areas, recreational resources, and wildlife habitats (e.g., Areas of Critical Environmental Concern, Desert Wildlife Management Areas, Critical Habitat Units, Category I and II desert tortoise habitat)

- To assist California and its investor-owned utilities in meeting the state's Renewable Portfolio Standard and greenhouse gas emission reduction requirements, including the requirements under Senate Bill 100 to increase the state's Renewable Portfolio Standard to 60% renewable power by 2030 and requires all California's electricity come from carbon-free resources by 2045
- To provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandates
- To provide community benefits through new jobs, spending in local businesses, and additional sales tax revenues

The California Department of Fish and Wildlife's (CDFW's) additional objectives include the following:

- Protect and conserve fish and wildlife resources and to minimize environmental impacts and land disturbance by, among other things, siting the facilities on relatively flat lands with high solar insolation and near established utility corridors, an existing substation with available capacity to facilitate interconnection, and accessible roads.
- Promote environmentally responsible development that minimizes incidental take by implementing species-specific minimization and avoidance measures.
- Protect and conserve the resources of the State of California and mitigate any impacts on these resources, consistent with CDFW's mission, its status as California's trustee agency for fish and wildlife, and the public trust doctrine.
- Assist in the implementation of the Desert Renewable Energy Conservation Plan (DRECP). Together with federal agencies, CDFW staff is working to ensure that the state is able to expedite siting and permitting of renewable energy projects that will assist in achieving greenhouse gas reduction targets set forth in Assembly Bill 32 while minimizing the impacts to natural resources and further mitigating the impacts of climate change.

During scoping, commenters recommended the following alternatives:

- An alternative that maximizes wildlife protection by avoiding, minimizing, and fully mitigating all direct, indirect, and cumulative impacts to wildlife and wildlife habitat to at least a no-net loss standard. The proposed Projects avoid, minimize, and mitigate all direct, indirect, and cumulative impacts to wildlife and wildlife habitat by avoiding over 1,000 acres of sensitive habitat and therefore reducing the impacts to sensitive wildlife. Where impacts cannot be avoided, they are mitigated fully in accordance with applicable regulations and laws.
- An alternative that conforms with the DRECP and all Conservation and Management Actions (CMAs). The proposed Projects were designed in consultation with BLM to conform with the DRECP and all CMAs.
- An alternative where the vegetation has been mowed rather than bladed and allowed to revegetate the area. Blading removes vegetation with a straight blade bulldozer, which removes topsoil and would disturb tortoise burrows. Mowing would not remove topsoil and minimize disturbance to tortoise burrows. Mitigation Measure (MM) BIO-3, presented in Section 3.4, Biological Resources, requires the Applicants to minimize vegetation and habitat impacts, specifically to minimize impacts to soils and root systems. Furthermore, it requires clear demarcation of work areas and limitation of activities within those areas, to minimize adverse effects to special-status species and associated habitat.

Alternatives considered included the No Projects Alternative, those associated with alternative gen-tie routes and access routes, and an alternative to reduce the significant visual impact. An alternative

comparison is provided in Section 4.2. Alternatives considered, but not carried forward for further analysis are presented in Section 4.3.

4.1 Alternatives Analyzed in Detail

4.1.1 No Project Alternative

Under the No Project Alternative, the construction of the Projects and associated infrastructure would not occur. Because no projects would be built and no ground disturbance would occur, none of the impacts associated with the construction, operation and maintenance (O&M), and future decommissioning of the Projects to any of the resources identified and discussed in Chapter 3 would occur. The No Project Alternative would not contribute to any cumulative impacts.

The No Project Alternative would fail to meet all the Applicants' objectives for the Projects and most of CDFW's additional project objectives. It would meet the CDFW objective to protect and conserve fish and wildlife resources of the State of California. The No Project Alternative would not achieve any of the environmental benefits of increasing renewable energy generation consistent with the State of California's Renewable Portfolio Standard.

If the energy needs that are unmet by the development of the Projects are not replaced with comparable renewable sources, the development of alternative energy projects could result in greater emissions from, for example, the burning of fossil fuels and the replacement projects would not contribute to meeting the state's greenhouse gas reduction goals. This impact would be greater than with the Projects.

This alternative also considers what would be reasonably expected to occur in the foreseeable future if the Projects were not approved and do not take place. The Project sites are located within a Development Focus Area (DFA), near an existing substation with available capacity for additional energy generation. If the Projects were not constructed, it is extremely likely that a different solar developer would apply to construct solar projects in these locations. As evidence of this, BLM has already received a separate Standard Form 299 for use of both sites for solar development, which is second in line behind the proposed Projects (BLM 2019). If a different solar project were to be constructed in these locations, the impacts of the other solar projects would be similar or the same as those identified for the proposed Projects in Chapter 3 of this EIR.

4.1.2 Alternative 1: Gen-Tie Alignment 1

An alternative route has been developed as an option should the proposed alignment be constrained. Under this alternative the gen-tie alignment would exit the shared switchyard heading southwest for 1.15 miles as shown on Figure 4-1, Proposed Linear Alternatives. At this point, the gen-tie would head northwest for 0.45 miles parallel to Interstate (I) 10. When reaching the westernmost boundary of the Victory Pass Project site fenceline, it would head west-northwest for 0.62 miles, still parallel to I-10, until turning due south to cross I-10 parallel to the existing Desert Sunlight crossing. The line would head south for 0.15 miles before entering the existing Red Bluff Substation. As with the proposed Projects, this alternative is entirely on BLM-administered land.

The Gen-Tie Alignment 1 alternative would be approximately 0.6 miles shorter than the proposed gen-tie line. Based on preliminary engineering by the Applicants, it would require the same number of transmission poles because it requires one additional turn compared with the proposed gen-tie route. It is assumed that the gen-tie alignment within the Victory Pass right-of-way (ROW) could use the solar facility exterior road to access the transmission towers during construction and O&M and entirely new

access roads would not be required. This alternative would require an estimated 0.6 miles of new access routes after exiting the Victory Pass Project site boundary because there is no existing access road north of I-10 in this area. The construction and O&M of the Gen-Tie Alignment 1 alternative would be similar to the proposed gen-tie alignment.

The Gen-Tie Alignment 1 alternative would meet Projects' objectives and would be technically, regulatorily, and legally feasible.

Impact Analysis

The Gen-Tie Alignment 1 alternative would be in the same area as the proposed gen-tie alignment and would be expected to use the same amount of construction and O&M workforce and equipment as the proposed alignment. The Gen-Tie Alignment 1 alternative is expected to use the same number of transmission poles as the proposed gen-tie alignment and require a slightly longer new access road that parallels the I-10. Impacts associated with transmission line construction and O&M are primarily associated with the ground disturbance from installing poles and access roads. While the approximately 0.6 miles newly constructed access road parallel to the I-10 would be longer than that of the proposed gen-tie alignment, the distance traveled along the access road during construction of the gen-tie line would be slightly shorter. Given the similarities between the Gen-Tie Alignment 1 alternative and the proposed alignment, the impacts for the following resources would be essentially the same with the incorporation of the same applicant proposed measures (APMs) as would be in the Projects:

- Air quality
- Cultural resources
- Energy
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology and water quality
- Noise
- Population and housing
- Public services
- Recreation
- Transportation
- Tribal cultural resources
- Utilities and service systems
- Wildfire

Aesthetics. The Gen-Tie Alignment 1 alternative would parallel I-10 for just over 1 mile and would cross the I-10 corridor at the same location as the proposed gen-tie route. There would be no change to the amount or type of solar infrastructure constructed and operated compared to the proposed Projects. Because the Gen-Tie Alignment 1 alternative is in the same general vicinity as the proposed gen-tie line and would require the same construction and O&M activities, the visual impacts from both the solar facilities and gen-tie line would be the similar to those for the proposed Projects. Alternative 1 would be more visible than the proposed gen-tie alignment from the I-10 corridor because it would run parallel to I-10 at roughly 150 feet for about a mile. The operational views of the Projects would remain the same as described for the proposed route for Key Observation Points 1 to 6 with the incorporation of APMs (APM AES-1 through APM AES-4) as part of the Gen-Tie Alignment 1 alternative. Overall, aesthetics impacts under the Gen-Tie Alignment 1 alternative would be slightly greater than those under the proposed alignment and would remain significant and unmitigable. Therefore, even with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) specifically would result in significant and unmitigable aesthetics impacts.

Biological Resources. Because the Gen-Tie Alignment 1 alternative remains in proximity to and would use the same construction techniques as the proposed alignment, the impacts to biological resources would be essentially the same. Alignment 1 would require some new access roads after exiting the Victory Pass ROW, which would increase the ground disturbance to desert dry wash woodland along this portion of the route. Gen-tie alignment 1 would not be collocated with existing transmission lines in the same way as the proposed alignment. Several authors have suggested that clustering or co-locating linear obstacles can reduce collision risk due to the increased visibility and that birds need to complete only one ascent and descent flight to cross the co-located obstacles; the consensus among industry experts supports this assumption and this approach, although few studies have attempted to evaluate the effectiveness of this measure in terms of the bird collision risk (WEST 2020). With incorporation of APMs (APM BIO-1 through APM BIO-25) into this alternative and implementation of mitigation (MM BIO-1 through MM BIO-13), the impacts to biological resources would be reduced to less than significant. Therefore, under the Gen-Tie Alignment 1 alternative, issuance of the Permits would result in less-than-significant biological resources impacts with implementation of mitigation and relevant APMs. Overall, the impacts to biological resources of the Gen-Tie Alignment 1 alternative would be slightly greater than the proposed alignment.

Land Use and Planning. Alternative 1 would take a route that stays within the Project sites' boundary for a greater length than the proposed route. All land use designations along the alternative gen-tie line would remain the same as with the proposed Projects as the gen-tie would be located on BLM land within a DFA and would be partially within a designated utility corridor. Because the land use designations along the gen-tie line and surrounding the gen-tie line would not change, this alternative would have no impacts to land use resources. The potential conflicts with existing ROWs would be the same as those of the proposed gen-tie route except as follows:

- slightly reduced for conflicts with the Athos and Palen solar projects because the Gen-Tie Alignment 1 alternative would not share an existing transmission corridor with those projects
- a new potential ROW conflict with the Oberon gen-tie alignment because it would cross this alignment where the Oberon gen-tie line crosses I-10
- a potential ROW conflict with the Eagle Crest line, depending on the Eagle Crest line final location
- a need to coordinate with the California Department of Transportation to avoid any potential conflicts with their ROW

Because BLM requires applicants to resolve conflicts prior to construction of their projects, the potential conflicts from implementation of Alternative 1 would result in similar environmental impacts as those under the proposed alignment and would be less than significant. Therefore, under the Gen-Tie Alignment 1 alternative, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant land use conflict impacts.

4.1.3 Alternative 2: Gen-Tie Alignment 2

As with Alternative 1, Alternative 2 has been developed as an option should the proposed alignment be constrained. Under this alternative the gen-tie alignment would exit the shared switchyard heading north for 300 feet, then turn west for an estimated 0.28 miles parallel to the existing Palen gen-tie line. Alternative 2 would then turn southwest for 1 mile (refer to Figure 4-1). At this point, the gen-tie would head northwest for 0.48 miles, north of but parallel to I-10. Alternative 2 would head west-northwest for 0.5 miles until turning due south to cross I-10 parallel to the existing Desert Sunlight crossing. The line would head south for 0.29 miles before entering the existing Red Bluff Substation. As with the proposed Projects, this alternative is entirely on BLM-administered land.

Alternative 2 would be approximately 0.5 miles shorter than the proposed gen-tie line. Based on preliminary engineering by the Applicants, it would require the same number of transmission poles because it requires one additional turn compared with the proposed gen-tie route. It would require an estimated 2 miles of new access routes for construction because there is no existing access road along the bulk of Gen-Tie Alignment 2 except where it overlaps the Palen gen-tie ROW and the westernmost portion of the Victory Pass Project site. The construction and O&M of the Gen-Tie Alignment 2 alternative would be the same as the proposed gen-tie alignment.

The Gen-Tie Alignment 2 alternative would meet the Projects' objectives and would be technically, regulatorily, and legally feasible.

Impact Analysis

The Gen-Tie Alignment 2 alternative would be in the same area as the proposed gen-tie alignment and would be expected to use the same amount of construction and O&M workforce and equipment as the proposed alignment. The Gen-Tie Alignment 2 alternative is expected to use the same number of transmission poles as the proposed gen-tie alignment, however it would require a greater length of new access road compared to the proposed gen-tie alignment. Impacts associated with transmission lines are primarily associated with the ground disturbance for construction of poles and access roads. While the new access road would be longer, the distance traveled along the access road during construction of the gen-tie line would be slightly shorter than for the proposed route. Given the similarities between Gen-Tie Alignment 2 alternative and the proposed alignment, the impacts for the following resources would be the essentially the same with incorporation of the same APMs as would be in the Projects:

- Aesthetics
- Air quality
- Cultural resources
- Geology and soils
- Hazards and hazardous materials
- Hydrology and water quality
- Noise
- Population and housing
- Public services
- Recreation
- Transportation
- Tribal cultural resources
- Utilities and service systems
- Wildfire
- Energy

Biological Resources. Because the Gen-Tie Alignment 2 alternative remains in proximity to and would use the same construction techniques as the proposed alignment, Alternative 2's impacts to special-status species habitat would be qualitatively similar to those of the proposed alignment. Impacts to desert dry wash woodland from the Alternative 2 gen-tie line would be slightly greater than the proposed alignment, because while both alignments would cross through the community, Alternative 2 would require 2 miles of new access road through areas with a substantial amount of desert dry wash woodland habitat. Other potential direct and indirect impacts to special-status species, including construction and O&M impacts, would be the same as described above for the proposed Projects. APMs and mitigation identified for the proposed Projects would also be applicable for Alternative 2 (APM BIO-1 through APM BIO-25 and MM BIO-1 through MM BIO-13).

Gen-tie alignment 2 would not be collocated with existing transmission lines, unlike the proposed alignment. Several authors have suggested that clustering or co-locating linear obstacles can reduce

collision risk due to the increased visibility and that birds need to complete only one ascent and descent flight to cross the co-located obstacles; the consensus among industry experts supports this assumption and this approach, although few studies have attempted to evaluate the effectiveness of this measure in terms of the bird collision risk (WEST 2020). With incorporation of APMs into this alternative and implementation of mitigation, the impacts to biological resources would be reduced to less than significant. Therefore, under the Gen-Tie Alignment 2 alternative, issuance of the Permits would result in less-than-significant biological resources impacts with implementation of mitigation and relevant APMs. Overall, the impacts to biological resources of the Gen-Tie Alignment 2 alternative would be slightly greater than those of the proposed alignment.

Greenhouse Gas Emissions. Alternative 2 would cross through the westernmost parcel of solar arrays of the Victory Pass Project site for approximately 0.25 miles. Along this portion of the gen-tie line, solar panels would need to be set back from the gen-tie line to avoid potential engineering conflicts. Additionally, the gen-tie line towers would shade a portion of the arrays at different times of the day due to their placement in the solar arrays themselves. Because there would be fewer solar panels and additional shading due to the tower placement, Alternative 2 would result in fewer megawatt-hours of renewable energy provided to the California grid, which would result in less greenhouse gas emissions reductions from the Projects over the 35 to 50 year lifespan of the Projects. This impact would remain less than significant but would be slightly greater than that of the proposed alignment.

Land Use and Planning. Alternative 2 would take a route that stays within the Project sites' boundary for a greater length than the proposed alternative route. This alternative would parallel the existing Palen gen-tie line for 0.28 miles, head southwest, and then turn west to parallel I-10, approximately 1,000 feet from I-10. All land use designations along the alternative gen-tie line would remain the same as with the proposed Projects, as the gen-tie would be located on BLM land within a DFA and would be partially within a designated utility corridor. Because the land use designations along the gen-tie line and surrounding the gen-tie line would not change, this alternative would have no impacts to land use resources. The potential conflicts with existing ROW would be the same as those of the proposed gen-tie route except as follows:

- slightly reduced for conflicts with the Athos and Palen solar projects because Gen-Tie Alignment 2 would share the existing transmission corridor with those projects for fewer miles
 - a different ROW conflict with Oberon because the gen-tie alignment would not follow the existing gen-tie lines and would cross the Oberon project at a different location
 - a new potential ROW conflict with the Eagle Crest line, depending on the Eagle Crest line's final location
- Because BLM requires applicants to resolve conflicts prior to construction of their projects, the potential conflicts from implementation of Alternative 2 would result in similar environmental impacts as those under the proposed alignment and would be less than significant. Therefore, under the Gen-Tie Alignment 2 alternative, issuance of the Permits would result in less-than-significant land use conflict impacts.

4.1.4 Alternative 3: Access Road Option 1

The Access Road Option 1 alternative was recommended by the Applicants to provide flexibility and to potentially reduce impacts of the proposed access road. It would use the Corn Springs exit off I-10 instead of the proposed Desert Center exit (refer to Figure 4-1). After exiting at Corn Springs road, Access Road Option 1 would follow existing BLM road DC 950 north for 0.7 miles to reach existing BLM road DC 511. The access route would head northwest on DC 511 for an estimated 1.9 miles to reach the boundaries of the Victory Pass Solar Project site. Both DC 950 and DC 511 are open BLM routes that have existing ROW holders.

As with the proposed access road, this route could require some improvements, including grading and potentially widening. Because the road is constrained to the north by the existing Southern California Edison transmission line, widening would likely occur south of the existing road boundary.

Access Road Option 1 would meet the Projects' objectives and would be technically feasible. Because the two roads have existing ROW holders, BLM would need to review any existing restrictions to determine whether Alternative 3 is regulatorily and legally feasible. This would be part of the BLM NEPA review for the proposed Projects.

Impact Analysis

The Access Road Option 1 alternative would be in the same area as the proposed access road and would be expected to use similar types of construction and O&M workforce and equipment as the proposed access road. The alternative would require driving approximately 2.5 miles on unpaved roads, compared with approximately 6 miles of unpaved roads for the proposed access route. Under Alternative 3, a different exit off I-10 would be used to access the Project sites. Because of this, the distance to the Project sites would change slightly depending on the direction of travel. Construction, O&M, and future decommissioning traffic traveling eastbound along I-10 would travel approximately 5 miles further to reach the Project sites than if they were using the Desert Center exit. Construction, O&M, and future decommissioning traffic traveling westbound along I-10 would travel approximately 13 miles less to reach the Project sites than if they were using the Desert Center exit.

For the following resources, impacts associated with the access road are primarily associated with ground disturbance due to improvements or with workforce use. While the Access Road Option 1 alternative would require improvement along a shorter length of road than the proposed access road and would change the overall distance traveled to reach the site based on the direction of travel, the impacts for the following resources would be the essentially the same with incorporation of the same APMs as would be in the Projects:

- | | |
|-------------------------------|---------------------------------|
| ■ Aesthetics | ■ Population and housing |
| ■ Biological resources | ■ Public services |
| ■ Energy | ■ Recreation |
| ■ Greenhouse gas emissions | ■ Tribal cultural resources |
| ■ Hydrology and water quality | ■ Utilities and service systems |
| ■ Noise | ■ Wildfire |

Air Quality. As noted in Section 3.3, Air Quality, construction emissions would be caused by exhaust from vehicles and equipment (this includes ozone precursors [volatile organic compounds or reactive organic gases and oxides of nitrogen (NO_x)], carbon monoxide, and particulate matter [particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM₁₀) and particulate matter with an aerodynamic diameter equal to or less than 2.5 microns (PM_{2.5})] and fugitive dust/particulate matter from ground-disturbing activities and travel on unpaved surfaces and on paved roads. This alternative would reduce the amount of unpaved travel from 6 miles using the proposed access road to 2.5 miles using the Corn Springs exit, a reduction of about 50% per trip. Given the average of 468 construction employees and the thousands of truck deliveries over the 16 to 18 months of construction, a reduction of 50% of travel on unpaved roads would be substantial and would help to reduce the fugitive dust/particulate matter. Additionally, because of the reduced speed required on unpaved travel (15 miles

per hour in areas that have not been fenced), it would also reduce the amount of time the engines are running and producing exhaust, including ozone precursors, carbon monoxide, and particulate matter. While this reduction would be substantial over the length of construction, it would not reduce the impact to the level of less than significant. Overall, impacts under Access Road Option 1 would be reduced compared with those under the proposed access road. As with the proposed alignment, incorporation of APMs (APM AIR-1 through APM AIR-3) into the Access Road Option 1 alternative would reduce the impact; however, air quality impacts would remain significant and unavoidable, even with incorporation of the APMs into the Projects. Therefore, under Alternative 3, even with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in significant and unavoidable air quality impacts.

Cultural Resources. Access Road Option 1 would be located on existing BLM roads east of the proposed access road. Access Road Option 1 is associated with one known built environment resource, P-33-019514, commonly known as the Blythe-Eagle Mountain Transmission Line. This resource, and its associated access road, has been previously determined not eligible for National Register of Historic Places listing through consensus determination with the BLM and State Historic Preservation Officer. As such, this resource and its access road is not considered a significant historical resource under CEQA. Use of this existing access road will not result in direct or indirect impacts to known historical resources. Therefore, the direct and indirect impacts of this alternative would be the same as those of the proposed Projects, which is less than significant with incorporation of APMs (APM CUL-1 through APM CUL-9) into this alternative. As a result, under Alternative 3, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect cultural resources impacts.

Geology and Soils. Both the proposed access road and Access Road Option 1 are along existing BLM roads that may need some grading and improvements where improvements have not already occurred for other area projects. Access Road Option 1 crosses the same geologic and soils units as the proposed access road, with the exception that Access Road Option 1 does not cross geologic unit Qc, which is identified at the Project sites as having high paleontological sensitivity (Aspen 2020). Access Road Option 1 would be subject to the same impacts related to geologic and seismic hazards and paleontological resources as would the proposed access road. Because Access Road Option 1 is shorter than the proposed access road and would thus potentially require fewer road improvements, it could result in slightly less erosion. Because it would not cross a geologic unit identified as having high paleontological sensitivity, it would have slightly less potential to damage or destroy paleontological resources. Unlike the proposed access route, Access Road Option 1 would cross the south end of a mapped eolian geomorphic zone, Zone C, which has fluviially dominated low sand migration rate. However, as this would be along an existing road and no structures would be constructed along the access road to impede sand migration or water flow, Access Road Option 1 would have less-than-significant impacts to sand transport. The federal and state requirements and incorporation of APMs (APM GS-1 through APM GS-7) as applicable to the proposed access road would also be applicable to Alternative 3 and would ensure the impacts remain less than significant. Therefore, under Alternative 3, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant geology and soils impacts. Overall, Access Road Option 1 would have slightly fewer impacts as would the proposed alignment.

Hazards and Hazardous Materials. Access Road Option 1 is along existing BLM roads that may need some grading and improvements. Although no agricultural properties are located along Access Road Option 1, it would cross adjacent to/through the corner of an agricultural property (for approximately 1,000 feet), which introduces the potential for encountering pesticides and herbicides if ground disturbance for road

improvements were to occur in this area. Impacts due to hazards and hazardous materials from the alternative would be the same as for the proposed access road for all impacts, except for the possibility of encountering pesticide- and herbicide-contaminated soils. The impacts would be less than significant with incorporation of APM HAZ-5 for Alternative 3 (Identify Pesticide/Herbicide Contamination) in addition to the APMs (APM HAZ-1 through APM HAZ-4) already incorporated into Projects. Therefore, under Alternative 3, issuance of the Permits would result in less-than-significant hazards and hazardous materials impacts. As a result, under Alternative 3, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant hazards and hazardous materials impacts. Overall, Access Road Option 1 would have slightly greater impacts as would the proposed alignment.

APM HAZ-5 Identify Pesticide/Herbicide Contamination [For Alternative 3]. Prior to Project construction, a soil investigation shall be conducted and prepared by a qualified environmental consultant to evaluate the potential presence of residual pesticide or herbicide contaminants in the soils along the portion of Alternative 3: Access Road Option 1 that passes through the agricultural land within areas proposed for disturbance. Soil samples shall be collected and analyzed for pesticides and/or herbicides in proposed construction disturbance areas to verify the presence of pesticide or herbicide contamination. Any soils found to contain residual contaminants in exceedance of regulatory action levels that are determined by the consultant to represent a potential hazard to construction workers or future workers and visitors shall be handled and disposed of in accordance with applicable laws and regulations.

Land Use and Planning. The Access Road Option 1 alternative would use Corn Springs and BLM routes DC 950 and DC 511 to access the Project sites instead of the Desert Center exit. These two roads have existing ROWs. Because the land use designations along the roads and surrounding the roads would not change, this alternative would have no impacts to land use resources. The Applicants would need to coordinate with the existing ROW holders along the routes to ensure no conflicts arise because of shared use. If use of DC 511 requires improvements, the Applicants would need to coordinate with the private landholders whose property is crossed by approximately 1,000 feet of DC 511. Because BLM requires applicants to resolve conflicts prior to construction of their projects, the potential conflicts from use of Access Road Option 1 would result in similar environmental impacts as would the proposed alignment and would be less than significant. Therefore, under the Access Road Option 1 alternative, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant land use conflict impacts.

Noise. Alternative 3 would use the Corn Springs exit off I-10. This would avoid use of Ragsdale Road and roads within the Desert Center community, where the proposed access route crosses near existing residences. There are no existing residences along the Access Road Option 1 alternative. The impacts would be less than significant with incorporation of APM N-1 and APM N-3 into this alternative. However, APM N-2 would not be required because the route would avoid Ragsdale Road and there would be no residents within 500 feet of the access driveway. Because of this, impacts to noise would be reduced compared with the proposed access route. Therefore, under the Access Road Option 1 alternative, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant noise impacts.

Transportation. The transportation impacts associated with Alternative 3 are similar to the proposed access route. While the overall number of trips generated during construction and O&M would be identical, under Alternative 3 construction traffic would use only I-10 to access the sites, using the Corn

Springs exit. Because Alternative 3 would shift trips away from State Route (SR) 177 and to the Corn Springs exit, it would reduce impacts to the SR-177 exit but could result in vehicle queues at the I-10/Corn Springs Road exit that extend into the I-10 travel lanes, thus resulting in a potential increase to motorist hazards. Such queues would most likely occur during the morning peak hours of 7:00 a.m. to 9:00 a.m. The Corn Springs exit has been used since 2019 for the Palen Solar Project construction, so it has already been improved and is better equipped to handle the traffic volume associated with construction of solar projects. Because the Corn Springs exit can lead either north or south of I-10, clearly marked signs would be required for construction traffic to know the route to the Project sites. Overall, because Alternative 3 would reduce traffic at the SR-177 exit, it would result in slightly reduced impacts compared with the proposed route. The impacts that would occur during construction and O&M of Alternative 3 would also incorporate the same APMS (APM TRA-1 through APM TRA-4) as presented previously for the Projects to reduce impacts to a less-than-significant level, including appropriate signage. Therefore, under the Access Road Option 1 alternative, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant transportation impacts.

4.1.5 Alternative 4: Access Road Option 2

The Access Road Option 2 alternative was recommended by the Applicants to provide flexibility to access the sites and to potentially reduce impacts of the proposed access road (refer to Figure 4-1). It would share the Athos access road off the Desert Center exit of I-10. After exiting at Desert Center, this access route would head northeast on SR-177 for 2.2 miles, then turn east for 2.7 miles using existing agriculture roads. The route would turn south for 1 mile, then east for 0.85 miles to travel around a portion of the Athos Solar Project. It would turn due south for 0.25 miles, west for 0.1 miles, then south again for 0.3 miles. At this point the route would be south of existing BLM open route DC 379. The alternative would then head east for 2 miles; the first 0.35 miles would be south of DC 379, then it would jog north of DC 379 for the remainder of the route.

Because this road would have been improved for the Athos Solar Project, no improvements would be required. As noted in the Athos EIR Project Description, all new and improved access roads would be 24 feet wide with a 2-foot-wide shoulder on each side, for a total width of approximately 30 feet, including allowances for side slopes and surface runoff control. Construction of the access road segments on private land would include compacting subsurface soils and placing a 4-inch-thick layer of asphalt concrete over a 6-inch-thick layer of compacted aggregate base. Design of all access roads would be consistent with County Transportation Department requirements, such as County Ordinance 461 (Road Improvement Standards and Specifications) (County of Riverside 2019).

Access Road Option 2 would meet the Projects' objectives and would be technically feasible. Because the roads have existing ROWs for the approved Athos Solar Project, BLM would need to review any existing restrictions to determine whether Alternative 4 is regulatorily and legally feasible. This alternative would require coordination between the Applicants for the Projects and the Athos owner (Soft Bank Energy) for use of the private portions of this access road. Whether an agreement could be reached is unknown, so it may not be legally feasible for the private portions of the road.

Impact Analysis

Access Road Option 2 would be in the same area as the proposed access road but would not require additional improvements prior to use. It would require driving approximately 7.4 miles on unpaved roads, compared with approximately 6 miles of driving on unpaved roads for the proposed access route. It would use the same exit off I-10 as the proposed access road but would travel further along SR-177 before exiting

to smaller local roads. The distance from I-10 to the Project sites would be 3 miles longer using Access Road Option 2 compared with the proposed access road.

For the following resources, impacts associated with the access road are primarily associated with ground disturbance due to improvements or with workforce use. Because Access Road Option 2 would not require improvements but would change the overall distance traveled to reach the site, the impacts for the following resources would be slightly reduced or essentially the same with incorporation of the same APMs as would be in the Projects:

- Aesthetics
- Air quality
- Biological resources
- Energy
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology and water quality
- Population and housing
- Public services
- Recreation
- Tribal cultural resources
- Utilities and service systems
- Wildfire

Cultural Resources. Access Road Option 2 would be located on existing BLM roads north of the proposed access road, a portion of which would be shared by the Athos Solar Project, and would be approximately 2.4 miles longer than the proposed access route. Both the proposed access road and Access Road Option 2 are along existing BLM roads. The southeasternmost portion of Access Road Option 2 appears to be previously documented as Segment 3 of P-33-019419, known as the Mecca-Blythe Highway, a historic period two-track dirt automobile road. This resource was previously determined as not eligible for the National Register of Historic Places with State Historic Preservation Officer concurrence in 2019. Use of this existing road will not result in direct or indirect impacts to known historical resources. Therefore, with incorporation of APMs (APM CUL-1 through APM CUL-9) into this alternative, the direct and indirect impacts of this alternative would be the same as those of the proposed Projects, less than significant. Therefore, under the Access Road Option 2 alternative, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect cultural resources impacts.

Land Use and Planning. Access Road Option 2 would share the proposed Athos Solar Project access road off SR-177. This alternative would use existing agriculture roads to connect to the Project sites. The route would be parallel to BLM route DC 379 for approximately 1.5 miles before it enters the Project sites. The roads used in this alternative have existing ROWs for the approved Athos Solar Project and would have been improved for construction and O&M of that project. Because the land use designations along the roads and surrounding the roads would not change, this alternative would have no impacts to land use resources. This would be similar to the impacts of the proposed route. Therefore, under the Access Road Option 2 alternative, as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in no impacts.

Noise. Alternative 4 would use the Desert Center exit off I-10 and would then follow the Athos Solar Project access route. This would avoid Ragsdale Road and the Desert Center community. Off-site noise due to traffic was analyzed in the Athos EIR. The Athos EIR concluded that peak noise levels associated with passing trucks and commuting worker vehicles would be approximately 70 to 75 A-weighted decibels at 50 feet, and this noise would be concentrated along the roads that access the site, primarily SR-177. The Athos EIR notes that there are residences within 0.25 miles of the access routes so the construction would

need to be limited to certain daytime hours to be consistent with the Riverside County Noise Ordinance. This alternative would be similar to the impacts of the proposed access route but would shift the impacts away from Ragsdale Road. Because there would be residences near Access Road Option 2, with incorporation of the APMs (APM N-1 through APM N-3) into the Projects, the impacts would be the same as those of the proposed route: less than significant. Therefore, under the Access Road Option 2 alternative, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant noise impacts.

Transportation. The transportation impacts associated with Alternative 4 are considered slightly reduced compared to the proposed access route. While the overall number of trips generated during construction and O&M would be identical to the proposed Projects, Access Road Option 2 would use unpaved access roads further away from the junction of I-10 and SR-177. The proposed access road would require vehicles to quickly turn right after merging onto SR-177, while under Alternative 4 vehicles would travel longer on SR-177 before turning right. This would reduce the potential for motorist hazards from slowing project-related vehicles turning right after merging onto SR-177 (a two-lane road). While Alternative 4 would have a reduction in potential hazards from this shift in access road locations, the impacts that would occur during construction and O&M of Alternative 4 would require the incorporation of the same APMs (APM TRA-1 through APM TRA-4) into the Projects as presented previously for the proposed Projects to reduce impacts to a less-than-significant level. Therefore, under the Access Road Option 2 alternative, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant transportation impacts. Overall, because Alternative 4 would reduce traffic along Ragsdale Road, it would result in slightly reduced impacts compared with the proposed route.

4.1.6 Alternative 5: I-10 Viewshed Avoidance

As noted in Section 3.2, Aesthetics, the Projects would result in a visual change along I-10 that would be adverse and unavoidable in the immediate vicinity of the Victory Pass Project site. This is due to the size and scale of the Projects, the limited vegetation along I-10, and the slight elevation of I-10 compared with the Project sites. Because of the elevation of I-10, viewers driving along I-10 looking down at the Projects could see into the Projects themselves. In order to reduce the visual impact to less than significant, an alternative was designed that would set the Projects back from I-10 to an extent such that they would become less noticeable to the viewers. Based on a digital terrain analysis, under this alternative the fenceline would be moved back from I-10 approximately 0.5 miles and possibly up to 0.7 miles. Figure 4-2, I-10 Viewshed Avoidance Alternative, illustrates the Projects with an approximately 0.5-mile setback for the fenceline. To build the Projects and avoid visual impacts to the I-10, the Projects would need to use land that was avoided to meet the DRECP CMAs under the proposed Projects layout.

The I-10 Viewshed Avoidance alternative would meet the Projects' objectives and would be technically feasible. The Projects would require a land use plan amendment (LUPA) by BLM because they would not avoid the desert dry wash woodland. BLM has authorized renewable solar projects in the Desert Center region that required a plan amendment so this alternative is likely legally feasible. Given the potential biological impacts and inconsistency with the DRECP LUPA, it would potentially require an environmental impact statement to comply with NEPA if the alternative were to result in significant effects.

Impact Analysis

The I-10 Viewshed Avoidance alternative would be in the same general area as the Project sites and would retain the same access road and gen-tie line. It would retain the same megawatts as the Projects so would use a similar amount of construction workforce and water, as well as the same construction fleet.

For the following resources, impacts are primarily associated with ground disturbance or with workforce use. Because Alternative 5 would disturb essentially the same amount of undeveloped land, in the same vicinity as the Projects, and use the same access roads to reach the projects, the following impacts would be essentially the same with incorporation of the same APMs as would be in the Projects:

- Air quality
- Energy
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology and water quality
- Noise
- Population and housing
- Public services
- Recreation
- Transportation
- Tribal cultural resources
- Utilities and service systems
- Wildfire

Aesthetics. The I-10 Viewshed Avoidance alternative would move the Projects' fenceline back 0.5-mile from I-10 to reduce the immediately adjacent views from the freeway. As experienced from I-10 under this alternative, the 0.5-mile distant solar arrays would be visually noticeable within the predominantly natural-appearing, rural desert landscape. However, because of the setback, more vegetation would screen the facilities (as compared to the proposed Projects) and the distance would reduce the views into the Projects themselves. While portions of the low-profile solar arrays would be visible as a linear, horizontal, medium- to dark-gray areal mass on the valley floor, the Projects would be partially screened in views from I-10 by intervening vegetation, existing wood-pole utility lines, and the steel-pole gen-tie lines of the Desert Sunlight and Desert Harvest solar projects farther to the northwest. In the context of the existing landscape, the low, rectangular and tall, thin forms of the solar and gen-tie facilities within the foreground/middleground of I-10 would display moderate visual contrast, primarily arising from the at-grade and edge-on view of the horizontal forms and dark color of the arrays and the vertical forms of the closer gen-tie poles. As a result, the Projects would constitute a foreground/middleground, visually subordinate to co-dominant feature in the landscape. The Projects would attract the attention of the casual observer, and view blockage of higher value landscape features (e.g., valley floor and vegetation) would be low to moderate. Combining the equally weighted moderate visual contrast, subordinate to co-dominant project dominance, and low to moderate view blockage results in a moderate rating for overall visual change, which in the context of the existing landscape's moderate to high visual sensitivity, results in a less-than-significant impact. This would reduce the unavoidable visual impact associated with the proposed Victory Pass Solar Project to the I-10 viewshed. As with the proposed Projects, incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design) into the Projects are recommended as they would reduce the visual contrast associated with visually discordant structural features, dark colors, glare (from large structures, buildings, and transmission line conductors) and unharmonious lines anticipated under this alternative to less than significant. Therefore, under Alternative 5, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant aesthetics impacts.

Biological Resources. The I-10 Viewshed Avoidance alternative would require use of land avoided under the proposed Projects to have sufficient acreage to meet the objectives. The proposed layout for the Projects avoided desert dry wash woodland to meet the DRECP CMAs. Alternative 5 would impact approximately 230 acres of desert dry wash woodland on the western side of the Victory Pass site and 15 acres of desert dry wash woodland on the eastern side of the Victory Pass site. Desert dry wash woodland

is a sensitive vegetation community described in Section 3.4, Biological Resources. Impacts to this community would need to be mitigated at a 5:1 ratio, which would require up to 1,225 acres of desert dry wash woodland compensatory mitigation. Assuming this habitat is available, the compensation would reduce the biological impact to less than significant.

The bulk of the live desert tortoise and desert tortoise sign, including tracks and burrows, were within the portion of the desert dry wash woodland on the western side of the Victory Pass site. Because the I-10 Viewshed Avoidance alternative is roughly the same acreage as the proposed Victory Pass Project, the loss of desert tortoise habitat would be the same; however, because desert dry wash woodland provides greater food and cover, the loss would be of higher quality habitat when compared with the proposed Projects. Compensatory mitigation would reduce this impact to less than significant.

Overall, the I-10 Viewshed Avoidance alternative would have substantially greater impacts to biological resources compared with the proposed Projects but they would remain less than significant with implementation of mitigation (MM BIO-1 through BIO-13) and incorporation of relevant APMs (APM BIO-1 through APM BIO-25). Therefore, although greater, issuance of the Permits under Alternative 5 would result in less-than-significant biological resources impacts with mitigation and incorporation of relevant APMs.

Cultural Resources. The I-10 Viewshed Avoidance alternative would require use of land avoided under the proposed Projects and would not use a portion of the land proposed for the Victory Pass Project. This entire area was surveyed by PaleoWest because it was part of the original Victory Pass boundary. All resources found within the original Victory Pass boundary (BLM ROW Grant Application Area) were determined ineligible on the National Register of Historic Places or California Register of Historical Resources as described in detail in Section 3.5.2, Cultural Resources. As such, the Alternative would impact different resources than the proposed Victory Pass Project, but overall, with incorporation of APMs (APM CUL-1 through APM CUL-9) into this alternative, the impacts would be similar and would remain less than significant. Therefore, under Alternative 5, with incorporation of APMs as part of CDFW's broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically would result in less-than-significant direct and indirect cultural resources impacts.

Land Use and Planning. As described in Section 3.11, Land Use and Planning, the Project sites are located entirely on BLM land managed under the California Desert Conservation Area Plan as amended by the DRECP LUPA and the Western Solar Plan. Alternative 5 would remain within a solar energy zone (SEZ) and DFA but would not meet the CMAs to avoid the desert dry wash woodland. Therefore, the alternative would conflict with the BLM California Desert Conservation Area Plan. CDFW has determined for purposes of CEQA that the DRECP is a "land use plan" relevant to its lead agency review of the Projects. When a project conflicts with a BLM management plan, a LUPA is required. Under this process, BLM would review the alternative and determine whether to approve the alternative. It is possible that BLM would approve a solar project with a LUPA, as it has done for other solar development in the Desert Center area. If the BLM approved the I-10 Viewshed Avoidance alternative with a LUPA, the alternative would no longer conflict with a land use plan.

BLM's biological objectives for the DRECP (BLM 2016) include to "maintain hydrogeomorphic processes that create habitat diversity, channel bank habitat and regeneration sites (through sediment transport, incision, and sand/silt deposition) for plants and wildlife, including single-thread channels, compound channels, and distributary networks located on alluvial fans" (DRECP LUPA Section II.4.1.1 Biological Resources Objective 2.2). BLM's visual resource management objective for a Class IV area includes "to allow for management activities and uses requiring major modifications to the natural landscape. The level of change to the characteristic landscape can be high. Management activities and uses may dominate the view and be a major focus of viewer attention" (DRECP LUPA Section II.4.1.12 Visual Resources Management). Given BLM's biological objectives for the DRECP, the BLM may determine it would not

approve a LUPA for this alternative, such that the alternative would result in a significant and unmitigable conflict with an existing land use plan . This potential conflict with an established land use plan under CEQA would be considered significant. This impact would be greater than that of the Projects as proposed. Furthermore, CDFW’s objectives are to protect and conserve fish and wildlife resources and to minimize environmental impacts and works together with federal agencies to achieve these objectives. Therefore, as part of CDFW’s broader proposed approval of the whole of the action under CEQA, issuance of the Permits specifically under Alternative 5 would result in greater land use plan conflicts.

4.2 Comparison of Alternatives

This comparison is based on the assessment of environmental impacts of the proposed Projects and each alternative, as identified in Chapter 3, Environmental Impacts of Proposed Project, and in Section 4.1.

CEQA requires the following for alternatives analysis and comparison (14 CCR 15126.6[d]):

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative among the other alternatives (14 CCR 15126.6[e][2]).

A summary of the significant impacts that cannot be mitigated is described in Section 4.2.1. Highlighting the proposed Projects’ significant and unavoidable impacts identifies the impact of concern when considering whether there is an alternative that would be capable of reducing these effects to a less-than-significant level, and whether an alternative would create new significant impacts. This simplifies identification of the environmentally superior alternative while considering all issue areas equally.

The environmental impacts of the proposed Projects were compared to those of each alternative to determine the environmentally superior alternative. The environmentally superior alternative was then compared to the No Project Alternative.

4.2.1 Significant and Unavoidable Impacts

Chapter 3 of this EIR describes the potential environmental impacts associated with the issuance of the Permits for the proposed Projects and describes the incorporation of APMs that are standard as part of the project description, if feasible. Impacts in the following areas would be significant and unavoidable with construction and O&M of the proposed Projects, even with the incorporation of feasible measures that attempt to reduce impacts.

■ Aesthetics:

- Impact A-3. The Projects could substantially degrade the existing visual character or quality of the site and its surroundings. The resulting visual change would be adverse and unavoidable in the immediate vicinity of Victory Pass Project site eastbound on I-10. Incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design) would reduce the visual contrast associated with visually discordant structural features and contrasting character of the Projects’ buildings, structures, and linear elements; however, these measures would not be sufficient to reduce the impact associated

with solar arrays and other perimeter elements as experienced from KOP 2 to a level that would be less than significant. No mitigation would be deemed feasible in addition to APMs incorporated to further reduce visual impacts due to the Victory Pass project along the I-10. Therefore, the resulting visual change would remain significant and unavoidable.

■ **Air Quality:**

- Impact AQ-2. During construction, the Projects could result in a cumulatively considerable but temporary net increase of any criteria pollutant for which the Projects’ region is non-attainment under an applicable federal or state ambient air quality standard. The Projects are in an area designated as non-attainment for state-level ozone and PM₁₀ standards. Emissions during the construction phase would include criteria air pollutants that could exceed quantitative thresholds for ozone precursors even with incorporation of APMs into the Projects and would represent a cumulatively considerable net increase of nonattainment pollutant. Emissions exceeding the quantitative thresholds could contribute to existing or projected violations of the ambient air quality standards. With incorporation of dust control practices (APM AIR-1) and for off-road equipment engine standards (APM AIR-2) the maximum daily emissions of NO_x, PM₁₀, and PM_{2.5} during construction could still exceed the SCAQMD significance thresholds. In addition, the Applicants could use an adaptive “construction activity management plan” as described in APM AIR-3, which could prevent construction from causing concurrent or overlapping activities that cause the sum of emissions to exceed the SCAQMD significance thresholds. However, because the Applicants may find it infeasible to adjust the simultaneous construction activities at the two sites, incorporation of this APM into the Projects may not be sufficient to reduce the construction-related emissions to levels below the SCAQMD thresholds. Therefore, no mitigation is deemed feasible in addition to APMs incorporated into the Projects to further reduce emissions below currently evaluated. As a result, this impact would remain significant and unavoidable.

■ **Tribal Cultural Resources:**

- Impact TCR-1. Both Project sites are part of a broader interconnected landscape of traditional Native American use that is significant from a tribal cultural perspective. The Cahuilla Traditional Use Area Tribal Cultural Landscape (TCL), which includes the Project sites, is a Tribal Cultural Resource (TCR), as provided by PRC Section 21074(b) and by extension, in the Projects’ area of potential direct effects, 7 prehistoric archaeological sites and 11 isolated prehistoric artifacts that are individually eligible for the California Register of Historical Resources under Criterion 1 for their association with significant tribal events on the landscape and Criterion 4 for the value of archaeological information to tribal concerns; these sites and artifacts are also considered TCRs. The Projects’ ground disturbing activities that would cause adverse changes to the TCL would have the same effect on the TCR and individual TCRs, including those known within the Projects’ areas of potential effects (APEs) and those that may be discovered during construction, O&M, and future decommissioning activities. Furthermore, the TCL extends beyond the direct effects APEs and into the indirect effects APEs, and several resources associated with this TCL (such as the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D [CA-RIV-053T] to the south, and the Palen Dunes/Palen Lake TCP to the east) also intersect the indirect effects APE. CDFW has determined that development of the Projects would incrementally increase impacts to the TCL, TCR, and individual TCRs within the indirect effects APEs and cause an adverse change in the ability of these resources to convey their tribal significance in a small but measurable way. Therefore, in CDFW’s lead agency opinion, while APM TCR-1 through APM TCR-4 incorporated into the Projects and PFMM TCR-1 through PFMM TCR-4, if implemented, are expected to avoid or lessen the Projects’ direct and indirect effects on the TCL and individual TCRs to some extent during all phases of the Projects, those effects are considered at this time to be significant and unavoidable under CEQA.

The Projects would result in a cumulatively considerable contribution to a significant cumulative impact to aesthetics; to air quality; to indirect impacts to the Prehistoric Trails Network Cultural Landscape/Historic District under cultural resources; and to direct and indirect impacts to TCRs due to indirect impacts to the Cahuilla Traditional Use Area TCL, TCR, and related TCRs, and direct impacts due to altering the physical properties of the resource through displacement of artifact-bearing deposits.

4.2.2 Comparison of Alternatives Summary

Table 4-1 compares the potential impacts of the proposed Projects to the alternatives for key resources.

Because several of the alternatives would not reduce the significant and unmitigable impacts to a less-than-significant level, Table 4-1 compares the alternatives based on differences in the level of similar impacts resulting from ground disturbance, as well as the size and duration of construction activities, O&M, and future decommissioning. Note that the resource topics with the same or similar potential impacts across all alternatives when compared to the proposed Projects are not listed in Table 4-1.

Table 4-1. Comparison of Alternatives

	No Project ¹	Alternative 1: Gen-Tie Alignment 1	Alternative 2: Gen-Tie Alignment 2	Alternative 3: Access Road Option 1	Alternative 4: Access Road Option 2 ²	Alternative 5: I-10 Viewshed Avoidance
Environmental Resource						
Aesthetics (Projects result in a significant and unmitigable [S/U] impact from I-10)	Eliminates S/U impact	Slightly greater	Similar	Similar	Similar	Eliminates S/U impact
Air Quality (S/U impact due to NO _x emissions)	Eliminates S/U impact	Similar	Similar	Substantially reduces the impact but not to LTS	Similar	Similar
Biological Resources	Fewer	Slightly greater	Slightly greater	Similar	Similar	Substantially greater
Geology and Soils	Fewer	Similar	Similar	Slightly fewer	Similar	Similar
Greenhouse Gas Emissions	Fewer	Similar	Slightly greater	Similar	Similar	Similar
Hazards and Hazardous Materials	Fewer	Similar	Similar	Slightly greater	Similar	Similar
Land Use and Planning	Fewer	Similar	Similar	Similar	Similar	Greater and potentially introduces a new S/U impact
Noise	Fewer	Similar	Similar	Slightly fewer	Similar	Similar
Transportation	Fewer	Similar	Similar	Slightly fewer	Slightly fewer	Similar

Notes: I = Interstate; NO_x = oxides of nitrogen; LTS = less than significant.

¹ The No Project Alternative would have no impacts, and the terms “fewer” and “greater” are used for ease of reference only. “Fewer” is used to indicate that the alternative, such as the No Project Alternative, would create reduced or fewer impacts than the Projects would create. The term “greater” indicates that the alternative would result in a greater level of impact than would the Projects.

² As noted in the text, use of Access Road Option 2 would not require additional improvements to the road because it would have been improved for construction of the Athos Project. Therefore, while the impacts to the Projects from use of one road versus another would be similar, use of Access Road Option 2 would result in slightly less impacts to all resources.

4.2.3 Comparison of the Proposed Projects and No Project Alternative

The No Project Alternative would avoid impacts from the construction, O&M, and future decommissioning of the Projects. This alternative would result in no impacts to aesthetics, agriculture, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, and transportation, tribal cultural resources, utilities and service systems, and wildfire. It would not realize the beneficial impacts of the Projects relating to long-term air quality, energy production, and greenhouse gas emissions with the use of renewable energy generation. Additionally, it is very likely that if the No Project Alternative were selected, another solar project would be proposed in the same location. The No Project Alternative would fail to meet all the Applicants' objectives for the Projects and most of CDFW's additional project objectives.

4.2.4 Environmentally Superior Alternative

Section 15126.6 of the CEQA Guidelines requires an EIR identify an environmentally superior alternative. If the No Project Alternative is the environmentally superior alternative, then the EIR must identify which of the other alternatives is environmentally superior.

Table 4-1 summarizes the comparison of impacts between the alternatives to the proposed Projects to help determine the environmentally superior alternative. As described in Section 4.1 and presented in the comparative summary in Table 4-1, the environmentally superior alternative for the proposed Projects would be the No Project Alternative. No substantially adverse and long-term impacts would occur to the environment under the no project alternative. The no project alternative would also avoid the impacts of the Projects analyzed in Chapter 3. However, because there is an existing second-in-line ROW request for the site, it is possible that if the Projects were not approved, another solar project would be constructed that would have impacts similar to the Projects.

The I-10 Viewshed Avoidance alternative would reduce the significant and unmitigable visual impact at the nearest points of the Project sites to the I-10 corridor to less than significant. However, it would substantially increase the impacts to biological resources when compared with the Projects, which were designed to avoid the most sensitive natural habitat. It would also result in a potentially significant and unmitigable impact to land use because it would not comply with the BLM land use plan for the California Desert Conservation Area and would require BLM to approve a LUPA for such a project. CDFW has determined for purposes of CEQA that the DRECP is a land use plan relevant to its lead agency review of the Projects. While BLM has approved amendments for solar projects in the past, this one would not meet BLM's biological objectives for the region, so BLM may not approve an amendment in this case, which would potentially result in a significant land use impact and conflict with an existing land use plan under CEQA. As such, the I-10 Viewshed Avoidance alternative is not preferred over the Projects.

In accordance with Section 15126.6 of the CEQA Guidelines, Alternative 3, Access Road Option 1, would be the environmentally superior alternative since it would result in fewer impacts than the proposed access road due to a reduction of noise impacts and reduced transportation impacts. While both access road options would have fewer impacts than the proposed access route, Alternative 3 would require less than 50% as much driving on unpaved roads per trip over the life of the Projects. Given the average construction workforce of 468 persons and the thousands of truck deliveries over the 16 to 18 months of construction, Alternative 3 would substantially reduce the PM₁₀ emissions associated with travel on

unpaved roads and the length of driving time, resulting in a reduction in NO_x emissions. Therefore, Alternative 3 is the environmentally preferred alternative.

4.3 Alternatives Considered and Eliminated from Further Analysis

Several alternatives were considered but eliminated from further analysis.

4.3.1 Air Quality Emissions Alternative

As noted in Section 3.3, during construction, the Projects, if built together concurrently, would result in emissions that could exceed quantitative thresholds for ozone precursors even with incorporation of APMs into this alternative and would represent a cumulatively considerable net increase of nonattainment pollutant. The significant and unavoidable impact of the ozone precursor emissions (NO_x) even after incorporation of APMs into the Projects would be due to maximum daily rates of emissions from off-road equipment (on site) and on-road motor vehicle emissions (primarily off site) that could occur when construction activities at the two sites occur simultaneously.

This alternative could expand upon the adaptive “construction activity management plan” as described in APM AIR-3 and other APMs identified in Section 3.3 to control on-road (off-site) sources. The APMs identified for the Projects would substantially reduce NO_x from off-road equipment (on site). However, no additional feasible mitigation beyond the APMs incorporated into the Projects is identified for the NO_x from on-road sources like heavy-duty trucks to deliver equipment, concrete, water, and other materials, and light-duty vehicles carrying crews and medium-duty deliveries. This is because, while it is feasible to dictate the type of engines required for the on-site construction work, it is much more challenging, if not infeasible, to dictate the type of engines required for the fleet of hauling, vendor, and worker vehicles. Any large-scale construction project includes delivery of large amounts of materials. Given that there are no nearby railroads, the only delivery option for the Projects is by large flat-bed trucks. The trucks would potentially come from a wide variety of contractors, haulers, and/or vendors and it would be infeasible for the Projects to control the individual engines in this mix of vehicles. Even if it were possible to require that the delivery trucks’ engines meet certain exhaust performance standards, it would be infeasible to monitor this requirement. To do so would require that the Projects have some type of truck registry. However, it is unclear whether any trucks would decide to comply with this registry given that many deliveries to the Projects would be a one-time trip. Truck registries generally work with a system where there is a long-term relationship between the owners and operators of the trucks and site that generates the truck trips. Given that all carriers for construction projects would be infrequent over a relatively short period of time during construction, and that they would only need temporary access to the Project sites, a Projects-scale registry would not be effective at controlling the emissions of the individual engines. As such, this type of alternative at the Projects’ scale would not be feasible.

To oversee these types of sources, the California Air Resources Board is implementing the Advanced Clean Trucks regulation that was approved on June 25, 2020; this new regulation includes two main components, a manufacturers Zero Emission Vehicle sales requirement and a one-time reporting requirement for large entities and fleets. Increased use of clean trucks will further reduce emissions overall in California at a statewide scale but will be implemented slowly over multiple years. Because implementing a Projects-scale vehicle registry would be infeasible and because a statewide program exists to oversee on-road motor vehicle emissions, this alternative was not considered further.

4.3.2 Private Land Alternative

Several scoping comments recommended use of private land for solar development instead of the proposed sites. The Applicants investigated the potential for use of private lands in and around the Desert Center area for a solar project and did not pursue private land for their solar projects because the private lands would be located closer to residences and would require additional gen-tie interconnections due to the discontinuous nature of the available private parcels. Multiple gen-tie lines would increase impacts associated with their construction and would introduce more widespread visual and avian collision impacts.

Furthermore, using nearby private lands as an alternative would not reduce the significant and unavoidable impacts of the proposed Projects listed in Section 4.2.1. A project built on nearby private land would not reduce the significant air emissions because the construction time frame would remain the same as for the current projects. Additionally, the Projects would be within the same vicinity and likely nearer to SR-177 and residences, so they would not reduce the significant visual impacts from certain viewpoints. Similarly, a project in the Desert Center area would remain within the Prehistoric Trails Network Cultural Landscape/Historic District so would not reduce the contribution of the Projects to the significant cumulative indirect impacts to cultural resources.

One scoping comment recommended use of brownfields or unused agriculture land as an alternative. There are limited brownfields or unused agriculture lands available for solar projects. The primary constraint is the ability to interconnect into the state's electricity grid. The scoping comment identified the Westlands Solar Park as an appropriate area for utility-scale solar. The Westlands Solar Park began construction of the first phase of solar development in 2020 and this area will likely continue to develop additional solar projects as noted in the scoping comment (Misbrenner 2020). While this region could develop up to 2,000 megawatts (MW) of solar energy over a 12-year time horizon for a total of approximately 5 million megawatt hours (5,000 gigawatt hours) per year (WWD 2017), it would not be capable of developing sufficient renewable energy to meet all the state's renewable energy needs. The California 2020 Integrated Energy Policy Report Update estimated the current generation from solar PV to be 15,800 gigawatt hours and projected it to increase to between 34,900 to 47,300 gigawatt hours by 2030 (CEC 2021). This projected demand is more than Westlands could produce independently. Additionally, while development at the Westlands Solar Park is ongoing, a solar project at Westlands Solar Project is not feasible for the Applicants because they cannot acquire, control, or otherwise have access to the alternative site, and they would not meet the interconnection requirements for the proposed Projects that must interconnect to Red Bluff Substation. Therefore, this alternative was not considered further.

4.3.3 Other Federal Land Alternative

In general, other federally administered land satisfies the need to provide contiguous parcels of land of sufficient size, and near transmission infrastructure, better than does a private land alternative. However, federal land is also constrained by technical factors and resource and use protections that limit the number and size of sites that can be considered for solar development. For example, much of the BLM-administered land in the California desert is precluded from development by special designations such as wilderness areas and Areas of Critical Environmental Concern. Many potentially suitable areas outside these designated areas are precluded because they are in use, often by other solar developers. The changes to land use allocations under the DRECP further restrict the availability of BLM-administered land on which solar development can occur. In the desert, the bulk of federal land not administered by the BLM is managed by the National Parks, which does not allow utility-scale solar projects, or the military, which allows renewable development on portions of its land, but only where it would not interfere with its stated mission.

Since the late 2000s, renewable energy developers have filed numerous ROW applications for use of BLM-administered land in California. Many, if not most, were eventually withdrawn either before or after beginning the NEPA review, because of concerns regarding impacts to resources or a lack of adequate transmission.

As a means of addressing the project-by-project permitting that started in 2009, BLM and other state and federal agencies began two landscape-level considerations about where projects should be located. Under both the Western Solar Plan and the DRECP, the agencies determined that the Projects' sites are suitable for solar development. The Western Solar Plan identified specific locations that, at a plan level, appear well-suited for utility-scale production of solar energy where BLM would prioritize development (i.e., SEZs), as well as categories of lands to be excluded from such development. The area of the Projects was designated as the Riverside East SEZ, signifying that it and the surrounding area are preferred for large-scale solar energy development based on environmental and technical suitability for such development. Similarly, the DRECP identified the Projects' sites as DFAs, again signaling that the area was preferred for large-scale renewable energy development.

Although both the Western Solar Plan and the DRECP include a process for proposing renewable energy projects on "variance lands" and "general lands" outside of designated SEZs and DFAs, the objective of these landscape-level planning efforts was to promote development in certain designated areas. Through the Western Solar Plan, BLM already considered whether other locations on public lands might be suitable for solar development and, after years of review, determined that the Riverside East SEZ, encompassing the Projects, contained areas most suitable for solar development. Similarly, the DRECP considered technical suitability and resource impacts in implementing new land use allocations for resource protection and for the focus of renewable energy development. The DRECP recognized the Projects' area as suitable for solar development by designating it as a DFA.

As a result of the technical, procedural, and environmental constraints discussed above, timely development of the Projects on other lands administered by BLM or other federal agencies would not be feasible and is likely to be inconsistent with the basic policy objectives for management of areas outside of the proposed DFAs.

4.3.4 Full Build Alternative

Most often, when an agency is considering a utility solar project, the agency reviews the location proposed for the project, identifies where the most substantial impact would be located, and develops a reduced footprint alternative(s) to avoid these locations. To meet the DRECP CMAs, this process, which resulted in the removal of approximately 1,000 acres from the original ROWs, was completed prior to defining the proposed Projects analyzed in Chapter 3 of this EIR.

The Arica Solar LLC and Victory Pass I LLC original ROW requests were for 2,000 acres for Arica and 1,800 acres for Victory Pass. The larger-sized projects would have allowed for additional flexibility when siting the 265 MW and 200 MW Projects within the project sites or could have accommodated more megawatts. While the number of megawatts proposed for construction at the Project sites has not changed with the smaller footprint, the megawatt hours are fewer than originally proposed. This is because the proximity of the solar panels under the smaller footprint increases shading and other technical constraints compared with a more widespread layout. Increased shading and proximity results in fewer total megawatt hours produced.

The full build alternative would have been technically feasible and met all objectives but would have increased the following impacts:

- Increased impacts to sand transport and sensitive plant species, including Harwood's Eriastrum, which would have been within the full build of the Arica Project
- Increased impacts to desert dry wash woodland, including many hundreds of acres within the Victory Pass Project full build footprint
- An additional 1,000 acres of desert tortoise habitat loss, including additional wildlife connectivity habitat
- Increased impacts to paleontological resources because of development in some sensitive areas along the sand transport corridors
- Impacts to land use plans because the full build alternatives would not have met the DRECP CMAs and would have required a LUPA
- Impacts to air quality and visual resources would have increased because of the larger amount of ground disturbance and the larger industrial footprint of the project.

Arica Solar LLC and Victory Pass I LLC worked with BLM to revise the full build alternative to the proposed Projects' boundaries and reduce impacts to sensitive species. Because the full build alternative would not reduce the significant impacts of the Projects, it was not retained for consideration. The proposed Projects are reduced project alternatives compared to the Applicants' originally intended Projects and this reduction in the Projects' size came about due to early consultation with resource agencies to reduce environmental impacts in an area that had already been identified as preferable for solar development.

4.3.5 Alternative Renewable Energy Technologies

Alternative renewable energy technologies, such as wind, geothermal, biomass, tidal and wave power technologies, have been eliminated from consideration, because they are either not within the Applicants' area of expertise or are not technically or economically feasible to implement at this location.

The following alternative solar technologies have been screened and are eliminated from detailed analysis since they are considered infeasible and would have similar or greater impacts to the environment.

Solar Power Tower Technology. Solar power tower technology is a concentrating solar power (CSP) technology that uses a flat mirror "heliostat" system that tracks the sun and focuses solar energy on a central receiver at the top of a high tower. The focused energy is used to heat a transfer fluid (to 800°F to 1,000°F) to produce steam and run a center power generator. The transfer fluid is super-heated before being pumped to heat exchangers that transfer the heat to boil water and run a conventional steam turbine to produce electricity. Although concentrated, solar power systems can store heated fluids to deliver electricity even when the sun is not shining. In areas of high solar insolation potential (i.e., desert environments), the land required to develop a CSP power tower facility is comparable to that required for a PV project.

This alternative was eliminated from consideration, because no substantial reduction in impacts would occur under this alternative technology and visual impact would be greater due to the height of the towers. In addition, due to the extent of the facility and the height of the power towers as well as a greater potential for glare, impacts to the Desert Center Airport would be greater under this alternative. It has also been suggested that due to a phenomenon known as "solar flux," power tower projects pose a greater risk to avian species by creating an invisible zone where the concentrated solar power can singe feathers and interfere with flight.

Solar Parabolic Trough Technology. Parabolic trough technology is another CSP technology that uses large, U-shaped (parabolic) reflectors (focusing mirrors) that have fluid-filled pipes running along their center, or focal point. The mirrored reflectors are tilted toward the sun and focus sunlight on the pipes to heat the heat transfer fluid inside, similar to the solar power tower technology. The hot fluid is then used to boil water, which makes steam to run conventional steam turbines and generators. Solar trough fields have stringent grading requirements, as parabolic troughs must be almost level along their troughs, and grades perpendicular to the troughs are generally benched to 2% or less. Therefore, most of the solar facility site would need to be graded and scraped free of vegetation. Use of solar trough technology would also likely require engineered drainage channels along the facility boundary to intercept any modeled off-site surface flows and convey them around and through the site for discharge.

Similar to solar power tower and other CSP technologies, parabolic trough technology has been eliminated from consideration because it would have the potential for more severe impacts than the proposed solar PV technology. These impacts would include more dramatic degradation of visual resources (due to use of mirrors and power towers), more extensive ground disturbance due to extensive grading, increased industrial construction for the turbines and power blocks, and use of potentially hazardous heat transfer fluids.

Distributed Solar Technology. There is no single accepted definition of distributed solar technology. The 2011 Integrated Energy Policy Report defines distributed generation resources as “(1) fuels and technologies accepted as renewable for purposes of the Renewables Portfolio Standard; (2) sized up to 20 MW; and (3) located within the low-voltage distribution grid or supplying power directly to a consumer.” Distributed solar facilities vary in size from kilowatts to tens of megawatts but do not require transmission to get to the areas in which the generation is used.

A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity. The PV panels could be installed on residential, commercial, or industrial building rooftops or in other disturbed areas like parking lots or disturbed areas adjacent to existing structures such as substations. To create a viable alternative to the proposed Projects, there would have to be sufficient newly installed panels to generate up to 465 MW of capacity, which would be similar in size to the proposed Projects.

Although there is potential to achieve up to 465 MW of distributed solar energy, the limited number of existing facilities makes it unlikely to be feasible or present environmental benefits. Although the type of panel used for the proposed Projects is not yet known, rooftop systems typically consist of less efficient fixed-tilt systems that may not be oriented optimally towards the sun, meaning that developers would need to obtain more surface area if constructed on a rooftop instead of on the ground. The transaction costs of obtaining multiple rooftops, the complexity of mobilizing construction crews across multiple projects including the transporting and deployment of construction materials in a less efficient manner, and the need to develop the deals to secure the same amount of PV-produced electricity can make this type of alternative infeasible. In addition, even rooftops that might provide the necessary surface area would require significant retrofitting to support generation facilities of meaningful size.

To the extent that distributed generation projects might have fewer impacts on certain resources because they do not include substations and transmission facilities, this illustrates that distributed generation projects cannot meet one of the fundamental objectives of a utility-scale solar project: to provide renewable energy to utility off-takers and their customers. Rooftop systems that are not connected to the utility side of the electric grid generate power only for on-site consumption. Distributed generation systems will not offset the impacts of counterpart fossil fuel energy sources managed by utilities or help achieve Renewable Portfolio Standard goals.

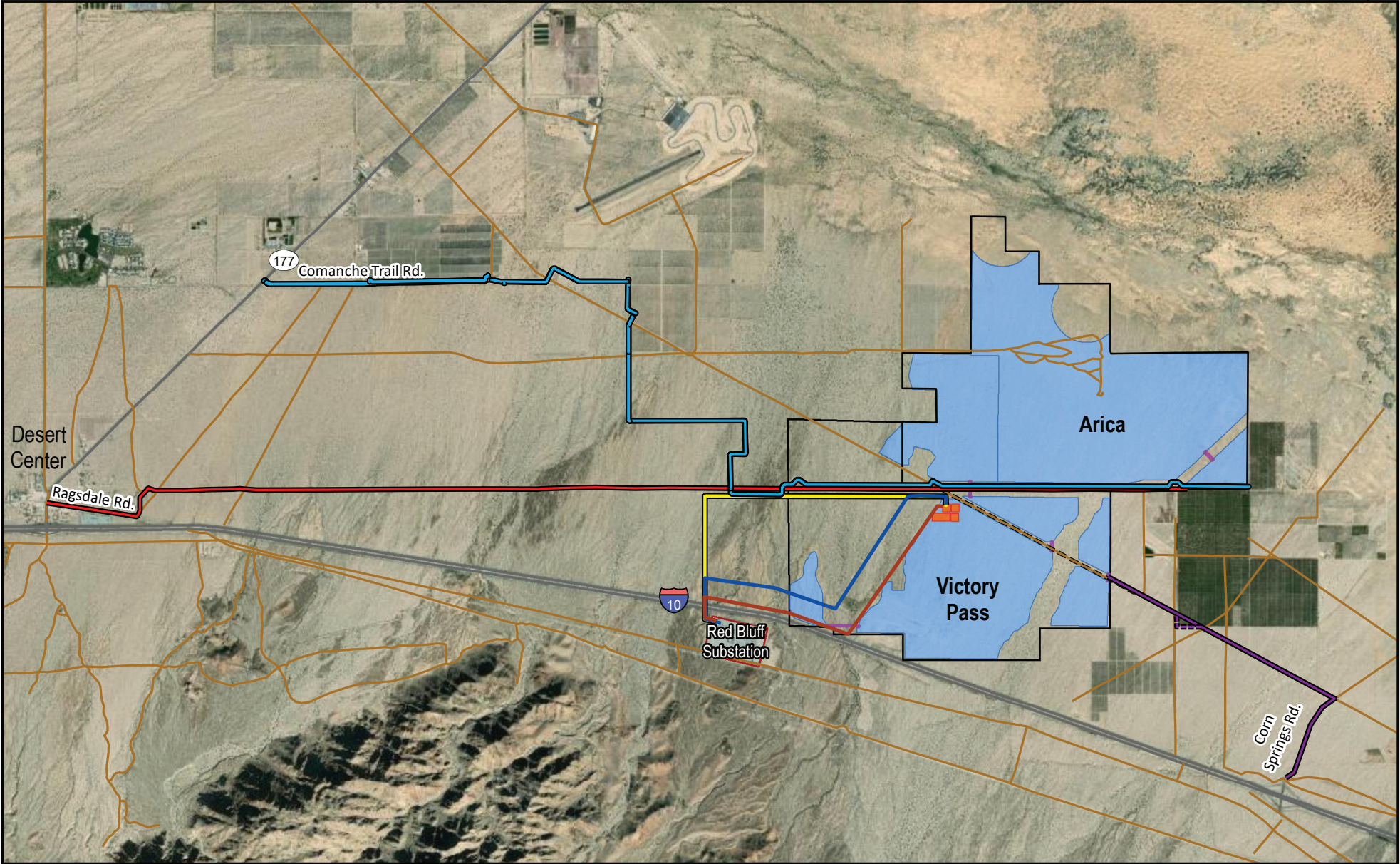
As renewable energy becomes a larger portion of California’s energy mix, the need for battery or other storage for reliability becomes greater. For this reason, the California legislature has authorized energy agencies to establish energy storage procurement targets. While it is technically feasible to include storage in distributed solar technologies, it is still very expensive at the rooftop scale and the bulk of the rooftop projects do not include storage. As such, a distributed solar alternative would not provide the same reliability benefits that that Projects would, with up to 200 MW of storage per Project.

The challenges associated with the implementation of a distributed solar technology include widely varying codes, standards, and fees; environmental requirements and permitting concerns; interconnection of distributed generation; inefficiencies and lack of storage; and integration of distributed generation. As a result, this technology was eliminated from detailed analysis as an alternative to the proposed Projects.

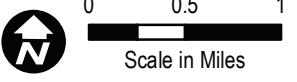
4.3.6 Conservation and Demand-Side Management

This alternative is not technically feasible as a replacement for the proposed Projects, because California utilities are required to achieve aggressive energy efficiency goals. Affecting consumer choice to the extent that would be necessary for a conservation and demand-side management solution would be beyond CDFW, BLM, or the Applicants’ control. Even if additional energy efficiency beyond that occurring in the baseline condition may be technically possible, it is speculative to assume that energy efficiency alone would achieve the necessary greenhouse gas reduction goals. With population growth and increasing demand for energy, conservation and demand management alone is not sufficient to address all of California’s energy needs. Furthermore, conservation and demand-side management would not by themselves provide the renewable energy required to meet California’s renewable energy goals, a stated Project objective. Therefore, conservation and demand-side management has been eliminated from detailed analysis because it is considered remote or speculative and would not meet the stated Project objectives.

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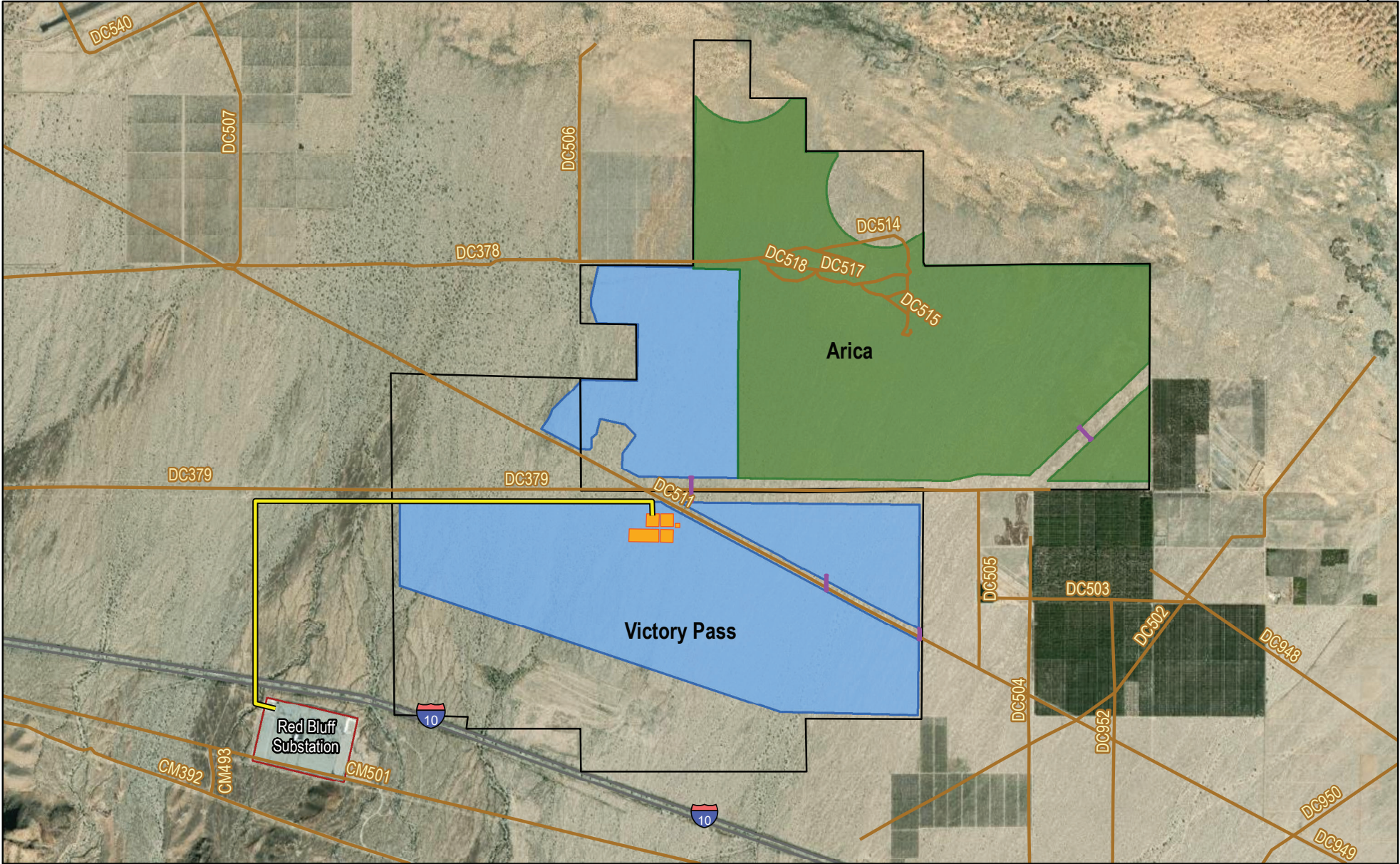
Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020



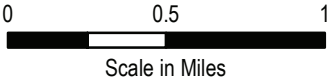
- Proposed Shared Gen-tie Line
- Gen-tie Line Alternative Route 1
- Gen-tie Line Alternative Route 2
- Proposed Access Road
- Alternative 1 Corn Springs Road Access Route
- Alternative Access Road 2
- Existing SCE access road
- BLM Right-of-Way Grant Application Area
- Solar Project Facilities (Project Fencelines)
- Substations, Switchyard, O&M Building, and Battery Storage
- Project Roads

Figure 4-1
Proposed Linear Alternatives

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Sources: Aspen, 2021; Clearway, 2020; BLM, 2020; SCE, 2013; Esri, 2020



- BLM Right-of-Way Grant Application Area
- Arica Solar Project Facilities (Project Fenceline)
- Alternative Victory Pass Solar Project Facilities (Project Fenceline)
- Substations, Switchyard, O&M Building, and Battery
- Project Roads
- Shared Gen-tie Line
- Off-Highway Vehicle (OHV) Route

Figure 4-2

I-10 Viewshed Avoidance Alternative

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5 Other CEQA Considerations

Chapter 5 includes discussions of various topics required by the California Environmental Quality Act (CEQA). These topics include Section 5.1, Significant And Unavoidable Environmental Impacts, which summarizes the conclusions presented in Chapter 3; Section 5.2, Irreversible And Irretrievable Commitments of Resources, including energy use; and Section 5.3, Growth-Inducing Impacts.

5.1 Significant and Unavoidable Environmental Impacts

5.1.1 Significant Direct Effects of the Solar Facility, Gen-Tie Line, and Access Road

As required by CEQA Guidelines Section 15126.2(b), an environmental impact report (EIR) must describe any significant impacts that cannot be avoided, including those impacts that can be mitigated but not reduced to a less-than-significant level. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications, and the reasons the project is being proposed, notwithstanding their effect, should be described. Chapter 3 of this EIR describes the potential environmental impacts associated with the issuance of the Incidental Take Permits and Lake and Streambed Agreements (collectively referred to as the Permits) for the proposed Arica Solar Project and Victory Pass Solar Project (Projects). Chapter 3 also describes the incorporation of Applicant Proposed Measures (APMs) that are standard as part of the project description, if feasible. Impacts to the following resources would be significant and unavoidable with construction and operation of the proposed Projects, even with the incorporation of APMs and/or other feasible measures that attempt to reduce impacts. Note that these conclusions apply to the proposed Projects (described in Chapter 2) even after consideration of Alternatives (described in Chapter 4) either because the Alternative is infeasible or it worsens impacts to other sensitive resources.

■ **Aesthetics:**

- Impact A-3. The Projects could substantially degrade the existing visual character or quality of the site and its surroundings. The resulting visual change would be adverse and unavoidable in the immediate vicinity of the Victory Pass Project site adjacent and to the north of Interstate 10. Incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings) and APM AES-2 (Project Design) would reduce the visual contrast associated with visually discordant structural features and contrasting character of the Projects' buildings, structures, and linear elements; however, these measures would not be sufficient to reduce the impact associated with solar arrays and other perimeter elements as experienced from KOP 2 to a level that would be less than significant. No mitigation would be deemed feasible in addition to APMs incorporated to further reduce visual impacts due to the Victory Pass project along the I-10. Therefore, the resulting visual change would remain significant and unavoidable.

■ **Air Quality:**

- Impact AQ-2. During construction the Projects could result in a cumulatively considerable but temporary net increase of any criteria pollutant for which the Projects' region is non-attainment under an applicable federal or state ambient air quality standard. The proposed Projects are in an area designated as non-attainment for state-level standards for ozone and PM₁₀ standards. Emissions during the construction phase would include criteria air pollutants that could exceed quantitative thresholds for ozone precursors even with incorporation of APMs as mitigation and would represent a cumulatively considerable net increase of nonattainment pollutant. Emissions exceeding the quantitative thresholds could contribute to existing or projected violations of the ambient air quality standards. With incorporation of dust control practices (APM AIR-1) and for off-road equipment

engine standards (APM AIR-2) the maximum daily emissions of NO_x, PM₁₀, and PM_{2.5} during construction could still exceed the SCAQMD significance thresholds. In addition, the Applicants could use an adaptive “construction activity management plan” as described in APM AIR-3, which could prevent construction from causing concurrent or overlapping activities that cause the sum of emissions to exceed the SCAQMD significance thresholds. However, because the Applicants may find it infeasible to adjust the simultaneous construction activities at the two sites, incorporation of this APM into the Projects may not be sufficient to reduce the construction-related emissions to levels below the SCAQMD thresholds. Therefore, no mitigation is deemed feasible in addition to APMs incorporated to further reduce emissions below currently evaluated. As a result, this impact would remain significant and unavoidable. Emissions would cease after the 18-month construction period is complete.

■ **Tribal Cultural Resources:**

- Impact TCR-1. Both Project sites are part of a broader interconnected landscape of traditional Native American use that is significant from a tribal cultural perspective. The Cahuilla Traditional Use Area Tribal Cultural Landscape (TCL), which includes the Project sites, is a Tribal Cultural Resource (TCR), as provided by PRC Section 21074(b) and by extension, in the Projects’ area of potential direct effects, 7 prehistoric archaeological sites and 11 isolated prehistoric artifacts that are individually eligible for the California Register of Historical Resources under Criterion 1 for their association with significant tribal events on the landscape and Criterion 4 for the value of archaeological information to tribal concerns; these sites and artifacts are also considered TCRs. The Projects’ ground distributing activities that would cause adverse changes to the TCL would have the same effect on the TCR and individual TCRs, including those known within the Projects’ areas of potential effects (APEs) and those that may be discovered during construction, O&M, and future decommissioning activities. Furthermore, the TCL extends beyond the direct effects APEs and into the indirect effects APEs, and several resources associated with this TCL (such as the Chuckwalla Mountains Petroglyph District to the southwest of the Arica Solar Project site, the Coco-Maricopa Trail Segment D [CA-RIV-053T] to the south, and the Palen Dunes/Palen Lake TCP to the east) also intersect the indirect effects APE. CDFW has determined that development of the Projects would incrementally increase impacts to the TCL, TCR, and individual TCRs within the indirect effects APEs and cause an adverse change in the ability of these resources to convey their tribal significance in a small but measurable way. Therefore, in CDFW’s lead agency opinion, while APM TCR-1 through APM TCR-4 incorporated into the Projects and Potentially Feasible Mitigation Measure (PFMM) TCR-1 through PFMM TCR-4, if implemented, are expected to avoid or lessen the Projects’ direct and indirect effects on the TCL and individual TCRs to some extent during all phases of the Projects, those effects are considered at this time to be significant and unavoidable under CEQA.

While the proposed Projects and alternatives would both create significant visual impacts from the solar facilities and gen-tie line to travelers along the Interstate 10, result in a temporary, significant air quality impact, and have significant impacts to the Cahuilla Traditional Use Area TCL as a TCR and individual TCRs in the Projects’ area, the proposed Projects are on land designated as a Solar Energy Zone and a Development Focus Area to allow for development of solar energy generation and appurtenant facilities on public lands in this specific area. Siting the facilities on land designated for renewable energy; on relatively flat, contiguous lands with high solar insolation; and near established utility corridors, existing transmission lines with available capacity to facilitate interconnection, and road access, will minimize environmental impacts and land disturbance associated with the development. Furthermore, construction and operation of the Projects would bring jobs to eastern Riverside County and would assist California with achieving its renewable energy generation goals. Given the location of the proposed Projects on land identified for

solar generation, the Projects' renewable energy and economic benefits would outweigh their unavoidable adverse environmental impacts on visual resources and short-term impacts to air quality.

5.1.2 Significant Cumulative Effects

According to Section 15355 of the CEQA Guidelines, the term cumulative impacts "refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual effects that may contribute to a cumulative impact may be from a single project or several separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the effects could be cumulatively considerable.

The cumulative scenario and analysis methodology is included in Section 3.1.2, Cumulative Impact Scenario, of this EIR. This EIR has considered the potential cumulative effects of the Projects for each issue area in Chapter 3. Impacts of these projects are cumulatively considered when they are combined with impacts from past, present, and reasonable future projects. Impacts would be considered cumulatively significant for the following issue areas:

- **Aesthetics:** The cumulative scenario includes many large-scale solar plants and transmission lines whose scale and pervasiveness would have adverse cumulative effects. If all the projects were implemented, they would introduce substantial visual contrast associated with discordant geometric patterns in the landscape and large-scale, built facilities with prominent industrial character; create unnatural lines of demarcation in the valley floor landscape and inconsistent color contrasts; and add visible night lighting within the broader Chuckwalla Valley. As a result, the proposed Projects in combination with the cumulative projects would result in significant cumulative visual impacts when viewed by sensitive viewing populations along Interstate 10 and State Route 177, from nearby residences, and in the surrounding mountains and wilderness. Effective incorporation of APM AES-1 (Surface Treatment of Project Structures and Buildings), APM AES-2 (Project Design), APM AES-3 (Minimize Nighttime Lighting), APM AES-4 (Night Lighting Management Plan), APM AIR-1 (Fugitive Dust Control Plan) into the Projects, and implementation of Mitigation Measure (MM) BIO-5 (Revegetation Plan) would reduce the severity of the cumulative visual effects, though not to levels that would be less than significant.
- **Air Quality:** The construction-phase emissions related to the proposed Projects would likely occur concurrently with other cumulative projects in the Mojave Desert Air Basin and would contribute to the adverse effects of other cumulative projects to result in a cumulative significant impact to air quality. The incremental contribution of the Projects to the cumulative impact would be reduced through incorporation of APM AIR-1 (Fugitive Dust Control Plan), APM AIR-2 (Control On-Site Off-Road Equipment Emissions), and APM AIR-3 (Construction Activity Management Plan) into the Projects, as identified in the discussion of Impact AQ-2. Because construction-related criteria air pollutant emissions would be mitigated and would entirely cease with completion of the 18-month duration of work, the construction emissions would not cause substantial long-term cumulative impacts, and the incremental contribution of the proposed Projects to the cumulative air quality impact would be reduced to the extent feasible during construction with incorporation of the APMs.
- **Cultural and Tribal Cultural Resources:** Past, present, and reasonably foreseeable future actions have already altered or destroyed and are projected to alter or destroy several thousand acres of cultural, historic, and tribal cultural resources that are estimated to have originally existed in the cumulative analysis study area. Three sensitive prehistoric archaeological resources are present in the indirect effects study area and are contributors to the Prehistoric Trails Network Cultural Landscape/Historic District (PTNCL). Furthermore, the same activities that result in cumulatively measurable impacts to the

PTNCL would adversely affect the Cahuilla Traditional Use Area TCL and related TCRs by indirectly altering the setting and feel through modifications to the natural landscape and directly altering the physical properties of the resource through displacement of artifact-bearing deposits. The addition of more industrial components to the Chuckwalla Valley contributes in a small but meaningful way to a visual intrusion upon the setting of the PTNCL and the TCL, which compromises the integrity of these resources. The incorporation of APM CUL-9 (Prehistoric Trails) and APM TCR-1 through APM TCR-4 into the Projects, and, if implemented, PFMM TCR-1 through PFMM TCR-4, would reduce the contribution of the Projects' direct and indirect cultural resources and TCRs cumulative effects. However, even with incorporation of APMs and, if implemented, the PFMMs, the Projects' incremental contribution to the prehistoric archaeological resource value and tribal cultural landscape cumulative effects to the PTNCL and Cahuilla Traditional Use Area TCL, in combination with other past, present, and probable future projects, would be cumulatively considerable and significant.

5.2 Irreversible and Irretrievable Commitments of Resources

CEQA Guidelines Section 15126.2 requires a discussion of any irreversible or irretrievable commitments of resources that implementation of a proposed project or alternative would cause. CEQA Guidelines Section 15126.2(c) states "uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely." Both primary and secondary impacts of a project generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with a project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified. Therefore, the purpose of this discussion is to identify any significant irreversible environmental changes brought about by the Projects.

Resources irreversibly or irretrievably committed to a proposed project are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as petroleum fossil fuel resources, petrochemical products, metals such as raw material for steel, aggregate minerals including sand and gravel, and other natural resources. These resources are considered irretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another irreversible or irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that environment.

Construction of the proposed Projects or alternatives would commit nonrenewable resources during construction and ongoing utility services during operations. The Applicants anticipate that at least 75% of construction waste would be recyclable. The proposed Projects would install solar photovoltaic panels manufactured from metals, such as thin-film panels (including cadmium telluride and copper indium gallium diselenide technologies), crystalline silicon panels, bifacial panels, or any other commercially available photovoltaic technology. During operations, oil, gas, and other nonrenewable resources would be consumed for maintenance purposes, although on a limited basis. See Section 3.6, Energy, for more information.

After the expiration of the right-of-way grant, the Projects could be decommissioned and the land will be available for reversion to open space or other compatible uses. The Applicants would restore the sites to the pre-solar facility conditions or such conditions as appropriate in accordance with the right-of-way grant and decommissioning plan or the Bureau of Land Management policies at the time of decommissioning. Upon ultimate decommissioning, most components would be suitable for recycling or reuse. Decommissioning would be designed to optimize such salvage as circumstances allow and in compliance with all local, state, and federal laws and regulations as they exist at the time of

decommissioning. If either Project is decommissioned and dismantled, some of the natural resources on site could be retrieved.

The Projects are renewable energy projects intended to generate solar energy to reduce reliance on fossil fuels. Over the life of the right-of-way grant for the Projects, the renewable energy projects would contribute incrementally to the reduction in demand for fossil fuel used to generate electricity, thereby resulting in a positive effect counteracting the commitment of nonrenewable resources to the Projects.

5.3 Growth-Inducing Impacts

CEQA Guidelines Section 15126.2(d) requires analysis of the growth-inducing impacts of the Projects. The discussion should identify the ways in which a project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. This includes projects that remove obstacles to population growth, such as by extending public services into areas not previously served. Growth inducement can also result from actions that encourage development or encroachment into surrounding areas or encourage adjacent development. According to CEQA Guidelines Section 15126.2(d), growth should not be assumed to be beneficial, detrimental, or of little significance to the environment.

This growth inducing impact analysis considers the following four criteria, and whether the Projects would result in:

- Removal of an obstacle to growth (e.g., establishment of an essential public service or the provisions of new access to an area)
- Economic expansion or growth (e.g., changes in revenue base or employment expansion that would require construction of new facilities that could cause significant environmental effects)
- Establishment of a precedent-setting action (e.g., a change in zoning or general plan amendment approval)
- Encouraging development or encroachment into an isolated area or open space.

Should a project meet any one of the criteria listed above, it can be considered growth inducing.

Removal of an obstacle to growth. The proposed Projects would result in the conversion of substantial land areas to a new type of land use. The Projects would be constructed on undeveloped federal land in an area identified for renewable energy in the Bureau of Land Management Western Solar Plan, specifically in an area designated as a solar energy zone. The Projects would not result in the establishment of an essential public service and would not provide new access to a previously inaccessible area. As a result, the Projects would not cause significant growth inducement under this criterion.

Economic expansion or growth. Short-term economic growth could occur during the construction and future decommissioning periods because the proposed Projects and the construction schedules of other overlapping projects could create a demand for workers that may not be met by the local labor force, thereby inducing in-migration of non-local labor and their households from the broader region. Construction of the proposed Projects alone, or of any of the proposed nearby projects which are also primarily solar projects, would not create long-term jobs. Therefore, the construction phase of the Projects is not considered to be growth inducing. Given the number of solar projects proposed in the Desert Center area, workers may stay on and continue to work in the area following construction of the proposed Projects if jobs on other solar projects are available. Following construction, up to 6 permanent staff per Project (12 total) could be on the site at any one time for ongoing solar facility maintenance and repairs, and no new permanent personnel are anticipated to be added to operate and maintain the gen-

tie line or access roads. The Projects' workforce could contribute to an increase in tax revenues for the State of California and Riverside County; however, the limited permanent employment expansion would not result in the need for new or physically altered community-serving facilities. As a result, the proposed Projects would not be growth inducing for their effects on economic expansion or growth.

Establishment of a precedent-setting action. The Projects would result in the development of two solar facilities, a shared gen-tie line, and access roads in the vicinity of other existing and approved solar projects and in an area identified by planning documents as appropriate for renewable development. The Projects would be like the other cumulative projects in eastern Riverside County, many of which are identified as past and present projects or probable future projects (see EIR Section 3.1.2, Cumulative Impact Scenario). The Projects would not establish a precedent-setting action such as a change in zoning or general plan amendment. Therefore, the Projects would not be growth inducing under this criterion.

Development or encroachment into an isolated area or open space. The proposed Projects would result in a change to undeveloped land in an area surrounded by existing or under construction solar projects in an area that was designated as appropriate for renewable development by the Bureau of Land Management. The Projects do not involve the development of a residential component that would directly facilitate population growth in the area. They would not involve the development of new roadways, water systems, or sewer systems. Infrastructure improvements to serve the Projects would be limited and would not be available to serve surrounding areas. Therefore, the proposed Projects would not result in growth inducement through development or encroachment into an isolated area or open space.

6 List of Preparers and Organizations Consulted

An Environmental Impact Report (EIR) is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation at multiple levels. The California Department of Fish and Wildlife is the California Environmental Quality Act lead agency supported by their environmental contractor, Dudek, during the California Environmental Quality Act review process. Aspen Environmental Group prepared the Administrative Draft EIR for California Department of Fish and Wildlife review, and provided technical assistance in the preparation of this document. The preparers and technical reviewers of this document are presented below, along with a list of organizations consulted.

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Aspen Environmental Group/Panorama Environmental Inc. were responsible for preparation of initial environmental document presented to the California Department of Fish and Wildlife.

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