2 Project Description

Chapter 2 provides a description of the Brawley Solar Energy Facility Project. This chapter also defines the goals and objectives of the proposed project, provides details regarding the individual components that together comprise the project, and identifies the discretionary approvals required for project implementation.

The proposed project consists of three primary components: 1) solar energy generation equipment and associated facilities including a substation and access roads (herein referred to as "solar energy facility"); 2) battery energy storage system; and, 3) gen-tie line that would connect the proposed on-site substation to the point of interconnection at the existing North Brawley Geothermal Power Plant substation. The solar energy facility, battery energy storage system and gen-tie are collectively referred to as the "proposed project" or "project."

2.1 Project Location

The project site is located on approximately 227 acres of privately-owned land in the unincorporated area of Imperial County, CA (Figure 2-1). The site is approximately one mile north from the City of Brawley's jurisdictional limit. The project site is south of Baughman Road, west of Best Road, and north of Andre Road. The Union Pacific Railway transects the project site. As shown on Figure 2-2, the project site is proposed on five parcels. Table 2-1 identifies the individual assessor parcel numbers (APN) with their respective acreage and zoning.

As shown on Figure 2-2, the gen-tie line would originate from the southern edge of the project site and then head west along Andre Road to interconnect to the Imperial Irrigation District's (IID) existing North Brawley Geothermal Power Plant substation, located at Hovley Road and Andre Road. The gen-tie route would be approximately 1.8 miles.

Currently, the project site contains alfalfa fields within different levels of harvest. North and east of the project site is undeveloped agricultural land. South of the project site is a mixture of undeveloped agricultural land and dirt lots used for staging activities. The Del Rio Country Club golf course is located to the south of the site. The City of Brawley Wastewater Treatment Plant is located along the western edge of the project site.

Table 2-1. Project Assessor Parcel Numbers, Acreages, and Zoning

APN	Acreage	Zoning
037-140-020	61.73	A-2-G
037-140-021	68.71	A-2-G
037-140-022	38.15	A-2-G
037-140-023	24.71	A-2-G
037-140-006	33.68	A-2-G
Total Gross Acres	**227**	--

APN = assessor parcel number; A-2-G = General Agricultural with Geothermal Overlay

Figure 2-1. Regional Location

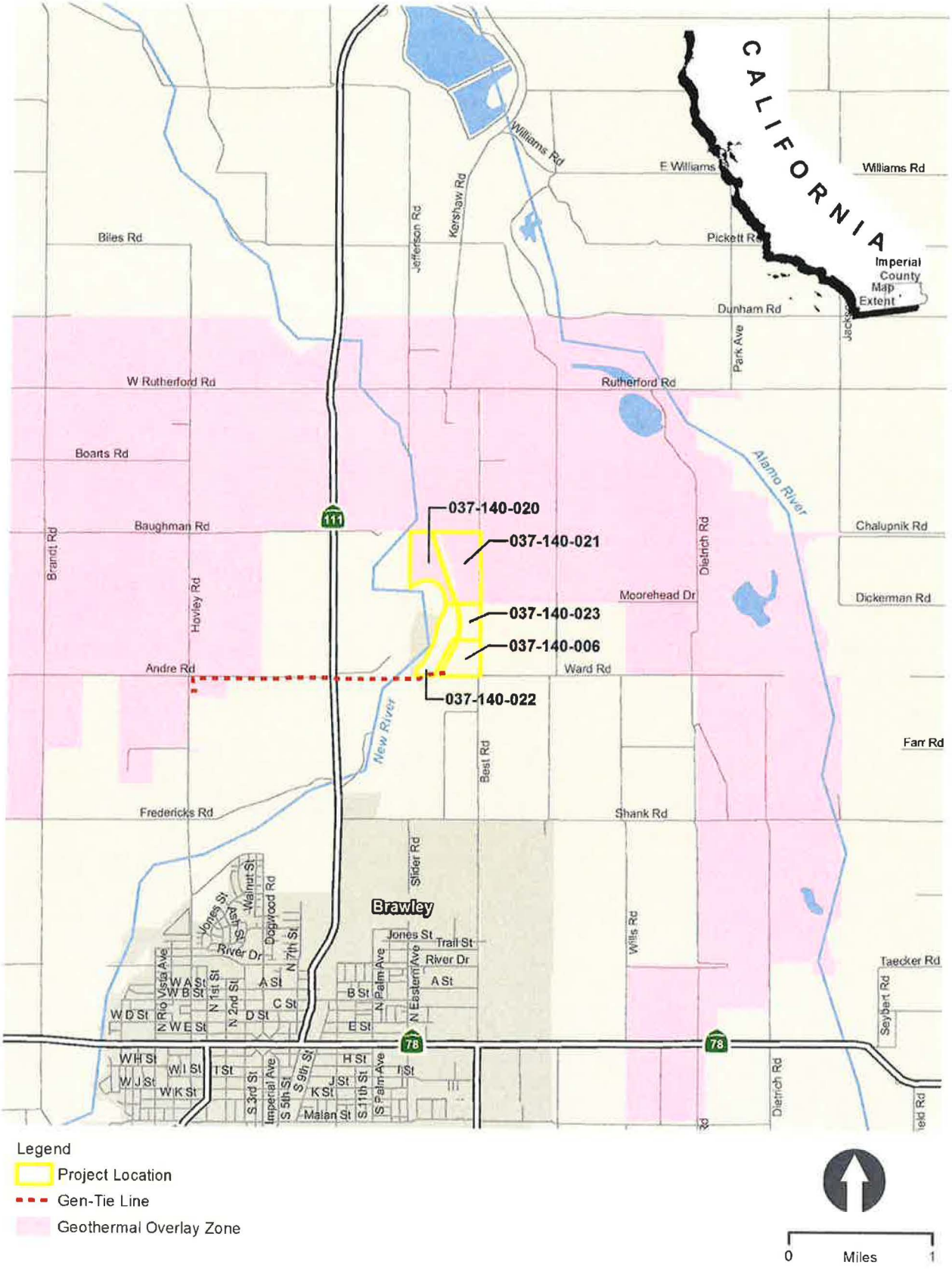
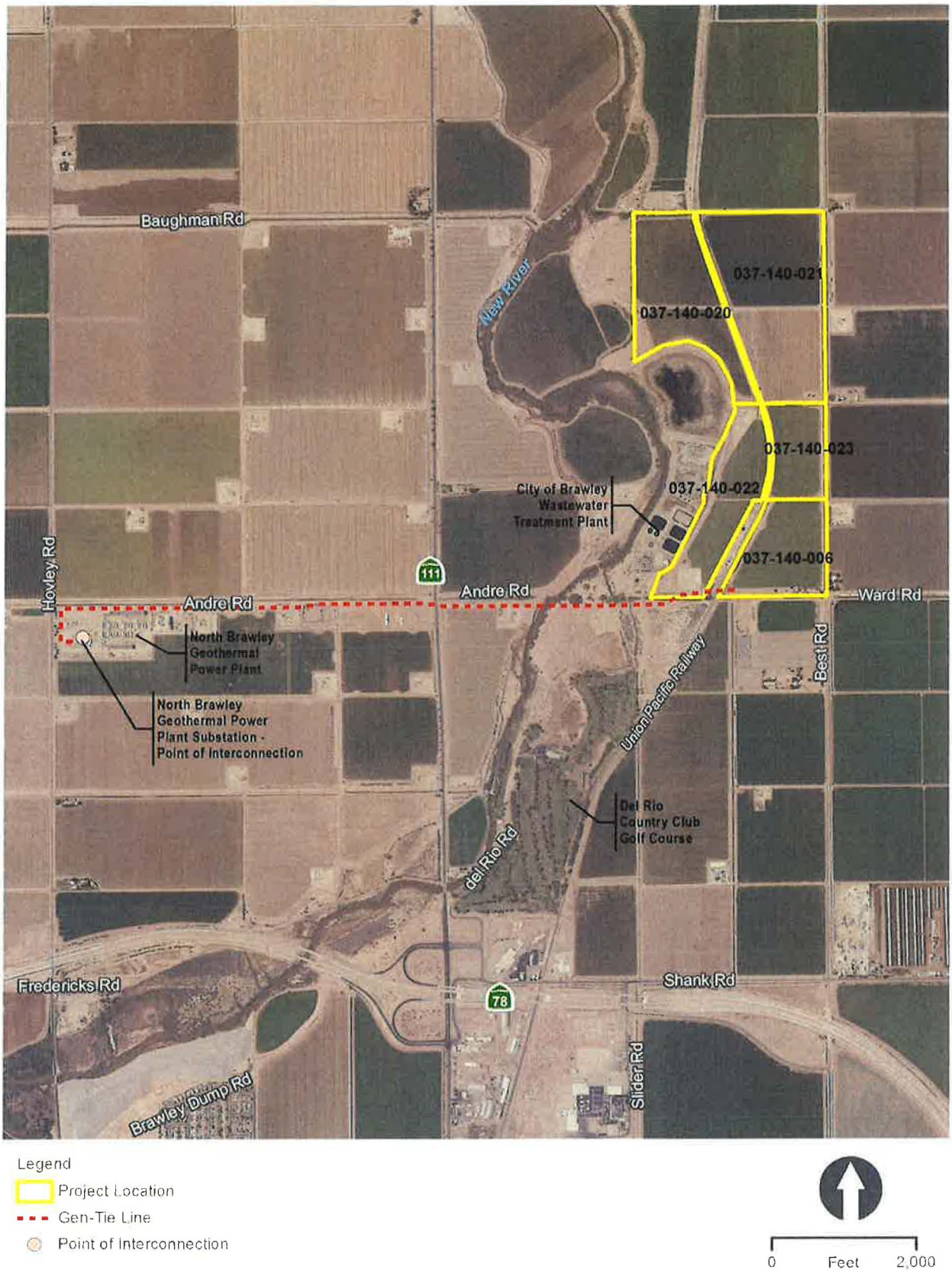


Figure 2-2. Project Site



2.1.1 Renewable Energy Overlay Zone

In 2016, the County adopted the Imperial County Renewable Energy and Transmission Element, which includes an RE Zone (RE Overlay Map). This General Plan element was created as part of the California Energy Commission Renewable Energy Grant Program to amend and update the County's General Plan to facilitate future development of renewable energy projects.

The County Land Use Ordinance, Division 17, includes the RE Overlay Zone, which authorizes the development and operation of renewable energy projects with an approved CUP. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established uses. CUP applications proposed for specific renewable energy projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone.

As shown on Figure 2-1, the northern portion of the project site (APNs 037-140-020 and 037-140-021) is located within the Geothermal Overlay Zone. However, the entire project site (APNs 037-140-020, 037-140-021, 037-140-022, 037-140-023, and 037-140-006) is located outside of the RE Overlay Zone. Therefore, the applicant is requesting a General Plan Amendment to include/classify all five project parcels into the RE Overlay Zone. No change in the underlying General Plan land use (Agriculture) is proposed.

2.2 Project Objectives

- Construct, operate and maintain an efficient economic, reliable, safe and environmentally sound solar-powered electricity generating facility.
- Help meet California's Renewable Portfolio Standard (RPS) requirements, which require that by 2030, California's electric utilities are to obtain 50 percent of the electricity they supply from renewable sources.
- Generate renewable solar-generated electricity from proven technology, at a competitive cost, with low environmental impact, and deliver it to markets as soon as possible.
- Develop, construct, own and operate the Brawley Solar Energy Facility, and ultimately sell its electricity and all renewable and environmental attributes to an electric utility purchaser under a long-term contract to meet California's RPS goals.
- Utilize a location that is in close proximity to an existing switching station and power lines.
- Minimize and mitigate any potential impact to sensitive environmental resources within the project area.

2.3 Project Characteristics

The proposed project involves the construction and operation of a 40 megawatt (MW) photovoltaic (PV) solar facility with an integrated 40 MW battery storage system (BESS) (not to exceed 80 MW) on approximately 227 acres of privately-owned land. The proposed project would be comprised of bifacial solar PV arrays panels, an on-site substation, BESS, generation tie-line (gen-tie), fiberoptic line and microwave tower, inverters, transformers, underground electrical cables, access roads. These project components are described in detail below and depicted in Figure 2-3.

Figure 2-3. Site Plan

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2.3.1 Photovoltaic Panels/Solar Arrays

Solar cells, also called PV cells, convert sunlight directly into electricity. PV cells combine to create solar modules, or panels, and many solar panels combined together to create one system is called a solar (or PV) array. The entire array would utilize 13 inverters and transformers collectively called a Power Conversion Station (PCS) for each block of solar panels. The inverters within the PCS are rated at 3496 kilo volt amperes (KVA). The power produced from the solar panels would be low voltage direct current (DC), which is routed to the inverters to convert the DC power to alternating current (AC).

The proposed project's PV arrays would be comprised of solar bifacial high-power dual cell PV panels. Panels would be organized into electrical groups referred to as "blocks," where the proposed project would require 13 blocks. Each panel is 3.2 feet by 6.5 feet and is on single-axis horizontal trackers in blocks that each hold 3,809 PV panels in 28 strings. The panels would be oriented from east to west for maximum exposure and the foundation would be designed based on soil conditions. The PV panels are made of a poly-crystalline silicon semiconductor material encapsulated in glass.

Installation of the PV arrays would include installation of mounting posts, module rail assemblies, PV modules, inverters, transformers and buried electrical conductors. Concrete would be required for the footings, foundations and pads for the transformers and substation work. Tracker foundations would be comprised of either driven or vibrated steel posts/pipes, and/or concrete in some places (depending on soil and underground conditions).

2.3.2 Battery Energy Storage System

The proposed project's BESS component would be placed on a 54,000 square-foot concrete pad at the southern edge of the project site. The BESS would consist of 12 banks of batteries totaling up to 432 enclosures. Each bank of batteries would be supported by a DC Combiner, control panel, and inverter/transformer skid. Each of the enclosures would utilize self-contained liquid cooling systems and include built-in fire suppression systems. All batteries would be lithium-ion based capable of storing 40 MW (not to exceed 80 MW).

2.3.3 Substation

The proposed substation would be a new 92/12 kV unstaffed, automated, low-profile substation. The dimensions of the fenced substation would be approximately 300 feet by 175 feet, with the footprint encompassing approximately 1.2 acres. The tallest feature would be the dead-end portal structure (39 feet 6 inches) coming in off the gen-tie line, which would have a lighting mast attached, making it 54 feet 6 inches total. The onsite substation control room would house the Supervisory Control and Data Acquisition (SCADA) system, switchgear, breakers, and DC batteries. Additionally, a 20kV emergency backup generator would be located adjacent to this control room for the HVAC system. The proposed substation site would be located at the southern edge of the project site, adjacent to the BESS. The California Building Code and the IEEE 693, Recommended Practices for Seismic Design of Substations, will be followed for the substation's design, structures, and equipment.

2.3.4 Gen-Tie Line

The proposed project would connect to a switchyard located at the southern edge of the project site and then routed through the BESS for energy storage. Power would then be transferred via a 1.8-mile-long double circuit 13.8 and 92 kV gen-tie line with 66- foot-high poles to interconnect to the IID'

existing North Brawley Geothermal Power Plant substation, located at Hovley Road and Andre Road, southwest of the project site. The transmission line would span the New River. A 12-inch diameter conduit railroad undercrossing would connect the PV arrays from the western side of the railroad tracks to the inverters on the eastern side.

2.3.5 Fiberoptic Cable and Microwave Tower

A proposed fiberoptic line from the project substation would be connected with the existing North Brawley Geothermal Power Plant substation approximately 1.8 miles to the southwest, which is required to connect the project substation to the region's telecommunications system. Overall, this would provide SCADA, protective relaying, data transmission, and telephone services for the proposed project substation and associated facilities. New telecommunications equipment would be installed at the project substation within the unmanned Mechanical and Electrical Equipment Room (MEER). The proposed fiber optic telecommunications cable, once past the point of interconnection, would utilize existing transmission lines to connect to the existing North Brawley Geothermal Power Plant substation. The length of this proposed fiber optic telecommunications cable route would be approximately 1.8 miles. Alternatively, a 40 to 100-feet tall microwave tower could replace the need for a fiberoptic line to transmit data offsite. If selected, this microwave tower would be located within the project substation footprint.

2.3.6 Security

Six-foot high chain link fencing topped with barbed wire would be installed around the perimeter of the project site at the commencement of construction and site access would be limited to authorized site workers. Points of ingress/egress would be accessed via locked gates. In addition, a motion detection system and closed-circuit camera system may also be installed. The site would be remotely monitored 24 hours per day, 7 days per week. In addition, routine unscheduled security rounds may be made by the security team monitoring the site security.

2.3.7 Site Access

As shown in Figure 2-3, primary access to the project site would be located off Best Avenue. A secondary emergency access road would be located in the northwest portion of the project site. Access roads would be constructed with an all-weather surface, to meet the County Fire Department's standards., Points of ingress/egress would be accessed via locked gates that can be opened by any emergency responders. An all-weather surface access road would surround the perimeter of the project site, as well as around solar blocks no greater than 500 by 500 feet.

2.4 Project Construction

Construction activities would be sequenced and conducted in a manner that addresses storm water management and soil conservation. During construction, electrical equipment would be placed in service at the completion of each power-block, after the gen-tie line has been completed. The activation of the power-blocks is turned over to interconnection following the installation of transformer and interconnection equipment upgrades. This in-service timing is critical because PV panels can produce power as soon as they are exposed to sunlight, and because the large number of blocks and the amount of time needed to commission each block requires commissioning to be integrated closely with construction on a block-by-block basis.

2.4.1 Construction Personnel and Equipment

The proposed project's workforce would consist of laborers, electricians, supervisory personnel, support personnel and construction management personnel. Up to 120 people are expected to be on-site per day. Project laydown and construction staff parking is expected to be located on-site or at the existing North Brawley Geothermal Power Plant in an approximately 4-acre area.

Typical equipment to be used during project construction and commissioning is listed in Table 2-2.

Table 2-2. Construction Equipment

Equipment	Use
1-ton crew trucks	Transport construction personnel
2-ton flatbed trucks; flatbed boom trucks	Haul and unload materials
Mechanic truck	Service and repair equipment
Aerial bucket trucks	Access poles, string conductor, and other uses
Shop vans	Store tools
Bulldozers	Grade pole sites; reclamation
Truck-mounted diggers or backhoes	Excavate
Small mobile cranes (12 tons)	Load and unload materials
Large mobile cranes (75 tons)	Erect structures
Transport	Haul poles and equipment
Drill rigs with augers	Excavate and install fences
Semi tractor-trailers	Haul structures and equipment
Splice trailers	Store splicing supplies
Air compressor	Operate air tools
Air tampers	Compact soil around structure foundations
Concrete trucks	Pour concrete
Dump trucks	Haul excavated materials/import backfill
Fuel and equipment fluid trucks	Refuel and maintain vehicles
Water trucks	Suppress dust and fires

2.4.2 Construction Schedule, Sequence, and Phasing

Construction is anticipated to start in quarter four of 2021 and would take approximately 6-9 months to complete. Construction would commence only after all required permits and authorizations have been secured. Construction would generally occur during daylight hours, Monday through Friday. However, non-daylight work hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. For example, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. If construction is to occur outside of the County's specified working hours, permission in writing will be sought at the time. The County's construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. on Saturday. No commercial construction operations are permitted on Sunday or holidays.

Construction of the project would occur in phases beginning with site preparation and grading and ending with equipment setup and commencement of commercial operations. Overall, construction would consist of three major phases over a period of approximately 6-9 months.

- Site Preparation (1 month)
- PV System Installation and Testing (7 months)
- Site Clean-Up and Restoration (1 month)

Site Preparation

Project construction would include the renovation of existing dirt roads to all-weather surfaces (to meet the County standards) from Best Avenue to the City of Brawley wastewater treatment plant. Construction of the proposed project would begin with clearing of existing brush and installation of fencing around the project boundary. Fencing would consist of a six-foot chain-link fence topped with barbed wire. A 20-foot road of engineering-approved aggregate would surround the site within the fencing.

Material and equipment staging areas would be established on-site within an approximate 4-acre area. The staging area would include an air-conditioned temporary construction office, a first-aid station and other temporary facilities including, but not limited to, sanitary facilities, worker parking, truck loading and unloading, and a designated area for assembling the support structures for the placement of PV modules. The size of the staging area would shrink as construction progresses throughout the project site. The project construction contractor would then survey, clear and grade road corridors in order to bring equipment, materials, and workers to the various areas under construction within the project site. Road corridors buried electrical lines, PV array locations and locations of other facilities may be flagged and staked in order to guide construction activities.

PV System Installation and Testing

PV system installation would include earthwork, grading and erosion control, as well as erection of the PV modules, mounting posts and associated electrical equipment.

The PV modules require a moderately flat surface for installation and therefore some earthwork, including grading, fill, compaction and erosion control, may be required to accommodate the placement of PV arrays, concrete for foundations, access roads and/or drainage features. Construction of the PV arrays would be expected to take place at a rate of approximately 0.10 MW to 0.25 MW per day. Construction of the PV arrays would include installation of the mounting posts, module assemblies, PV modules, inverters, transformers and buried electrical conductors. The module assemblies would then be cut off at the appropriate heights since the center posts must be completely level. Field welding would be required to attach the module assemblies to the top of the mounting posts. Finally, the PV panels would be attached to the module assemblies. Heavy equipment lifters (e.g., forklift) would be required to get the module assemblies in position, while welding and cutting equipment would be necessary to cut off the posts at the appropriate height.

Concrete would be required for the footings, foundations and pads for the transformers and substation equipment. Concrete would be produced at an off-site location by a local provider and transported to the site by truck. The PCS housing the inverters utilize a precast concrete base. Final specifications for concrete would be determined during detailed design engineering, but any related production would meet applicable building codes. Wastes generated during construction would be non-hazardous and may contain any of the following: cardboard, wood pallets, copper wire, scrap steel, common trash

and wood wire spools, and as much as possible of the waste that is generated during construction would be recycled.

No hazardous waste is expected to be generated during construction of the proposed project. However, field equipment used during construction would contain various hazardous materials such as hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints and other petroleum-based products contained in most construction vehicles. The storage, handling, and potential spills of these materials contained within the field equipment would adhere to all applicable local, State, and Federal regulations.

Site Clean-Up and Restoration

After construction is complete, all existing roads would be left in a condition equal to or better than their preconstruction condition. All other areas disturbed by construction activities would be recontoured and decompacted.

Waste materials and debris from construction areas would be collected, hauled away, and disposed of at approved landfill sites. Cleared vegetation would be shredded and distributed over the disturbed site as mulch and erosion control or disposed of offsite, depending on agency agreements. Rocks removed during foundation excavation would be redistributed over the disturbed site to resemble adjacent site conditions. Interim reclamation would include also re-contouring of impacted areas to match the surrounding terrain, and cleaning trash out of gullies. Equipment used could include a blader, front-end loader, tractor, and a dozer with a ripper.

A covered portable dumpster would be kept on site to contain any trash that can be blown away. After completion of the proposed project, the project engineer would complete a final walk-through and note any waste material left on site and any ruts or terrain damage or vegetation disturbance that has not been repaired. The construction contractor would be given this list and final payment would not be received until all items are completed.

2.4.3 Water Use

Approximately 20,000 to 30,000 gallons of water per day would initially be required for grading, dropping to much less for the remainder of the project construction. Construction water needs would be limited to earthwork, soil conditioning, dust suppression, and compaction efforts. Water would be obtained from a ground storage tank existing onsite which fills from the Best Canal along the eastern property boundary. A dust palliative with low environmental toxicity would also be used to suppress dust as approved by California Air Resources Board (CARB) and the Imperial County Air Pollution Control District (ICAPCD).

Potable water would be brought to the project site for drinking and domestic needs.

2.5 Operations and Maintenance

Once fully constructed, the project would be operated on an unstaffed basis and be monitored remotely, with periodic on-site personnel visitations for security, maintenance and system monitoring. Therefore, no full-time site personnel would be required on-site during operations and approximately two employees would only be onsite up to four times per year to wash the solar panels. As the project's PV arrays produce electricity passively, maintenance requirements are anticipated to be very minimal. Any required planned maintenance activities would generally consist of equipment inspection and

replacement and would be scheduled to avoid peak load periods. Any unplanned maintenance would be responded to as needed, depending on the event.

2.5.1 Water Use

Estimated annual water consumption for operation and maintenance of the proposed project, including periodic PV module washing, would be approximately 0.81-acre feet annually (af/y), which would be trucked to the project site as needed.

2.6 Restoration of the Project Site

Electricity generated by the facility could be sold under the terms of a PPA with a power purchaser (i.e., utility service provider). At the end of the PPA term, the owner of the facility may choose to enter into a subsequent PPA, update technology and re-commission, or decommission and remove the generating facility and its components. Upon decommissioning, the site could be converted to other uses in accordance with applicable land use regulations in effect at that time. A collection and recycling program will be executed to promote recycling of project components and minimize disposal in landfills. All permits related to decommissioning would be obtained, where required.

Project decommissioning may include the following activities:

- The facility would be disconnected from the utility power grid.
- Project components would be dismantled and removed using conventional construction equipment and recycled or disposed of safely.
- PV panel support steel and support posts would be removed and recycled off-site by an approved metals recycler.
- All compacted surfaces within the project site and temporary on-site haul roads would be de-compacted.
- Electrical and electronic devices, including inverters, transformers, panels, support structures, lighting fixtures, and their protective shelters would be recycled off-site by an approved recycler.
- All concrete used for the underground distribution system would be recycled off-site by a concrete recycler or crushed on-site and used as fill material.
- Fencing would be removed and recycled off-site by an approved metals recycler.
- Gravel roads would be removed; filter fabric would be bundled and disposed of in accordance with all applicable regulations. Road areas would be backfilled and restored to their natural contour.
- Soil erosion and sedimentation control measures would be re-implemented during the decommissioning period and until the site is stabilized.

2.7 Required Project Approvals

2.7.1 Imperial County

The following are the primary discretionary approvals required for implementation of the project:

1. **General Plan Amendment.** An amendment to the County's General Plan, Renewable Energy and Transmission Element is required to implement the proposed project. CUP applications proposed for specific renewable energy projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. As shown in Figure 2-1, the northern portion of the project site (APNs 037-140-020 and 037-140-021) is located within the Geothermal Overlay Zone. However, the entire project site (APNs 037-140-020, 037-140-021, 037-140-022, 037-140-023, and 037-140-006) is located outside of the RE Overlay Zone. Therefore, the applicant is requesting a General Plan Amendment to include/classify all five project parcels into the RE Overlay Zone. No change in the underlying General Plan land use (Agriculture) is proposed.
2. **Zone Change.** The project site is currently zoned General Agricultural with a Geothermal Overlay (A-2-G). The applicant is requesting a Zone Change to include/classify all five project parcels into the Renewable Energy/Geothermal (REG) Overlay Zone (A-2-REG).
3. **Approval of CUP.** Implementation of the project would require the approval of a CUP by the County to allow for the construction and operation of the proposed solar energy facility with an integrated battery storage system. The project site is located on five privately-owned legal parcels zoned General Agricultural with a Geothermal Overlay (A-2-G). With approval of the zone change, the project site would be zoned General Agricultural with a REG Overlay Zone (A-2-REG). Pursuant to Title 9, Division 5, Chapter 8, the following uses are permitted in the A-2 zone subject to approval of a CUP from Imperial County: solar energy electrical generator, battery storage facility, electrical substations, communication towers, and facilities for the transmission of electrical energy.
4. **Certification of the EIR.** After the required public review for the Draft EIR, the County will respond to written comments, edit the document, and produce a Final EIR to be certified by the Planning Commission and Board of Supervisors prior to making a decision on approval or denial of the project.

Subsequent ministerial approvals may include, but are not limited to:

- Grading and clearing permits
- Building permits
- Reclamation plan
- Encroachment permits
- Transportation permit(s)

2.7.2 Discretionary Actions and Approvals by Other Agencies

Responsible Agencies are those agencies that have discretionary approval over one or more actions involved with development of the project. Trustee Agencies are state agencies that have discretionary

approval or jurisdiction by law over natural resources affected by a project. These agencies may include, but are not limited to the following:

- California RWQCB – Notice of Intent for General Construction Permit
- ICAPCD – Fugitive Dust Control Plan, Rule 801 Compliance
- CDFW (Trustee Agency) – ESA Compliance, Section 1600 Streambed Alteration Agreement
- USFWS – ESA Compliance
- IID – Water Supply Agreement