Appendix J

Alternatives Screening Report:
Northern San Joaquin 230 kV
Transmission Project

ALTERNATIVES SCREENING REPORT

Northern San Joaquin 230 kV Transmission Project

Prepared for:

California Public Utilities Commission
Energy Division – Infrastructure and Permitting

September 2024

ALTERNATIVES SCREENING REPORT

Northern San Joaquin 230 kV Transmission Project

Prepared for:

California Public Utilities Commission
Energy Division – Infrastructure and Permitting
505 Van Ness Ave, San Francisco, CA 94102

Contact:

Boris Sanchez
Public Utilities Regulatory Analyst III (PURA III)
Boris.Sanchez@cpuc.ca.gov

Prepared by:

Ascent
455 Capitol Mall, Suite 300
Sacramento, CA 95814

Contact:

Heather Blair
Principal

September 2024

19010160.01

TABLE OF CONTENTS

Section Page

Figures

Tables

LIST OF ABBREVIATIONS

AB	Assembly Bill
APCD	San Joaquin Valley Air Pollution Control District
APM	Applicant Proposed Measure
ASR	Alternatives Screening Report
BESS	Battery Energy Storage Solution
BMP	best management practice
BTM	behind the meter
CAISO	California Independent System Operator
CEQA	California Environmental Quality Act
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
DCTL	double-circuit transmission line
DERI	distribution energy resources improvement
Draft EIR	draft environmental impact report
EMF	electromagnetic field
FTM	front of the meter
kV	kilovolt
LEU	Lodi Electric Utility
MW	megawatt
NERC	North American Electric Reliability Corporation
NOP	notice of preparation
PG&E	Pacific Gas and Electric Company
project	proposed Northern San Joaquin 230 kV Transmission Project
ROW	right-of-way
RWQCB	Central Valley Regional Water Quality Control Board
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
SR	State Route
TPP	Transmission Planning Process

1 INTRODUCTION AND PROJECT BACKGROUND

1.1 PURPOSE AND BACKGROUND

The purpose of this Alternatives Screening Report (ASR) is to document the California Public Utilities Commission's (CPUC's) efforts and process for developing a range of potentially feasible alternatives for the proposed Northern San Joaquin 230 kV Transmission Project (project). The ASR will support and inform the analysis of project alternatives in the draft environmental impact report (Draft EIR) that is being prepared for the project. This ASR is intended to identify a reasonable range of potentially feasible alternatives that will be carried forward as part of the Draft EIR's detailed environmental analysis.

Pursuant to the California Environmental Quality Act (CEQA), an EIR must describe a reasonable range of potentially feasible alternatives to a project, or to the location of a project, which could feasibly attain most of the basic project objectives and could also avoid or reduce any of the significant effects of the project (CEQA Guidelines Section 15126.6[a]). CEQA also requires consideration of a No Project Alternative (CEQA Guidelines Section 15126.6[e]). An alternatives screening process benefits the development of alternatives to be assessed in the EIR and helps CPUC understand the range and potential feasibility of alternatives to the project prior to conducting a detailed analysis of those alternatives.

1.1.1 Public Outreach

CPUC circulated a Notice of Preparation (NOP) of an EIR for the project on January 10, 2024. Circulation of the NOP initiated the 30-day scoping period for the project, which lasted until February 9, 2024. CPUC conducted two virtual public scoping meetings for the project on January 30, 2024 at 2:30 p.m. and 6:30 p.m. Presentation slides from the public scoping meeting, as well as a Scoping Summary Report, which summarizes the comments received during the scoping period, are available on the project website at: https://ia.cpuc.ca.gov/environment/info/ascent/NSJTP/index.html.

Refer to Section 2.1.2, "Public and Stakeholder Scoping," for further details on the project's scoping process. For information on CPUC proceeding for the project (Application No. A.23-09-001), refer to the following website and search for the application number: https://apps.cpuc.ca.gov/apex/f?p=401:1:0::NO:RP.

1.2 SUMMARY OF THE PROPOSED PROJECT

1.2.1 Project Overview

The project is proposed by Pacific Gas and Electric Company (PG&E) and Lodi Electric Utility (LEU) to address reliability and capacity issues identified by the California Independent System Operator (CAISO) on the existing PG&E 230 kilovolt (kV) and 60 kV systems in northern San Joaquin County, California. The project would be partially constructed by PG&E, an investor-owned utility regulated by CPUC, and partially constructed by LEU, a publicly owned municipal utility operated by the City of Lodi and a member of the Northern California Power Agency.

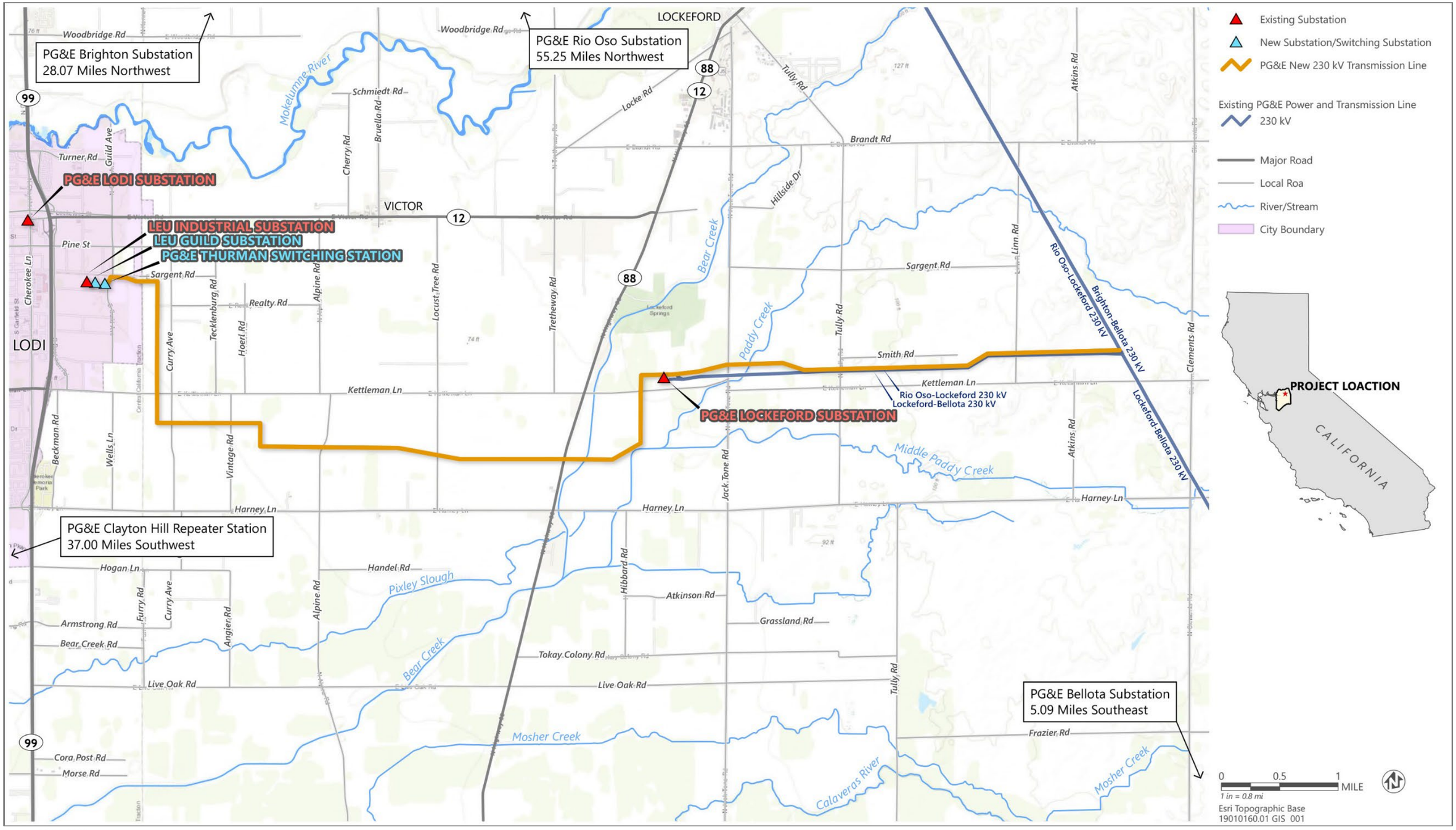
The project would include construction, modification, and operation of electrical infrastructure (including power lines, transmission lines, a switching station, and substations)[1] from an existing PG&E 230 kV transmission corridor that traverses roughly northwest-southeast of Atkins Road in unincorporated San Joaquin County to an existing substation

[1] In this document, electrical lines that are designed to operate at or above 200 kV are referred to as "transmission lines," lines designed to operate between 50 kV and 200 kV are referred to as "power lines," and lines designed to operate under 50 kV are referred to as "distribution lines."

in eastern Lodi, approximately 9 miles to the west. The transmission alignment roughly follows East Kettleman Lane, crossing State Route (SR) 88, Bear Creek, and Paddy Creek (see Figure 1-1).

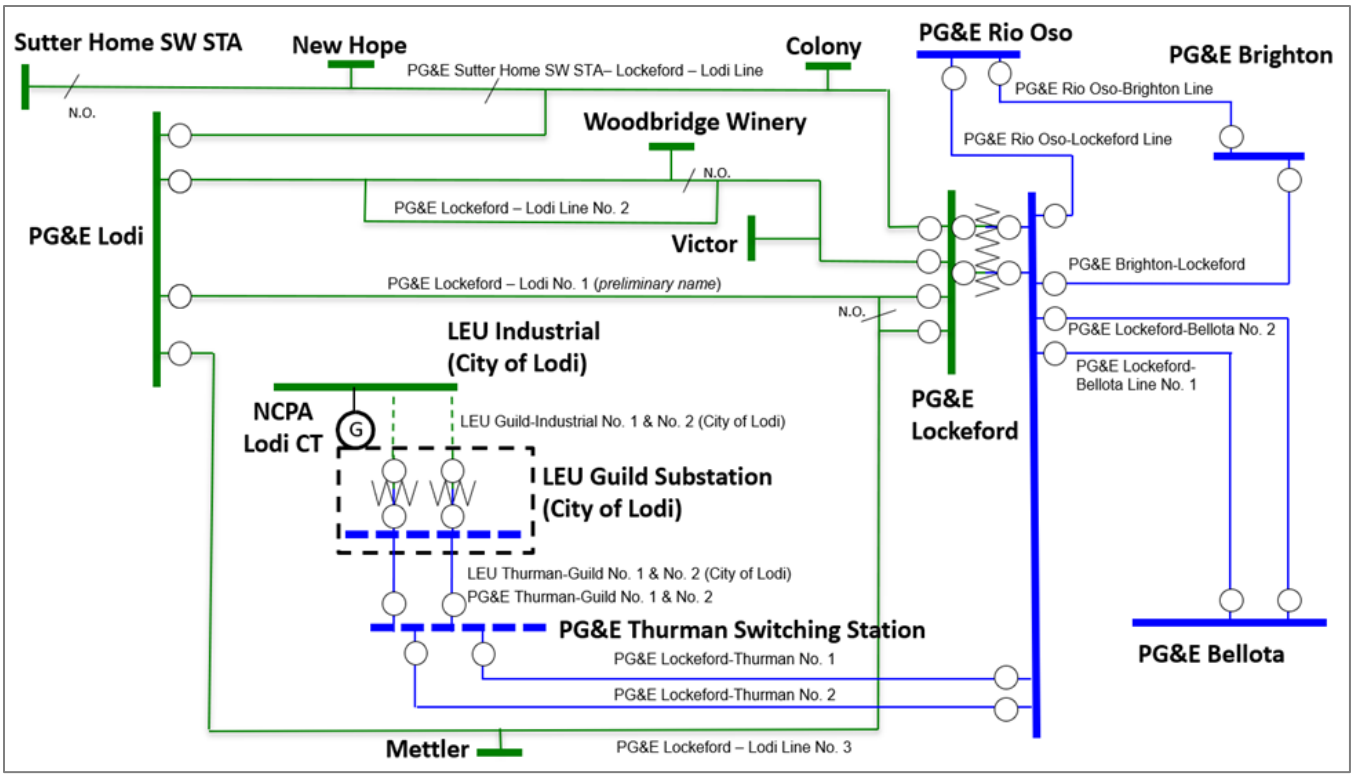
The project would loop the existing overhead PG&E Brighton-Bellota 230 kV Transmission Line through an expanded PG&E Lockeford Substation and install a new overhead double-circuit 230 kV transmission line between PG&E Lockeford Substation and the proposed PG&E Thurman Switching Station adjacent to LEU's existing Fred M. Reid Industrial Substation (Industrial Substation). LEU would construct the LEU Guild Substation, a new 230/60 kV substation, between its LEU Industrial Substation and the new PG&E Thurman Switching Station. At LEU Guild Substation, the new PG&E 230 kV transmission line would terminate, and LEU transformers would step down the power to 60 kV to connect with the LEU Industrial Substation. When the new 230 kV system is energized, the existing local PG&E 60 kV system would be reconfigured within existing alignments, including disconnecting as a source to LEU at the LEU Industrial Substation by removing the connections with the PG&E Lockeford-Industrial, PG&E Industrial Tap, and PG&E Lodi-Industrial 60 kV lines. By creating a new 230 kV source and separating PG&E's and LEU's 60 kV systems, current and projected voltage issues and thermal overloads on PG&E's 230/60 kV system would be remedied and forecasted demand growth would be accommodated. Figure 1-2 provides an overview of the proposed electrical system components.

As part of this project, PG&E would also update its system protection scheme at four remote-end substations (Bellota, Brighton, Lodi, and Rio Oso), which are located in Linden, Sacramento, Lodi, and Rio Oso, respectively. PG&E would also install two 6-foot dish antennas on an existing microwave tower at the existing Clayton Hill Repeater Station (on a communication tower) in Contra Costa County to create a new digital microwave path allowing redundant communication into PG&E Thurman Switching Station in support of PG&E's system protection scheme.



Source: PG&E 2023a.

Figure 1-1 Project Location Overview



Source: PG&E 2023a.

Figure 1-2 Proposed System at Project Completion Single Line Diagram

Table 1-1 summarizes the project in terms of the facilities that would be removed, modified, or newly constructed at the various electrical system components. It also identifies which existing components would be renamed through reconfiguration of existing lines and/or construction of new lines and facilities. New transmission structures between the existing PG&E Brighton-Bellota 230 kV Transmission Line on the east and the PG&E Lockeford Substation on the west are numbered from east to west as E1 through E23, and the final line structure on the Rio Oso-Lockeford 230kV Line is designated as RO1.

Table 1-1 Summary of Proposed Removed, Modified, and New Facilities

Component	Facilities Removed	Facilities Modified	New Facilities
PG&E Lockeford Substation	Replace fence	Expand permanent facility fence line by approximately 1,330 feet. Replace all existing perimeter fence line in-kind and install new sections for new fence line. Expand retention pond and rebuild existing concrete stormwater drainage. Build new 230 kV bay, control, and battery buildings with potential ground system expansion; reconfigure existing 230 kV bay; move existing 230 kV control equipment to new building. Improve existing western internal drive path for all-weather use; install interior gate between western side yard and central yard. Extend AT&T fiber lines within substation. Update system protection scheme in existing control facilities.	None

Component	Facilities Removed	Facilities Modified	New Facilities
PG&E Brighton-Bellota 230 kV Line PG&E Brighton-Lockeford Line and Lockeford-Bellota No. 2 Line	Retire Brighton-Bellota 230 kV Line name	Install a dead-end structure (E1) starting an approximately 3.8-mile line extension, creating a double-circuit 230 kV line (E1 to E23) into PG&E Lockeford Substation. Operate the line extension so that the north circuit will be part of PG&E Brighton-Lockeford 230 kV Line and the south circuit will be part of PG&E Lockeford-Bellota No. 2 Line.	New PG&E double-circuit 230 kV extension of approximately 3.8 miles of PG&E Brighton-Bellota 230 kV Line with 23 new TSPs and conductor into PG&E Lockeford Substation.
PG&E Rio Oso-Lockeford 230 kV Line	Replace final structure at PG&E Lockeford Substation	Replace final line structure, RO1 (shared with PG&E Lockeford-Bellota), approximately 85 feet north of the existing structure on the substation parcel to reduce the current approximately 30-degree structure angle.	None
PG&E Lockeford-Bellota 230 kV Line	Replace final structure at PG&E Lockeford Substation Retire Lockeford-Bellota 230 kV Line name	Replace final line structure, RO1 (shared with PG&E Rio Oso-Lockeford), approximately 85 feet north of the existing structure on the substation parcel to reduce the current approximately 30-degree structure angle. Relocate PG&E Lockeford-Bellota 230 kV Line within PG&E Lockeford Substation Bay 1 position and rename it for operation as PG&E Lockeford-Bellota No. 1 Line.	None
PG&E Lockeford-Thurman No. 1 and PG&E Lockeford-Thurman No. 2 230 kV Transmission Lines	None	None	New PG&E double-circuit 230 kV line between PG&E Lockeford Substation and PG&E Thurman Switching Station by installing 49 new TSPs and conductor for approximately 6.8 miles.
LEU Industrial Substation	Remove terminal connections to: PG&E Lodi-Industrial PG&E Industrial Tap PG&E Lockeford-Industrial Remove overhead LEU 12 kV feeder (to northeast)	Expand ground system, replace eastern perimeter fence and install pedestrian gate. Install new 12 kV feeder underground riser, two single-circuit 60 kV TSPs, underground telecommunication conduits to LEU Guild Substation. Update relay setting. Phase transposition of existing LEU substation 60 kV lines.	None
PG&E Thurman Switching Station (230 kV)	None	None	New PG&E switching station on 5.75 acres to connect new 230 kV feed at Thurman Switching Station to the new LEU 230/60 kV Guild Substation and switch power from PG&E to LEU.
PG&E Thurman-Guild No. 1 and PG&E Thurman-Guild No. 2 230 kV Transmission Lines	None	None	New PG&E and LEU 230 kV lines between PG&E Thurman Switching Station and LEU Guild Substation, single span between 230 kV terminals, approximately 135 feet.

Component	Facilities Removed	Facilities Modified	New Facilities
LEU Guild Substation (230/60 kV)	None	None	New LEU substation on 3.25 acres to receive PG&E 230 kV feed and transform 230 kV to 60 kV.
LEU Guild-Thurman No. 1 and LEU Guild-Thurman No. 2 60 kV Power Lines	None	None	New 60 kV lines between LEU Guild and LEU Industrial substations, two spans with one pole for each circuit between 60 kV terminals, approximately 180 feet.
LEU 12 kV Feeder Lines from LEU Industrial Substation	Remove LEU 12 kV underbuild on PG&E Lockeford-Industrial 60 kV Line Retire in place existing underground portion	Relocate aboveground 12 kV line (PG&E Lockeford-Industrial pole 2 to pole 6) to an underground configuration along existing alignment and connect to a separate existing LEU 12 kV line from LEU Industrial Substation. Remove LEU 12 kV span between PG&E Lockeford-Industrial pole 4 and LEU 12 kV wood pole.	None
Comcast Telecommunication Line	Comcast to remove its existing line on PG&E Lockeford-Industrial Line pole 4.	Comcast will use other existing Comcast telecommunication lines and other joint poles as needed.	None
PG&E 12 kV Service Line on South Guild Avenue north of East Lodi Avenue	None	Extend service from PG&E 12 kV wood pole approximately 500 feet underground within South Guild Avenue to new PG&E Thurman Switching Station.	None
PG&E Lockeford-Industrial 60 kV Line	Remove 10 spans and 9 poles (pole 1 to pole 9), including span into LEU Industrial Substation Retire PG&E Lockeford-Industrial 60 kV Line name	Install new span to connect PG&E Lockeford-Industrial pole 10 with PG&E Industrial Tap pole 13 near western end of East Sargent Road. Replace pole 10 (east end of new span) with light-duty steel pole the same approximate height with a new down guy. When PG&E Lodi-Industrial Line is disconnected from LEU Industrial Substation and connected with PG&E Industrial Tap, operate PG&E reconfigured 60 kV line as PG&E Lockeford-Lodi No. 1 Line (preliminary name).	None
PG&E Lodi-Industrial 60 kV Line	Remove terminal span and pole 1 outside LEU Industrial Substation Remove pole 2 horizontal guy and stub pole on north side of East Lodi Avenue Retire PG&E Lodi-Industrial 60 kV Line name	Replace arms of existing pole 2 and pole 3 along East Lodi Avenue to connect PG&E Lodi-Industrial to PG&E Industrial Tap pole 2 and install new conductor between existing pole 2s. Operate the remaining portion of PG&E Lodi-Industrial Line as PG&E Lockeford-Lodi No. 1 Line (preliminary name).	None

Component	Facilities Removed	Facilities Modified	New Facilities
PG&E Industrial Tap 60 kV Line	Remove terminal span and pole 1 outside LEU Industrial Substation Remove pole 2 horizontal guy and stub pole on north side of East Lodi Avenue Retire PG&E Industrial Tap 60 kV Line name	Reframe pole 12 and pole 13 and install a new down guy. Install new span to connect PG&E Industrial Tap pole 13 to PG&E Lockeford–Industrial pole 10 near western end of East Sargent Road. Replace arms of pole 2 along East Lodi Avenue to connect PG&E Industrial Tap to PG&E Lodi-Industrial pole 2 and install new conductor between poles. Modify the remaining northern portion of PG&E Industrial Tap (approximately 0.5 mile between East Sargent Road and East Victor Road/ SR 12), pole 14 to pole 21, with existing PG&E distribution underbuild. Remove 60 kV conductor and pole crossarms and top existing wood poles; northern portion of existing wood pole line will operate as distribution. Operate the remaining west-east portion of PG&E Industrial Tap Line as PG&E Lockeford-Lodi No. 1 Line (preliminary name).	None
PG&E Lockeford-Lodi No. 2 60 kV Line	Remove connecting PG&E Industrial Tap span	Reframe pole 22 and install new down guy. Install horizontal guy wire from pole 22 to existing PG&E distribution pole across SR 12/East Victor Road and new down guy on distribution pole.	None
PG&E Remote-End Substations (Bellota, Brighton, Lodi, and Rio Oso)	Remove or retire in place PG&E Bellota, Brighton, Rio Oso line tuner/wave trap equipment and associated structures	Extend existing fiber lines at PG&E Bellota, Brighton, and Rio Oso substations. Install updated system protection schemes in existing control facilities of PG&E Bellota, Brighton, Lodi, and Rio Oso substations.	None
PG&E Clayton Hill Repeater Station	None	Install two new antennas on existing south communication tower within the station fence line.	None

Notes: kV= kilovolts; RO1= the final line structure on the Rio Oso-Lockeford 230kV Line; SR = State Route; TSP = tubular steel pole.

Source: PG&E 2023a.

1.2.2 Purpose and Need for the Project

Beginning in 2012, CAISO identified system reliability issues that did not meet certain thermal and voltage performance requirements established by the North American Electric Reliability Corporation (NERC)[2] in the project area.

In the CAISO 2012-2013 Transmission Planning Process (TPP) assessment, five PG&E 60 kV lines between PG&E Lockeford and PG&E Lodi substations (Lockeford/Lodi, or 230/60 kV system) in northern San Joaquin County (Northern San Joaquin area) were identified as having existing overload and high voltage deviation. To address these reliability issues, CAISO selected a 230 kV reinforcement for the 230/60 kV system.

CAISO's 2017-2018 planning cycle reevaluated the need for a 230 kV reinforcement project based on the latest system planning assumptions, which had changed since the 2012-2013 TPP because of gridwide evolving load forecasts and distributed energy resource growth scenarios. Additional reliability assessments reaffirmed the need for a 230 kV reinforcement for the area to address reliability and forecasted capacity increases and approved a revised scope for the project that refined the original project components. The project is the solution identified in CAISO's

[2] NERC's transmission system planning performance requirements for normal system operation include assessment and planning for events that could impact a system's stability and service.

2017-2018 Final Transmission Plan (CAISO 2018). In its transmission planning documents, the CAISO refers to the project as "Lockeford-Lodi Area 230 kV Development."

The project is necessary to address current and projected voltage issues and thermal overloads on PG&E's 230/60 kV system, as well as forecasted demand growth. The project would shift approximately 148 megawatts (MW) of load from the existing PG&E 60 kV system to a new PG&E 230 kV source. Moving the LEU load to the PG&E 230 kV source would reduce demand on the PG&E 60 kV system, which would provide greater reliability to other existing PG&E customers within northern San Joaquin County. The normal Load Serving Capability of the Lockeford-Lodi system would increase from 194 MW to approximately 404 MW with the proposed 230 kV system upgrade under normal operating conditions, and the emergency Load Serving Capability would increase from 152 MW to approximately 456 MW when there is a single component (i.e., line or transformer) failure in the system.

1.2.3 Project Objectives

The basic objective of the project is to address reliability and capacity issues on the existing PG&E 230 kV and 60 kV systems serving the area between PG&E Lockeford and PG&E Lodi substations (Lockeford/Lodi, or 230/60 kV system) in northern San Joaquin County (Northern San Joaquin area). The project is needed because the existing PG&E 230/60 kV system is experiencing voltage issues and thermal overloads that could cause systemwide outages. The Northern San Joaquin area is forecasted to continue to grow its power load requirements, which will worsen these voltage and thermal overload issues.

CPUC'S PROJECT OBJECTIVES

As the lead agency, CPUC is responsible for defining project objectives for the purpose of the CEQA analysis. These objectives may differ from PG&E and LEU's objectives, as stated in the section below. Based on its understanding of the purpose of the project, CPUC has identified the following project objectives:

- Substantially reduce existing thermal overload and voltage issues during P1 and P6 contingencies and maintain compliance with NERC standards in the Northern San Joaquin County area, including the City of Lodi, as identified by CAISO in its 2017-2018 Transmission Plan.
- Accommodate expected future increased electrical distribution demand in the Northern San Joaquin County area, including the City of Lodi.
- Separate PG&E's 60 kV system from LEU's 60 kV system.

APPLICANT'S PROJECT OBJECTIVES

The following objectives were identified in the Proponent's Environmental Assessment (PEA) prepared by PG&E:

- Meet PG&E's legal obligation to implement the CAISO-approved project.
- Improve system reliability for PG&E's approximately 10,000 electrical customers, one of which is Lodi Electric Utility, which itself serves approximately 27,750 customers.
- Increase capacity to accommodate projected growth in demand and minimize future reliability issues.
- Address thermal overloads and voltage concerns on PG&E's 60 kV transmission system identified during P1 contingencies and maintain compliance with NERC standards.
- Address thermal overloads on PG&E's 60 kV transmission system identified during P6 contingencies and maintain compliance with NERC standards.
- Reinforce the PG&E 60 kV system in the Lodi area by constructing a new 230 kV double-circuit line to provide an additional source of power.

- Construct a new 230 kV switching station to receive the new 230 kV double-circuit line and provide power to a new 230/60 kV substation to be constructed by LEU.
- Separate PG&E's 60 kV system at the LEU Industrial Substation from LEU's 60 kV system.
- Construct a safe, economical, and technically feasible project that minimizes environmental and community impacts.

1.3 PRELIMINARY PROJECT IMPACTS ANALYSIS

The EIR analysis has not yet been completed for the project; therefore, final project impact determinations have not been made. Nevertheless, development and screening of alternatives requires an understanding of the potential significant impacts of the project. As described further in Chapter 2, "Methodology for Identifying and Screening Alternatives," CEQA alternatives should avoid or reduce at least one of the project's potentially significant effects. Therefore, a preliminary discussion of the project's impacts is provided here for the purpose of informing the alternatives screening process.

1.3.1 Impacts Identified in the PEA

The PEA submitted by PG&E and LEU identified no potentially significant impacts that would occur as a result of the project. However, the PEA included a number of Applicant Proposed Measures (APMs) and Best Management Practices (BMPs) that CPUC would likely consider mitigation measures (e.g., preconstruction surveys for special-status species and implementation of avoidance measures, if necessary; implementation of measures in the event of discovery of human remains or fossils; noise minimization measures). Without assuming implementation of these APMs, a number of the impacts identified in the PEA would be potentially significant but could be reduced to a less-than-significant level through implementation of mitigation measures. The impact conclusions in the PEA do not necessarily reflect those of CPUC in its Draft EIR.

1.3.2 Impacts Identified in the Preliminary EIR Analysis

Preliminary analysis of potential project impacts by the EIR consultant team, including solicitation of scoping comments and coordination with local stakeholders, has identified several potentially significant impacts, including the following:

- Aesthetics: The project area is predominantly agricultural in nature and includes residential parcels, particularly within the City of Lodi. The proposed alignment would cross roadways designated as scenic routes by San Joaquin County (North Jack Tone Road and SR 12, which is a designated scenic highway approximately 4 miles north of the proposed alignment). The project could adversely affect the existing visual character or quality of public views and result in new sources of light and glare.
- Agriculture: Portions of the new PG&E 230 kV transmission line (approximately 57 new tubular steel poles) and existing PG&E 60 kV lines are located on designated agricultural land. The PG&E Lockeford Substation expansion is proposed on PG&E property that is categorized as Prime Farmland and Farmland of Statewide Importance. The project would convert agricultural land for utility infrastructure. Additionally, the project could conflict with existing agricultural land uses, including wineries.
- Biological Resources: The project area has been previously disturbed by development, landscaping, and agriculture. Nonetheless, sensitive vegetation communities and habitats, including wetlands and riparian habitat, could be disturbed or lost as a result of the project. Additionally, the project could result in the disturbance or loss of special-status and migratory species, conflict with local regulations that protect biological resources, and create a substantial collision or electrocution risk for birds or bats.
- Land Use and Planning: Project components proposed by PG&E would not be subject to local discretionary land use or planning regulations; however, LEU's portion of the project would be subject to local regulation. The

project could conflict with adjacent land uses, including existing residences, farms, vineyards, and wine-related businesses.

- **Cultural Resources:** Ground disturbance associated with implementation of project improvements could adversely affect archeological and tribal cultural resources.
- **Noise:** Construction activities conducted near sensitive receptors could temporarily exceed local noise thresholds.
- **Wildfire:** New overhead power lines could increase the risk of wildfire by creating new ignition sources in the event of downed lines, vegetation contact, or apparatus failures.

This page is intentionally left blank.

2 METHODOLOGY FOR IDENTIFYING AND SCREENING ALTERNATIVES

2.1 IDENTIFICATION OF ALTERNATIVES

As discussed above, the purpose of the ASR is to identify a reasonable range of potentially feasible alternatives to the project for consideration and evaluation in the EIR. The range of alternatives considered in the ASR was identified through (1) review of the Applicants' PEA, including review of the PEA's proposed alternatives and selection criteria; (2) collection of input from members of the public and stakeholders during the CEQA scoping process; and (3) independent evaluation of the project by CPUC staff and consultants and consideration of CPUC initiatives. As explained further in Section 2.2, "Alternatives Screening Methodology," the purpose of alternatives under CEQA is to reduce or avoid one or more significant impacts of the project (while also meeting all or most of the basic project objectives and feasibility criteria). Therefore, project alternatives identified and evaluated in the ASR considered these underlying factors.

2.1.1 PEA Alternatives and Alternatives Selection Criteria

Prior to submitting their application to CPUC, the Applicants and their consultant teams developed and used selection criteria to identify project alternatives for the PEA analysis. Selection criteria developed as part of the PEA process are described in detail below.

As explained by PG&E in the PEA (PG&E 2023a), potential alternatives were screened based on three criteria: (1) does the alternative meet most basic project objectives, (2) is the alternative feasible, and (3) does the alternative avoid or substantially lessen any significant environmental effects of the project (including consideration of whether the alternative itself could create significant environmental effects potentially greater than those of the project). PG&E considered the no-project alternative and 13 alternatives (i.e., system, siting [or routing], energy storage, and demand response). PG&E compared the alternatives with the project purpose, project objectives, feasibility criteria (consideration of schedule, economic, environmental, legal, social, and technological factors) and the environmental criterion (reduction of potentially significant environmental impacts). PG&E obtained input on potential project alternatives and routing alternatives from community and agency stakeholder information, and project planners and engineers.

Ultimately, as a result of this screening process, PG&E narrowed the previous 13 alternatives down to two alternative routes (including the proposed route) and a system alternative, in addition to the no-project alternative (PG&E 2023a).

2.1.2 Public and Stakeholder Scoping

In accordance with CEQA requirements, CPUC circulated an NOP to agencies and interested members of the public on January 10, 2024. Circulation of the NOP initiated the 30-day scoping period, which lasted until February 9, 2024. CPUC transmitted copies of the NOP via certified mail to 20 agencies including the planning departments of Alameda, Amador, Contra Costa, Sacramento, San Joaquin, Solano, and Stanislaus counties; and the cities of Escalon, Lathrop, Manteca, Ripon, Stockton, and Lodi. The Central Valley Regional Water Quality Control Board (RWQCB), San Joaquin Valley Air Pollution Control District (APCD), California Department of Transportation, and California Department of Fish and Wildlife were also directly mailed the NOP via certified mail. Copies of the NOP were sent to the Union Pacific Railroad and Central California Traction Company. The NOP was also posted with the San Joaquin County Clerk and distributed to State agencies through the State Clearinghouse, a division of the Governor's Office of Planning and Research. CPUC also mailed copies of the NOP to the last known mailing address of 119 property owners within 300 feet of the proposed transmission line alignment.

CPUC conducted two virtual public scoping meetings for the project on January 30, 2024 at 2:30 p.m. and 6:30 p.m. The meetings were open to the public, with attendees representing landowners, organizations, and other interested

parties. The meeting format consisted of a presentation by CPUC and consultant staff followed by an opportunity for attendees to provide oral comments. The presentation included basic information about the project, ways interested parties can stay informed and engaged, and avenues by which to submit questions or comments. A total of about 45 individuals attended both virtual meetings. CPUC and consultant staff were available to take comments and direct questions or concerns.

During the scoping period, CPUC received numerous comment letters from public agencies, the general public, and other entities, as summarized in Table 2-1.

Table 2-1 Comment Letters Received by Commenter Type

Commenter Type	No. of Comment Letters
Agencies	4
Public	19
Community Organization / Group	2
Tribes	0

Source: CPUC 2024a.

The following public agencies submitted comments on the project:

- Native American Heritage Commission,
- Stanislaus County,
- Central Valley RWQCB, and
- San Joaquin Valley APCD.

The specific comments within the comment letters submitted on the project covered a wide range of topics; refer to the Scoping Summary Report (available via the project website) for a detailed discussion of the comments received during scoping. The most common, generalized comments received are provided in Table 2-2.

Table 2-2 Comment Topics and Frequency

Comment Topic	Number of Comments
General Comment: Comments related to general opinions on the project or other comments unrelated to any of the categories listed below.	15
CEQA Process: Comments related to the CEQA review process, such as the length of the public review period.	1
Project Description: Comments related to specific aspects of the project, such as project design or schedule.	4
Environmental Impacts: Comments related to possible impacts on the physical environment from the project, such as noise impacts during project construction or operation, or possible effects on biological resources from project components.	25
Alternatives: Comments related to potential alternatives to the project, such as siting proposed infrastructure at a different location or using alternative technologies or methods.	21
Electromagnetic Fields: Comments related to potential impacts on human health and other environmental resources specific to EMFs resulting from project components.	6

Source: CPUC 2024a.

Most of the comments (more than 80 percent) include mention of topics related to alternatives, generally including non-wire options that the City of Lodi could implement independently, route modification requests, suggestions to upgrade existing lines instead of constructing new ones, and requests to pursue undergrounding of the transmission line. In addition, several common topics raised in the comments related to property value, conflicts with agricultural production (including limiting the use of aerial spraying), the effect of the project on the aesthetic qualities of the project area, and human health hazards from potential exposure to electromagnetic fields (EMFs).

The following comments were received specifically on the topic of alternatives:

- Commenters suggested increasing the capacity of existing power lines, specifically the Lockeford Industrial 60 kV or other 60 kV/115 kV lines, and considering the expansion of existing infrastructure as an alternative to building new towers. For example, upgrading one of the four existing single-circuit 60 kV lines to a double circuit to address overheating and reliability issues was suggested.
- Commenters expressed support for undergrounding the proposed transmission lines to reduce potential agricultural and aesthetic impacts, as well as minimize impacts on property values.
- Commenters requested that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property. For example, along Kettleman Lane or Harney Lane. An abandoned rail line right of way was also identified as a potential routing option to limit the impact on landowners.
- Commenters recommended consideration of the Central Route identified by PG&E, along Highway 12/Victor Road, and westward direction along Kettleman Lane rather than diverting south at Highway 88 to cut through multiple farms and vineyards.
- A comment suggested two alternatives at Locust Tree Road: extending the line's angle westward to put the line at the property's northern edge or shortening the line to position it along the property's southern boundary.
- Comments suggested that CPUC identify an alternative route with fewer proximate residences, farms, vineyards, and wine-related businesses.
- Commenters suggested that the City of Lodi should transition to renewable energy to help meet energy demand. For example, a commenter suggested installing a large solar generation facility to produce power locally rather than transmit it from the north-south Bellota line to the Lockeford substation.
- Some commenters expressed a preference for a “no project” alternative.

2.1.3 Independent Evaluation and Consideration of CPUC Initiatives

As part of the independent evaluation of the project for the EIR, CPUC staff and consultants identified and considered possible alternatives to the project. This process was guided by the alternatives screening criteria (see Section 2.2 for detailed description), comments received during scoping, as well as consideration of CPUC initiatives and relevant sections of the Public Utilities Code.

ENERGY STORAGE INITIATIVES AND RULINGS

In 2010, the California Legislature authorized CPUC to evaluate and determine energy storage targets, if any, for the State Load Serving Entities (LSEs) through Assembly Bill (AB) 2514. In 2013, CPUC issued Decision (D.)13-10-040, which set an AB 2514 energy storage procurement target of 1,325 MW by 2020. CPUC's energy storage procurement policy was formulated with three primary goals:

- grid optimization, including peak reduction, contribution to reliability needs, or deferral of transmission and distribution upgrade investments;
- integration of renewable energy; and
- greenhouse gas (GHG) reductions in support of the State's targets.

AB 2868, passed in 2016, required PG&E, Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) to propose programs and investments to accelerate the deployment of distributed energy storage systems with the total capacity not to exceed 500 MW (CPUC 2024b). In 2017, CPUC issued D.17-04-039, which required PG&E, SCE, and SDG&E to propose programs and investments to adopt up to 166.66 MW of distributed energy storage systems into their 2018 AB 2514 energy storage procurement plans. In July 2019, CPUC issued D.19-

06-032, which approved PG&E's behind the meter (BTM)[3] thermal energy storage program proposal to comply with AB 2868. This Decision determined that PG&E's remaining application proposal and the application proposals from SDG&E and SCE did not comply with AB 2868 and thus rejected these proposals.

To date, CPUC has approved procurement of more than 1,533.52 MW of new storage capacity to be built in the State (CPUC 2024b). Of this total, 506 MW are operational. The AB 2514 mandate is procured in three distinct grid domain targets, with some flexibility between the grid domain targets of customer sited, distribution-connected, and transmission connected. Cumulatively, the three major investor-owned utilities (PG&E, SCE, and SDG&E) have exceeded the AB 2514 target of 1,325 MW and satisfied nearly all domain-specific requirements (CPUC 2024b).

PUBLIC UTILITIES CODE CONSIDERATIONS FOR ALTERNATIVES AND CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY APPLICATIONS

With respect to identification and consideration of alternatives in an EIR, CPUC takes the following into account:

> In considering an application for a certificate for an electric transmission facility pursuant to Section 1001, the commission shall consider cost-effective alternatives to transmission facilities that meet the need for an efficient, reliable, and affordable supply of electricity, including, but not limited to, demand-side alternatives such as targeted energy efficiency, ultraclean distributed generation, as defined in Section 353.2, and other demand reduction resources. (Public Utilities Code Section 1002.3.)

Additionally, the CPUC's Information and Criteria List for project applications requires discussion of "…alternatives capable of substantially reducing or eliminating any significant environmental effects, even if these alternatives substantially impede the attainment of the project objectives, and are more costly."

Finally, Public Utilities Code Section 1002 states the following with respect to issuance of Certificates of Public Convenience and Necessity (CPCNs):

(a) The commission, as a basis for granting any certificate pursuant to Section 1001 shall give consideration to the following factors:

  (1) Community values.

  (2) Recreational and park areas.

  (3) Historical and aesthetic values.

  (4) Influence on environment, except that in the case of any line, plant, or system or extension thereof located in another state which will be subject to environmental impact review pursuant to the National Environmental Policy Act of 1969 (Chapter 55 (commencing with Section 4321) of Title 42 of the United States Code) or similar state laws in the other state, the commission shall not consider influence on the environment unless any emissions or discharges therefrom would have a significant influence on the environment of this state.

2.2 ALTERNATIVES SCREENING METHODOLOGY

The screening process for identified possible alternatives considered the following primary criteria:

- Does the alternative meet most basic project objectives?
- Is the alternative feasible?

[3] The term, "behind the meter" (BTM), refers to connecting energy storage behind a customer's meter (i.e., connecting it to a specific customer's electrical system). The term, "front of the meter" (FTM), refers to connecting energy storage to a utility company's electrical grid. FTM connections can be to a utility's distribution system (under 50 kV) or transmission system (above 50 kV).

- Does the alternative avoid or substantially lessen any significant environmental effects of the project (including consideration of whether the alternative itself could create significant environmental effects potentially greater than those of the project)?

Each criterion is described further in the following subsections. The criteria are discussed throughout this document in the order shown above; however, the order is not important, and all criteria carry equal weight.

2.2.1 Consistency with Basic Project Objectives

Section 15126(a) of the CEQA Guidelines requires that project objectives be set forth in an EIR to help define alternatives to the project that meet most of the basic project objectives. Moreover, a project may not limit its objectives in such a way as to effectively confine the range of feasible alternatives that are available. The project purpose and objectives are discussed in Sections 1.2.2, "Purpose and Need for the Proposed Project," and 1.2.3, "Project Objectives."

As described in Section 1.2.3, the basic objective of the project is to address reliability and capacity issues on the existing PG&E 230 kV and 60 kV systems serving the area between PG&E Lockeford and PG&E Lodi substations (Lockeford/Lodi, or 230/60 kV system) in northern San Joaquin County (Northern San Joaquin area). The project is needed because the existing PG&E 230/60 kV system is experiencing voltage issues and thermal overloads that could cause systemwide outages. The Northern San Joaquin area is forecasted to continue to grow its power load requirements, which will worsen these voltage and thermal overload issues.

Additional project objectives are listed in Section 1.2.3.

2.2.2 Feasibility

The alternatives screening process also considered whether the alternative is potentially feasible. As defined by Section 15364 of the CEQA Guidelines, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into consideration economic, environmental, legal, social, and technological factors. These factors include, for example, technology availability, constructability, and regulatory permits. These factors were considered in evaluating potential alternatives. To assess the feasibility of different transmission line corridors, PG&E considered potential routes based on the siting objectives and existing setting shown in Table 2-3.

Table 2-3 Siting Analysis Objectives and Existing Setting

Siting Objectives	Existing Setting
Compatibility with Land Use and Land Ownership	▶ Land ownership and jurisdiction ▶ Recreational areas ▶ Population density ▶ Land use
Compatibility with Agricultural Land Uses	▶ Agricultural crop type/land use ▶ Center-pivot irrigation ▶ Prime farmland soils ▶ California farmland mapping and monitoring ▶ Williamson Act lands
Compatibility with Infrastructure	▶ Existing utilities and facilities ▶ Other linear facilities ▶ Communication towers

Siting Objectives	Existing Setting
Provision for Efficient and Reliable Engineering, Construction, and Operations	▶ Site slope ▶ Construction access and staging ▶ Flood or other water inundation ▶ Geotechnical conditions ▶ Solid waste landfill and hazardous materials sites ▶ Airfield ▶ Length of line
Protection of Natural Resources	▶ Wetlands and waterways ▶ Natural resource protection ▶ Special-status species critical habitat ▶ Vegetation/land cover types
Protection of Cultural Resources	▶ High-sensitivity areas ▶ Historic landmarks and historic places
Protection of Visual Resources	▶ Designated scenic resources and visually sensitive areas

Source: PG&E 2023a.

The existing setting was not reviewed during siting for the associated switching station or substations' modification, expansion, and construction because these project components were predetermined to be located within or adjacent to existing facilities.

2.2.3 Potential to Avoid or Lessen Significant Environmental Impacts

Finally, the screening process determined, as far as available information allows, whether the alternative could avoid or substantially lessen any of the significant effects of the project. Per Section 15126.6(a) of the CEQA Guidelines, alternatives considered must "avoid or substantially lessen any of the significant effects of the project." Based on the analysis summarized in Section 1.3, "Preliminary Project Impacts Analysis," alternatives were evaluated based on their potential to result in environmental impacts, including:

- conflicts with existing land uses;
- conflicts with existing agricultural land uses, including wineries;
- impacts on special-status species and habitats; and
- impacts on visual resources;
- impacts to sensitive receptors from construction noise;
- impacts on archeological and tribal cultural resources; and
- impacts related to wildfire risk.

3 ALTERNATIVES DESCRIPTIONS AND DETERMINATIONS

This chapter describes the alternatives considered in this ASR and the process by which alternatives were either retained for further analysis in the EIR or eliminated from further consideration. Each alternative was evaluated using the process described in Chapter 2. CEQA requires that the No Project Alternative be considered in the EIR; as such, it is not discussed here.

3.1 SUMMARY OF ALTERNATIVES SCREENING ANALYSIS RESULTS

PG&E obtained input on potential alternatives from CAISO, community and agency stakeholder information, and project planners and engineers. The public outreach process is described in Section 2.1.2, "Public and Stakeholder Scoping." After each stakeholder meeting, PG&E considered the input as part of its project planning and identification of alternatives. In developing a list of alternatives for consideration, the following factors were considered:

- Alternatives to the project that were suggested, considered, or studied by CAISO or by a stakeholder. CAISO studied a prior version of the project, the Lockeford-Lodi Area 230 kV Development (Eight Mile Substation) project. Stakeholders suggested battery energy storage solutions be considered.
- Alternatives suggested during public outreach. Stakeholders had numerous suggestions for transmission line routing such as use of existing right-of-way (ROW) or roadways, and also suggested undergrounding as an option.
- Reduction in footprint, which is incorporated in the project design through use of monopoles instead of traditional towers and by constructing new and expanded substations on existing substation property. Reduction in footprint also was considered through system alternatives such as reconductoring and battery energy storage, which are listed in Table 3-1 as system and energy storage alternatives. In addition, use of existing ROW for new transmission lines, which could reduce the project footprint, was considered as part of the siting analysis.
- Project phasing. No alternatives were identified for project phasing because the entire project must be built to meet basic objectives.
- Alternative facility and construction activity sites. Alternative locations for transmission lines are included in the evaluation of possible transmission line routes. Multiple potential construction staging areas have been included in the project description. Alternative locations were not considered for substation expansion and construction because the use of existing substation sites as included in the project description is expected to be the least impactful.
- Renewable energy, energy conservation, energy efficiency, demand response, distributed energy resources, and energy storage. The potential for alternatives of this type was limited. For example, feasible reductions in energy use from energy conservation/energy efficiency would not be sufficient to avoid voltage issues and thermal overload issues. These considerations did support identification of alternatives incorporating battery storage and distribution energy resources.
- Avoiding or limiting the construction of new transmission-voltage facilities, which was considered in reconductoring alternatives, energy storage, and demand response alternatives.
- Transmission line routes. As part of its routing, PG&E evaluated electrical transmission or power lines, railroads, and roads within the project area for potential paralleling or ROW reuse opportunities, as well as routes across agricultural land, as possible corridors for the new 230 kV lines. While some roads were identified as having opportunities and are included as alignments for retained routes, aligning was constrained for most roads and lines because of structures and existing vegetation (mature trees/biological resources). PG&E used the siting objectives and existing setting discussed in Section 2.2 to identify several potential corridors to be carried forward for further analysis as alternatives.

- Engineering or technological approaches, which were incorporated in reconductoring, routing, and other alternatives.

PG&E identified 13 alternatives and screened them against the criteria discussed in Section 2.2, "Alternatives Screening Methodology." The alternatives are provided in the following list. Siting alternatives either were identified to be carried forward by PG&E's siting analysis or were suggested by stakeholders. Other alternatives were identified by CAISO or public stakeholders. Table 3-1 summarizes the alternatives screening analysis.

System Alternatives

A. Lockeford-Lodi Area 230 kV Development (Eight Mile Substation, CAISO 2013)

B. 60 kV Reconductoring

C. Upgrade Lockeford-Industrial 60 kV to 115 kV

D. Undergrounding

Siting Alternatives

E. Central Route

F. Northern Route

G. Southern Route East

H. Victor Road/SR 12 Route

I. East Kettleman Lane Route

J. Use Existing 60 kV ROW (including replacing existing 60 kV with 230 kV, building parallel line to 60 kV, or building 230 kV over 60 kV)

Energy Storage Alternatives

K. Battery Energy Storage Solution (BESS) Only

L. Hybrid BESS

Demand Response Alternative

M. Distribution Energy Resources Improvement

Table 3-1 provides a summary of the alternatives screening analysis results. Sections 3.2 and 3.3 provide additional analysis to support determinations provided in this summary table.

Table 3-1 Summary of Alternatives Screening Analysis

Potential Alternative	Project Purpose and Objectives Criterion	Feasibility Criterion[a]	Environmental Criterion[b]
System Alternatives			
A. Lockeford-Lodi Area 230 kV Development (Eight Mile Substation)	Meets project purpose and most objectives.	Alternative would cost more than project, with a new 230 kV transmission line approximately twice as long as project. Otherwise appears potentially feasible.	Impacts likely greater than project because of longer transmission line (approximately twice as long as project).
B. 60 kV Reconductoring	Does not meet project purpose or most objectives. Reconductored 60 kV lines would not be strong enough to address the voltage and thermal issues.	Alternative appears potentially feasible.	Impacts would likely be less than the project because of reconducting and replacement of 60 kV poles within existing alignments.
C. Upgrade PG&E Lockeford-Industrial 60 kV to 115kV	Would not meet project purpose or most objectives. A 115 kV line would not be strong enough to address the voltage and thermal issues.	Alternative appears potentially feasible.	Similar impacts compared to the proposed project because of the 115 kV line having a similar ROW footprint and construction duration.
D. Undergrounding	Meets project purpose and most objectives. It is not consistent with CAISO-recommended solution.	Not economically feasible. Cost is an order of magnitude greater than the proposed project or other alternatives.	Avoids visual and other impacts of aboveground alternatives. Construction impacts would be greater than project for some areas such as traffic and air quality.
Siting Alternatives			
E. Central Route	Meets project purpose and most objectives.	Alternative appears potentially feasible.	Impacts would likely be similar to the project.
F. Northern Route	Meets project purpose and most objectives.	Alternative appears potentially feasible.	Impacts would likely be similar to the project.
G. Southern Route East	Does not fully meet project purpose based on reliability concerns. Meets most objectives, except for improving reliability. Having a double-circuit 230 kV transmission line cross over multiple other transmission lines (required near PG&E Lockeford Substation) can compound line failures.	Alternative appears potentially feasible, although it presents technological issues in crossing multiple existing transmission lines near PG&E Lockeford Substation.	Results in greater impacts than the project based on multiple crossings of wetlands and creeks, as well as longer transmission line. More and taller poles would be required in the vicinity of PG&E Lockeford Substation to cross existing transmission lines, increasing visual impacts.
H. Victor Road/SR 12 Route	Does not meet project purpose or objectives because it is not technically feasible.	Not technically feasible. Between Kennison Lane and UPRR Railroad, there is not enough clearance to accommodate height restrictions or ROW width requirements for a new 230 kV line because of industrial developments on the north and residential developments on the south of the roadway.	If it were technically feasible, potentially greater impacts because of the portion of line between eastern end of SR 12 and PG&E Lockeford Substation. Siting options for this section place a potential 230 kV line in very close proximity to residences that would be within the required ROW.

Potential Alternative	Project Purpose and Objectives Criterion	Feasibility Criterion[a]	Environmental Criterion[b]
I. East Kettleman Lane Route	Does not meet project purpose or objectives because it is not technically feasible.	Not technically feasible. There is not enough clearance to accommodate height restrictions or ROW width requirements for a new 230 kV line along some portions of East Kettleman Lane.	If it were technically feasible, potentially greater impacts from placing 230 kV line in very close proximity to residences and businesses that would be within the required ROW.
J. Use Existing 60 kV ROW	Does not meet project purpose or objectives because it is not technically feasible.	Not technically feasible. Each existing 60 kV power line has lengths with insufficient ROW to accommodate the required ROW for 230 kV line. Proximity to roads, existing structures, and mature vegetation prevents expansion of 60 kV ROW. Additionally, three circuits on the same structure create a single point of failure and is a nonstandard design.	If it were technically feasible, potentially greater impacts from placing 230 kV line in very close proximity to residences and businesses that would be within the required ROW.
Energy Storage Alternatives			
K. Battery Energy Storage Solution (BESS) Only	Would not meet project purpose or most objectives, including mitigating thermal overloads and meeting PG&E's legal obligations. The batteries cannot be charged enough to address the overloads under the NERC P1 category contingency.	Alternative appears potentially feasible. Some uncertainty given the unknown timeline for a BESS to be built, which would be done by a third party selected by CAISO through a competitive bid process. There is also a lack of a clear standard for battery sizing.	Impacts would be less than the project because no new 230 kV lines would be constructed.
L. Hybrid BESS	Would not meet project purpose and some objectives. Would not accommodate projected growth in demand beyond approximately 10 years.	Alternative appears potentially feasible. Some uncertainty given the unknown timeline for a BESS to be built, which would be done by a third party selected by CAISO through a competitive bid process. There is also a lack of a clear standard for battery sizing.	Impacts would likely be similar to the project based on reconductoring and replacement of 60 kV poles.
Demand Response Alternatives			
M. Distribution Energy Resources Improvement	Would not meet project purpose or most objectives.	Not technically feasible to reduce electrical system demand sufficiently to meet project objectives.	Unable to determine because exact improvements are unknown.

Notes:

[a] Considers economic, environmental, legal, social, and technological factors.

[b] Based on the PEA analysis and preliminary EIR analysis, the project would not result in significant environmental impacts that cannot be mitigated.

Bold text indicates alternative carried forward in the EIR.

Source: PG&E 2023a.

3.2 ALTERNATIVES CARRIED FORWARD FOR EIR EVALUATION

Two alternatives, in addition to the proposed project and No Project Alternative, are being carried forward for evaluation in the EIR. These alternatives are shown in Figure 3-1 and are described in the following sections. These alternatives were selected because they are potentially feasible, meet the underlying purpose of the project, meet most of the project objectives, and represent a reasonable range of alternatives to the project. As noted earlier in this chapter, based on the PEA analysis and preliminary EIR analysis, the project would not result in significant environmental impacts that cannot be mitigated.

3.2.1 Central Route Alternative

DESCRIPTION

The Central Route Alternative would route the western portion of the new 230 kV line to the north of the proposed project between PG&E Lockeford Substation and LEU Industrial Substation, as shown on Figure 3-1. It would parallel portions of the existing PG&E Lockeford-Industrial 60 kV Line. For the eastern segment between PG&E Lockeford Substation and PG&E Brighton-Bellota 230 kV Line, this alternative would parallel the existing PG&E Lockeford-Bellota 230 kV Line, the same eastern alignment as the project. The total length of new PG&E 230 kV transmission lines would be approximately 10.04 miles.

Within the footprint of the Central Route Alternative, land uses include orchard and semiagricultural, including wineries, with rural residential clusters mainly on local and county roads with mature vegetation. Like the project, the Central Route Alternative includes one canal crossing (Bear Creek), one highway crossing (SR 88), one railroad crossing, and multiple road crossings. The Central Route Alternative would enter the City of Lodi approximately 0.5 mile south of the proposed project and follow South Guild Avenue north to PG&E Thurman Switching Station. Some of the 230 kV tubular steel pole structures would likely need to be in business parking lots fronting South Guild Avenue for this route segment to accommodate the needed 230 kV alignment width.

All other components of this alternative would be the same as the project, including:

- PG&E Thurman Switching Station,
- LEU Guild Substation,
- PG&E and LEU Thurman-Guild 230 kV No. 1 and No. 2 Transmission Lines,
- LEU Guild-Industrial 60 kV No. 1 and No. 2 Power Lines, and
- PG&E 60 kV power lines reconfiguration.

In general, construction activities for the Central Route Alternative would be similar to the project, including the types of equipment to be used in each phase of construction and hours per day that equipment would be used during construction (refer to Chapter 2, "Project Description," of the Draft EIR). Substation construction activities would be the same as the project. Construction staging areas, pull-and-tension sites, and access roads were not identified for this alternative, but would be expected to be similar to and at the same scale as the project.

Public and Agency Comments

Scoping comments recommended consideration of the Central Route identified by PG&E, along Highway 12/Victor Road, and westward direction along Kettleman Lane rather than diverting south at Highway 88 to cut through multiple farms and vineyards. Additionally, commenters requested that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property.

DISCUSSION AND CONCLUSION

The Central Route Alternative would meet the project purpose and most objectives of CPUC and PG&E, and it would be potentially feasible. Given the similar length of the new transmission line, impacts related to agriculture and biological resources would likely be similar to the project. However, this alternative would have more noticeable aesthetic impacts because 18 residences are located within 250 feet of the new PG&E 230 kV transmission line compared to 12 residences under the project. Additionally, this alternative would be within 250 feet of a winery. This alternative would be nearer, and hence more visible, to the designated scenic portion of SR 88 than the project. Notwithstanding these differences, this alternative is being carried forward for evaluation in the EIR to compare the project to an alternative that would increase paralleling of existing roadways and power line ROW.

3.2.2 Northern Route Alternative

DESCRIPTION

The Northern Route Alternative alignment would route the western portion of the new 230 kV corridor, between PG&E Lockeford Substation and LEU Industrial Substation, to the north of the proposed project alignment, as shown on Figure 3-1. It would parallel portions of the existing PG&E Lockeford-Industrial 60 kV Line on the western segment. Most of the eastern portion of the Northern Route Alternative 230 kV transmission line would be the same as the project. Approximately 1 mile west of PG&E Brighton-Bellota 230 kV Line (approximately 0.25 mile west of North Linn Road), the corridor would turn north and then east on East Sargent Road. The total length of new PG&E 230 kV transmission lines would be approximately 10.39 miles.

Land uses along the alignment include orchard and semiagricultural, wineries, and rural residential clusters mainly on local and county roads with mature vegetation. Similar to the project, the Northern Route Alternative includes one canal crossing (Bear Creek), one highway crossing (SR 88), one railroad crossing, and multiple road crossings. As with the proposed project, this route alternative runs adjacent to the cemetery when entering the City of Lodi and would reuse the western end of PG&E Lockeford-Industrial 60 kV line alignment.

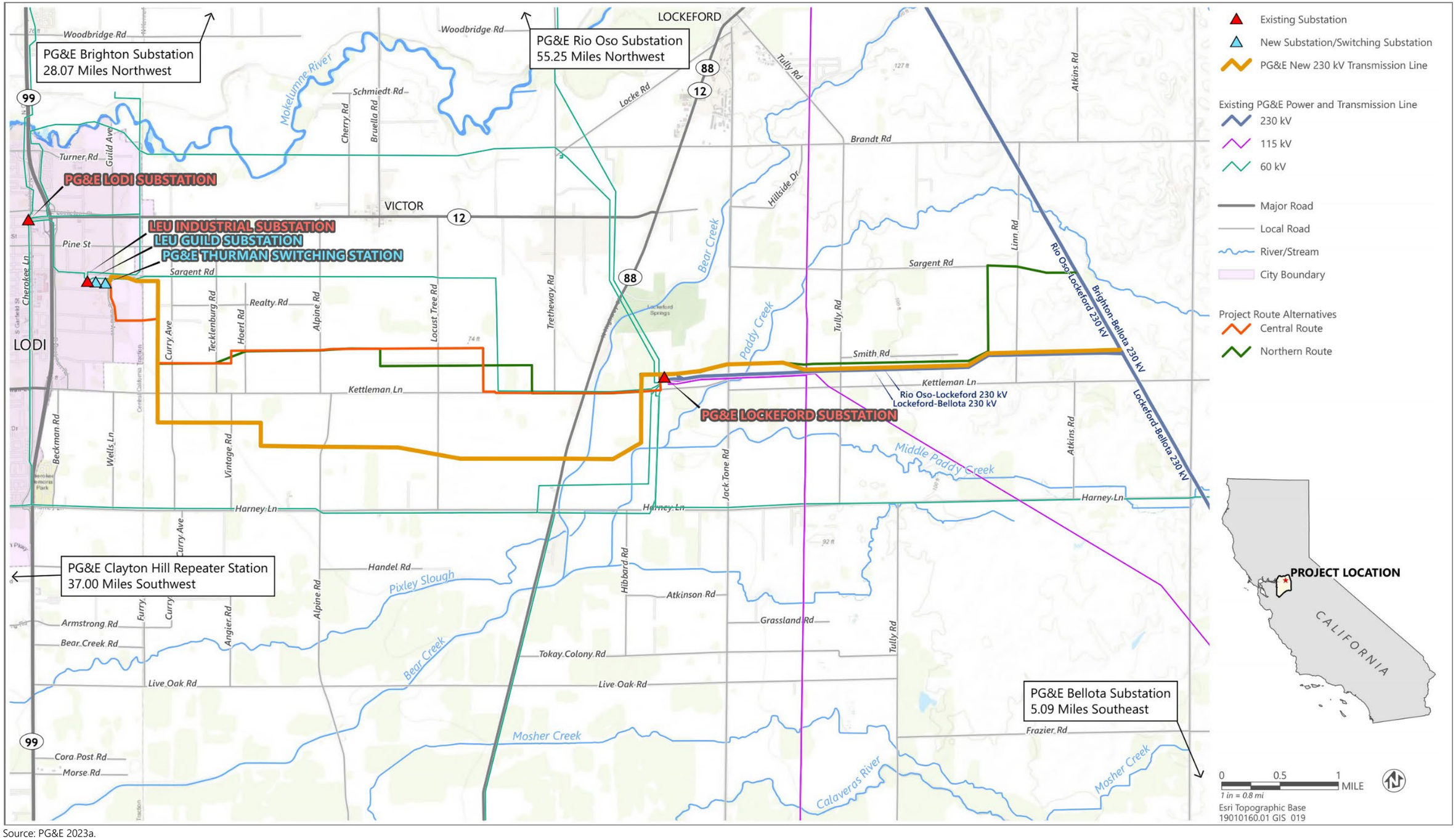
All other components of this alternative would be the same as the project, including:

- PG&E Thurman Switching Station,
- LEU Guild Substation,
- PG&E and LEU Thurman-Guild 230 kV No. 1 and No. 2 Transmission Lines,
- LEU Guild-Industrial 60 kV No. 1 and No. 2 Power Lines, and
- PG&E 60 kV power lines reconfiguration.

In general, construction activities for the Northern Route Alternative would be similar to the project, including the types of equipment to be used in each phase of construction and hours per day that equipment would be used during construction (refer to Chapter 2, "Project Description," of the Draft EIR). Substation construction activities would be the same as the project. Construction staging areas, pull-and-tension sites, and access roads were not identified for this alternative, but would be expected to be similar to and at the same scale as the project.

Public and Agency Comments

Scoping comments requested that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property.



Source: PG&E 2023a.

Figure 3-1 Project Route Alternatives

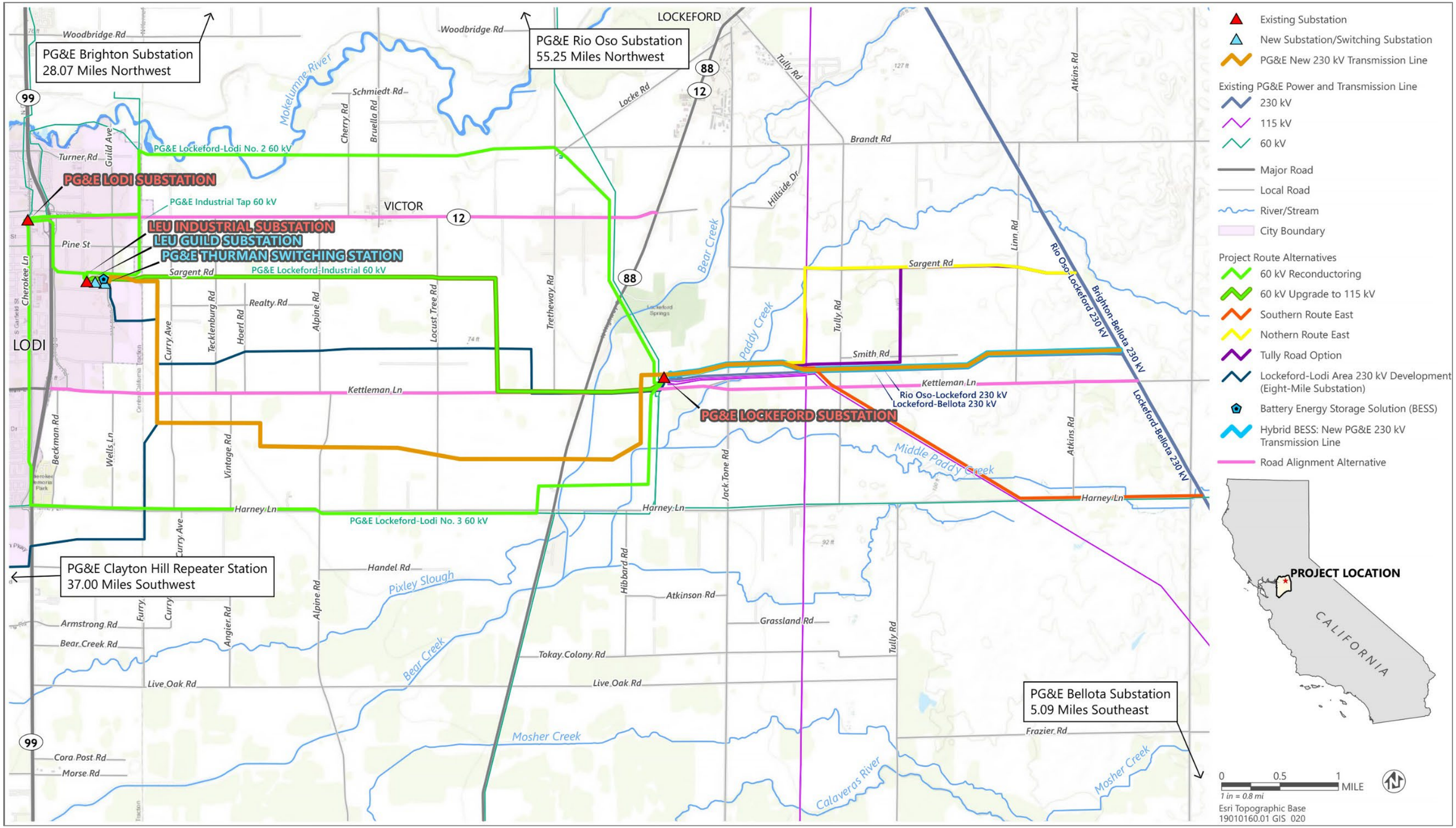
DISCUSSION AND CONCLUSION

The Northern Route Alternative would meet the project purpose and most objectives of CPUC and PG&E, and it would be potentially feasible. Given the similar length of the new transmission line, impacts related to agriculture and biological resources would likely be similar to the project. However, this alternative would have more noticeable aesthetic impacts because 21 residences are located within 250 feet of the new PG&E 230 kV transmission line compared to 12 residences under the project. Additionally, this alternative would be within 250 feet of a winery. This alternative would be nearer, and hence more visible, to the designated scenic portion of SR 88 than the project. Notwithstanding these differences, this alternative is being carried forward for evaluation in the EIR to compare the project to an alternative that would increase paralleling of existing roadways and power line ROW and decrease paralleling of existing transmission line ROW.

3.3 ALTERNATIVES DISMISSED FROM FURTHER EVALUATION

This section discusses alternatives considered but not selected for further analysis. For each alternative, this section provides a brief description of the alternative, comments from the public or agencies about the alternative, and an explanation of why the alternative was dismissed from further evaluation. Table 3-1 provides a discussion of the extent to which each alternative would meet the project purpose and objectives, its feasibility, its potential to reduce environmental impacts of the project, and any new impacts that could occur with its implementation. Figure 3-2 provides a map of the alternative sites where they have been identified.

This page is intentionally left blank.



Source: PG&E 2023a.

Figure 3-2 Alternatives Dismissed from Further Evaluation

3.3.1 System Alternatives

LOCKEFORD-LODI AREA 230 KV DEVELOPMENT (EIGHT MILE SUBSTATION) ALTERNATIVE

Description

This version of the project was included in the CAISO *2012-2013 Final ISO Transmission* Plan (CAISO 2013). This alternative would include a 230 kV double-circuit transmission line from PG&E Eight Mile Substation to PG&E Lockeford Substation, construction of a new LEU 230 kV bus at LEU Industrial Substation and looping one of the new PG&E Eight Mile/Lockeford 230 kV lines into this bus from an adjacent new PG&E switching station. A combination of potential route options presented at the December 2016 open houses for the 2013 CAISO project is used as the alternative's centerline for comparison purposes. The alternative centerline avoids existing and planned land use constraints and generally is a shorter length than other potential route combinations. Combining the Southern Route Via Industrial and the Central routes to connect the end points creates a total length of new PG&E 230 kV transmission lines of approximately 19.85 miles. Components of this alternative would include the following:

- Construction of a new PG&E Thurman Switching Station and LEU Guild Substation,
- Construction of a new 230 kV double-circuit transmission line (DCTL) between PG&E Eight Mile Substation and PG&E Lockeford Substation with a loop into PG&E Thurman Switching Station,
- Expansion of PG&E Eight Mile Substation by approximately 3.38 acres and grade approximately 5.85 acres to connect to the new 230 kV DCTL,
- Expansion of approximately 1.5 acres and grading to PG&E Lockeford Substation to connect to the new 230 kV DCTL, and
- PG&E 60 kV power lines reconfiguration.

Public and Agency Comments

No comments were made specifically on this alternative. It was identified (and later approved) by CAISO as an earlier version of the project.

Discussion and Conclusion

The Lockeford-Lodi Area 230 kV Development Alternative would meet the project purpose and most objectives of CPUC and PG&E, and would be technically potentially feasible. Given the longer new transmission line, this alternative would have greater impacts than the project. For example, this alternative would result in the permanent conversion of approximately 3.4 acres of Important Farmland compared with the project's permanent conversion of 1.4 acres of Important Farmland. Additionally, 85 residences would be within 250 feet of the new PG&E transmission lines compared with 12 residences under the project. It also would cross a state designated scenic highway and be located within two miles of two airports. For these reasons, this alternative is dismissed from further evaluation.

60 KV RECONDUCTORING

Description

This alternative would involve reconductoring the PG&E 60 kV power lines in the study area by replacing existing lines and poles. The lines that would be reconductored include:

- PG&E Lockeford-Industrial 60 kV,
- PG&E Industrial Tap 60 kV,

- PG&E Lockeford-Lodi No. 2 60 kV, and
- PG&E Lockeford-Lodi No. 3 60 kV.

Public and Agency Comments

Several community stakeholders, including at the July 2019 open house, suggested this alternative to minimize or avoid impacts to agriculture with the construction of a new 230 kV line. Additionally, scoping comments suggested increasing the capacity of existing power lines, specifically the Lockeford Industrial 60 kV or other 60 kV/115 kV lines, and considering the expansion of existing infrastructure as an alternative to building new towers.

Discussion and Conclusion

This alternative would not meet the project purpose or most objectives of CPUC and PG&E; however, it appears to be potentially feasible. Impacts would likely be less than the project as proposed because reconducting and replacement of 60 kV poles would occur within existing alignments. Reconductored PG&E 60 kV lines would not meet project objectives because they would not be strong enough to address the voltage and thermal issues and would not accommodate planned growth in the service area. For these reasons, this alternative is dismissed from further evaluation.

UPGRADE PG&E LOCKEFORD-INDUSTRIAL 60 KV TO 115 KV

Description

This alternative would upgrade the existing Lockeford-Industrial 60 kV line between PG&E Lockeford Substation and LEU Industrial Substation. It would replace the existing 60 kV poles and install a new 115 kV line.

Public and Agency Comments

Several community stakeholders, including at the July 2019 open house, suggested this alternative to minimize or avoid impacts to agriculture that would occur with the construction of a new 230 kV line. Additionally, scoping comments suggested increasing the capacity of existing power lines, specifically the Lockeford Industrial 60 kV or other 60 kV/115 kV lines, and considering the expansion of existing infrastructure as an alternative to building new towers.

Discussion and Conclusion

This alternative would not meet the project purpose or most objectives of CPUC and PG&E; however, it appears to be potentially feasible. Impacts would be similar to the project because the 115 kV line would have a similar ROW footprint and construction duration. A 115 kV line would not be strong enough to address the voltage and thermal issues and would not accommodate planned growth in the service area. For these reasons, this alternative is dismissed from further evaluation.

UNDERGROUNDING

Description

This alternative would construct the new 230 kV lines underground along existing roadways. The alternative could not be constructed on agricultural land because it would prevent any use of the land in the ROW. Suggested alignments included East Kettleman Lane and Victor Road/SR 12.

Public and Agency Comments

Community stakeholders, including at the July 2019 open house, suggested this alternative to minimize or avoid impacts to agriculture, wineries, and similar businesses. Additionally, scoping comments expressed support for undergrounding the proposed transmission lines to reduce potential agricultural and aesthetic impacts, as well as minimize impacts on property values.

Discussion and Conclusion

This alternative would meet the project purpose and most objectives of CPUC and PG&E; however, it is not consistent with the CAISO-recommended solution and would not be economically feasible. The construction cost would be an order of magnitude greater than the project or other alternatives that meet most project objectives. This alternative would avoid the aesthetic and other impacts of aboveground alternatives. However, construction of the underground lines would require substantially more construction activity and ground disturbance resulting in greater air quality, noise, and traffic impacts over a longer period of time compared to the project. Air quality and traffic impacts during construction would be substantially greater than for the project due to both ground disturbance and the need to export excavated materials and trench within roadways. The greater ground disturbance would increase the potential to encounter buried cultural resources or contaminated soils along the alignment. Furthermore, these activities would result in greater potential for soil erosion that could degrade water quality and would increase noise impacts to the residences located along the underground portion of the alignment over a longer period of time. For these reasons, this alternative is dismissed from further evaluation.

3.3.2 Siting Alternatives

SOUTHERN ROUTE EAST

Description

This alternative would route the eastern segment of the new PG&E 230 kV line parallel to the existing PG&E 115 kV line from PG&E Lockeford Substation to East Harney Lane, then turn east along Harney Lane to PG&E Brighton-Bellota 230 kV Line. Other project components would be the same as the project.

Public and Agency Comments

This alternative was one of the route alignments considered by PG&E in early analysis. Additionally, CPUC received scoping comments requesting that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property; Harney Lane was identified as an alternative alignment.

Discussion and Conclusion

This alternative would not fully meet the project purpose based on reliability concerns. This alternative would meet most objectives of CPUC and PG&E, except for improving reliability. Having a double-circuit 230 kV transmission line cross over multiple other transmission lines (required near PG&E Lockeford Substation) can compound line failures. This alternative appears potentially feasible, although it presents technological issues in crossing multiple existing transmission lines near PG&E Lockeford Substation.

This alternative is dismissed from further evaluation for several reasons. Because it would result in a new PG&E double-circuit 230 kV transmission line crossing over multiple other PG&E transmission and power lines near PG&E Lockeford Substation, it would be more constrained during operations and maintenance than the project. It would be more expensive than the project or other alternatives carried forward because of the longer 230 kV line and taller structures required to cross the other existing lines. Existing PG&E distribution and 60 kV lines and residential structures along the edge of the road and center-pivot irrigation agricultural use would prevent the 230 kV line from continuous and adjacent paralleling of the roadway or other lines. Avoiding the constraints by setting the 230 kV line back from the existing lines, structures and center-pivot irrigation reduces the benefits of paralleling and increases the impacts that typically would be avoided or minimized by paralleling. It would result in greater biological impacts than the project because of multiple crossings of wetlands and creeks as well as the longer length of the transmission line. More and taller poles would be required in the vicinity of the PG&E Lockeford Substation to cross existing transmission lines, increasing visual impacts.

VICTOR ROAD/SR 12 ROUTE

Description

This alternative would route the western segment of the new 230 kV line west on East Kettleman Lane from PG&E Lockeford Substation then north along SR 88 to parallel Victor Road/SR 12 toward the City of Lodi. An option for this alternative would follow existing PG&E 60 kV lines north from PG&E Lockeford Substation before turning west along Victor Road/SR 12. The eastern segment of the new 230 kV line and substation components would be the same as the project.

Public and Agency Comments

Community stakeholders, including at the July 2019 open house, suggested that roadways be paralleled for the new 230 kV lines to minimize or avoid impacts to agriculture, wineries, and similar businesses. Agriculture was described as Lodi's economic engine and should be protected. Victor Road/SR 12, as one of the larger east-west roads in the study area, was identified by multiple stakeholders as a potential corridor.

Additionally, CPUC received scoping comments recommending consideration of the Central Route identified by PG&E, along Highway 12/Victor Road, and westward direction along Kettleman Lane rather than diverting south at Highway 88 to cut through multiple farms and vineyards. Commenters also suggested that CPUC identify an alternative route with fewer proximate residences, farms, vineyards, and wine-related businesses.

Discussion and Conclusion

This alternative would not meet the project purpose or objectives of CPUC and PG&E because it is not technically feasible given height restrictions and required width of ROW. Between North Kennison Lane and the UPRR railroad, industrial development on both sides of the road present constraints to height clearance and ROW width requirements. Additionally, at the Town of Victor (between Cherry Road and North Locust Tree Road), height and width clearance would be insufficient for a new 230 kV line because of existing industrial developments on the north side and residential developments on the south side of Victor Road.

In addition, there would be constraints to connect the line from Victor Road to the PG&E Lockeford Substation, with possible routes including Tretheway Road, Fox Road, and the existing PG&E Lockeford-Industrial 60 kV line along a farm road (between Tretheway Road and North Locust Tree Road). Along these routes, a 230 kV line would be too close to residences, especially the cluster of residences on both sides of the route south of SR 12 at Tretheway Road and Fox Road. The distances between the 230 kV line and residences would be less than the widths required for a 230 kV line ROW. If it were technically feasible, this alternative would result in potentially greater impacts because of the portion of the line between the eastern end of SR 12 and PG&E Lockeford Substation (where the new 230 kV line would be in close proximity to residences that would be within the required ROW). For these reasons, this alternative is dismissed from further evaluation.

EAST KETTLEMAN LANE ROUTE

Description

This alternative would route the new 230 kV line along East Kettleman Lane from the PG&E Brighton-Bellota 230 kV Line to just west of North Curry Avenue, where it would follow the project alignment north to the LEU Industrial Substation. Substation components would be the same as the project.

Public and Agency Comments

Community stakeholders, including at the July 2019 open house, suggested that the new 230 kV lines parallel the roadways to minimize or avoid impacts to agriculture, wineries, and similar businesses. East Kettleman Lane, one of the larger east-west roads in the study area, was identified by multiple stakeholders as a potential corridor. Others noted that East Kettleman Lane contains wine-related business that would be impacted by this route and an alternative along this route would hurt the appeal of wedding businesses, wine-tasting fundraisers, and other tourist-

oriented activities. Several residents on East Kettleman Lane east of PG&E Lockeford Substation noted that they already have three transmission or power lines and associated towers on or near their properties.

Additionally, CPUC received scoping comments requesting that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property; Kettleman Lane was identified as an alternative alignment. Commenters also suggested that CPUC identify an alternative route with fewer proximate residences, farms, vineyards, and wine-related businesses.

Discussion and Conclusion

This alternative would not meet the project purpose or objectives of CPUC and PG&E because it is not technically feasible. There is not enough clearance to accommodate height restrictions or ROW width requirements for a new 230 kV line paralleling East Kettleman Lane. If it were technically feasible, this alternative would result in potentially greater impacts from placing a 230 kV line in very close proximity to residences and businesses that would be within the required ROW. For these reasons, this alternative is dismissed from further evaluation.

USE EXISTING 60 KV ROW

Description

This alternative would route the new 230 kV lines using an existing PG&E 60 kV power line ROW. This would be done either by constructing a new 230 kV line parallel to the existing 60 kV line, removing the 60 kV line to construct the new 230 kV line, or by placing both the 60 kV and 230 kV lines on the same structures (underbuild). Substation components would be the same as the project. Possible 60 kV line routes include PG&E Lockeford-Industrial 60 kV, PG&E Lockeford-Lodi No. 2 60 kV, PG&E Lockeford-Lodi No. 3 60 kV, and PG&E Industrial Tap 60 kV.

Public and Agency Comments

Community stakeholders, including at the July 2019 open house, suggested that the existing PG&E 60 kV power line ROW be used or paralleled for the new PG&E 230 kV lines to minimize or avoid impacts to agriculture, wineries, and similar businesses. Agriculture was described as Lodi's economic engine and should be protected. It should be noted that suggestions were also made to place the new PG&E 230 kV lines on an existing 60 kV alignment using existing poles. However, there are no "empty" areas or framing on existing structures to locate new lines. Additionally, existing structures are not designed to support the weight of 230 kV lines and are not tall enough to achieve the required vertical clearance to ground. The existing PG&E 60 kV lines cannot be taken out of service for more than approximately 4 to 5 months annually when the project service area load requirements can be supported with one PG&E 60 kV line offline. This is an insufficient period of time to remove a 60 kV line, construct a new double-circuit 230 kV line, and place the new 230 kV source into service. In addition, multiple circuits on a line can impact operations because all circuits on a line need to be taken offline for maintenance. Use of an existing 60 kV line was not evaluated as an alternative.

Additionally, CPUC received scoping comments requesting that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property. Commenters also suggested that CPUC identify an alternative route with fewer proximate residences, farms, vineyards, and wine-related businesses.

Discussion and Conclusion

This alternative would not meet the project purpose or objectives of CPUC and PG&E because it is not technically feasible. Each existing PG&E 60 kV power line has large portions with insufficient ROW to accommodate the required ROW for a double-circuit 230 kV line. Proximity to roads, existing structures, and mature vegetation constrain expansion of 60 kV ROW. Avoiding the constraints by setting the 230 kV line back from the existing 60 kV line reduces the benefits of paralleling and increases the impacts that typically would be avoided or minimized by paralleling. Crossing back and forth across roads to achieve the required ROW clearance could be done but would result in a non-typical 230 kV line, because engineering would not recommend that a line zigzags unless all other

alternatives are infeasible. It also could substantially increase the height and number of structures required, increasing impacts and cost. Specific issues include the following:

- PG&E Lockeford-Industrial 60 kV to East Sargent Road Constraint (between Tecklenberg Road and North Curry Avenue). The majority of this PG&E line could be paralleled by a new 230 kV line by setting the new structures in fields adjacent to the 60 kV alignment. Where residential structures are located on both sides of East Sargent Road between Tecklenberg Road and North Curry Avenue, the existing 60 kV ROW mainly uses franchise rights, which are unlikely to also accommodate an adjacent 230 kV line. Routing a 230 kV line here would require a ROW width of at least 80 to 100 feet, but because the existing 60 kV ROW does not accommodate that width, the new 230 kV line would have to be engineered to zigzag across East Sargent Road. A new 230 kV line with 60 kV underbuild could be accommodated if structures were tall enough and a 60 kV shoofly was used during construction. The new tall 230 kV line segment with 60 kV underbuild would pass within approximately 40 to 50 feet of some of the residences and span several residential driveways. Zigzagging the line across East Sargent Road would be required to achieve adequate ROW clearance and would result in greater impacts to the residences on this section of East Sargent Road because of the shorter span length with increased angle pole height and width required; each crossing of the road requires a pole at each end. Routing under this method would result in a nontypical 230 kV line, because engineering would not recommend that a line zigzags with 60 kV underbuild unless all other alternatives are infeasible.
- PG&E Industrial Tap 60 kV to Victor Road. The northern approximately 0.5 mile of the existing PG&E Industrial Tap 60 kV line would likely accommodate a parallel 230 kV line to the west. The final approximately 0.42 mile is constrained by a cemetery and East Lodi Avenue to the north and railroad tracks to the south. These constraints on the west end of the line do not allow for sufficient double circuit 230 kV line ROW.
- PG&E Lockeford-Lodi No. 3 60 kV. This route does not contain enough ROW width at the residential structures east of Bear Creek. Additionally, along East Harney Lane between SR 88 and SR 99, there are numerous residences, wineries, and industrial structures located on both north and south sides of the road. Because residences are located on both sides of East Harney Lane, the existing ROW crossing back and forth across the roadway and the existing ROW is mainly within franchise rights, which will not accommodate the width needed for a double-circuit 230 kV line with the existing 60 kV line. Routing a 230 kV line here would require a ROW width of at least 80 to 100 feet, but because the existing ROW does not accommodate that width, the new 230 kV line would have to be engineered to zigzag across East Harney Lane. As noted previously, zigzagging the line would result in greater potential impacts to the residences on East Harney Lane because of the increase in poles required; each crossing of the road requires a taller pole at each end. Avoiding the constraints by setting the 230 kV line back from the existing lines and structures reduces the benefits of paralleling and increases the impacts that typically would be avoided or minimized by paralleling. Routing under this method would result in a nontypical 230 kV line, because engineering would not recommend that a line zigzags unless all other alternatives are infeasible.
- PG&E Lockeford-Lodi No. 2 60 kV. This route parallels PG&E Sutter Home SW Sta to Lockeford Lodi 60kV line from PG&E Lockeford Station to approximately 860 feet north of SR 12, where it splits from PG&E Sutter 60 kV line. Paralleling this route would result in an additional 80 to 100 feet width of ROW for a new 230kV line for approximately 1.7 miles of the route, in addition to the existing ROW for the two existing 60 kV lines. The northern portion of the route would result in a significant number of water crossings of the Mokelumne River, potentially up to nine river crossings. Paralleling this route could result in significant biological and riparian habitat impacts that would not occur with other alternatives.

For safety and reliability reasons, putting both lines on the same structures (underbuild) is not preferred, even if there was sufficient ROW. Multiple circuits on a line limit operations flexibility because all circuits on a line need to be taken offline for maintenance. Additionally, three circuits on a structure would create a single point of failure for all circuits and is a nonstandard design.

If it were technically feasible, this alternative would result in potentially greater impacts from placing a 230 kV line in very close proximity to residences and businesses that would be within the required ROW. For these reasons, this alternative is dismissed from further evaluation.

3.3.3 Energy Storage Alternatives

BESS ONLY

Description

This alternative would install two blocks of 50 megawatt (MW) batteries and a new PG&E 60 kV switching substation at LEU Industrial Substation. No changes or additions to power or transmission lines would be included.

Public and Agency Comments

CAISO received this as a non-participating transmission owner submittal regarding Lockeford-Lodi area reliability issues, as listed in the 2017-2018 CAISO Transmission Plan (CAISO 2018). In 2017, CAISO evaluated the NEER - Lodi 40MW BESS Project as an alternative and determined that, while it would address thermal overloads, there were other lower-cost alternatives. This alternative was requested by CPUC to be considered by PG&E.

Discussion and Conclusion

This alternative would not meet the project purpose or most objectives of CPUC and PG&E, including mitigating thermal overloads and meeting PG&E's legal obligations. The batteries cannot be charged enough to meet peak demand and mitigate the overloads under the NERC P1 category contingency. Although this alternative appears potentially feasible, there is some uncertainty given the unknown timeline for a BESS to be built, which would be done by a third party selected by CAISO through a competitive bid process. There is also a lack of a clear standard for battery sizing. Impacts would be less than the project because no new 230 kV lines would be constructed; however, there would be environmental impacts associated with installing an operating a BESS. Nonetheless, this alternative is dismissed from further evaluation because it would not meet the project purpose or most objectives, including mitigating thermal overloads and meeting PG&E's legal obligations.

HYBRID BESS

Description

PG&E considered whether reconductoring existing PG&E 60 kV lines and installing a BESS would be a feasible project alternative. Specific components of this alternative included the following:

- Two blocks of 40 MW BESS at LEU Industrial Substation;
- A new PG&E 60 kV switching substation for BESS interconnection to LEU Industrial Substation;
- Acquisition of approximately 4 acres of land at LEU Industrial Substation;
- New PG&E 230 kV transmission line (approximately 3.8 miles long) to connect the existing PG&E Brighton-Bellota 230 kV Line to PG&E Lockeford 230 kV Substation; the alignment would be the same as the project;
- Reconductor approximately 13.67 miles of PG&E 60 kV Lines with new poles and some switches; and
- Replace limiting terminal equipment at PG&E Lockeford and PG&E Lodi substations.

Public and Agency Comments

This alternative was requested by CPUC to be considered by PG&E.

Discussion and Conclusion

The BESS Hybrid Alternative would not meet the project purpose or key objectives of CPUC and PG&E, including mitigating thermal overloads and meeting PG&E's legal obligations. The system would require further upgrades within approximately 10 years; thus, it would not accommodate projected growth in demand beyond approximately 10 years. Although this alternative appears potentially feasible, there is some uncertainty. The battery would be built by a third party selected by CAISO with unknown cost. The dependency between the PG&E 60 kV line reconductoring and the battery development, which a third party would lead, creates uncertainty with the in-service timing of both Hybrid BESS Alternative components to mitigate the NERC P1 category contingency. For example, if the PG&E 60 kV line reconductoring was completed before the battery was installed, PG&E Lockeford-Lodi 60 kV system would still have thermal overloads risk under the NERC P1 category contingencies. Impacts would likely be similar to the project based on reconductoring and replacement of 60 kV poles. Nonetheless, this alternative is dismissed from further evaluation because it would not meet the project purpose or most objectives, including mitigating thermal overloads and meeting PG&E's legal obligations.

3.3.4 Demand Response Alternatives

DISTRIBUTION ENERGY RESOURCES IMPROVEMENT

Description

This alternative would implement improvements to reduce electrical system demand (such as distributed generation, energy efficiency, and demand response).

Public and Agency Comments

Community stakeholders, including at the July 2019 open house, suggested that PG&E pursue alternatives such as solar and batteries to avoid new transmission lines. Additionally, CPUC received scoping comments suggesting that the City of Lodi should transition to renewable energy to help meet energy demand. For example, a commenter suggested installing a large solar generation facility to produce power locally rather than transmit it from the north-south Bellota line to the Lockeford substation.

Discussion and Conclusion

This alternative would not meet the project purpose or most objectives of CPUC and PG&E because it would not be technically feasible to reduce electrical system demand sufficiently to meet project objectives. The potential environmental impacts of this alternative and how they would compare with those of the project cannot be determined because the exact improvements are unknown.

As explained by PG&E in its December 2023 letter to CPUC, distribution energy resources improvement (DERI) alternatives are dismissed from further evaluation because they would not meet the project purpose and objectives (PG&E 2023b). As a general matter, a DERI alternative would be inconsistent with the project scope identified by CAISO, which is to bring a new 230 kV source into the City of Lodi. In addition, DERI alternatives cannot achieve sufficient load reduction to rectify the voltage issues and thermal overloads occurring on PG&E's 60 kV system during Category P1 and P6 contingency scenarios. Moreover, even if DERI alternatives could achieve the necessary load reduction to mitigate current voltage issues and thermal overloads, a significant portion of the load reduction that would need to be achieved by DERI alternatives would have to be implemented by a third party, the City of Lodi. Given that the City of Lodi is not subject to PG&E's control, and that LEU is not subject to CPUC's jurisdiction, there is no legal mechanism available in this CPCN proceeding to mandate that the City of Lodi or LEU implement DERI alternatives.

Based on how the forecasted load is distributed on PG&E's and LEU's 60 kV substations in the northern San Joaquin County area, the only practicable means of achieving sufficient load reduction on PG&E's existing 60 kV system must include reducing the load on LEU's Industrial Substation (PG&E 2023b). PG&E does not control LEU and cannot modify LEU's electrical grid to reduce load on Industrial Substation. Likewise, CPUC does not have jurisdiction over

LEU and cannot require LEU to modify its electrical grid, including to undertake DERI alternatives, that would reduce load on Industrial Substation. Because implementation of DERI alternatives on PG&E's 60 kV system cannot solve the current reliability issue and there is no legal means for PG&E or CPUC to require LEU to implement DERI alternatives, DERI alternatives are not a potentially feasible alternative to the project.

Additionally, load relief must be instantaneous and dependable, and the required amount would depend on the grid's operating condition at any given moment. Solar generation is limited by time and weather. In 2035, the peak demand hour will be 7 p.m., which will not coincide with peak solar production unless there is adequate storage to compensate (PG&E 2023b). The proposed new 230 kV source to feed LEU's Industrial Substation will be instantaneous and dependable.

The City of Lodi also provided data regarding the infeasibility of a DERI or non-wire alternative (Shahriar, pers. comm., 2024), which is summarized here. According to the City's records, the City recorded a peak summer load of 143 MW in 2022. Projections from the Northern California Power Agency estimate that within a 20-year timeframe, the peak load for the City of Lodi will increase to approximately 200 MW. A non-wire alternative would involve constructing a new 200 MW utility-grade solar system with battery backup within Lodi. According to the City of Lodi, this alternative is not feasible because of land requirements and infrastructure cost. First, according to the National Renewable Energy Laboratory (NREL 2013: Table ES-1, cited in Shahriar, pers. comm., 2024), approximately 7.2 acres of land are required per MW of solar panels for large photovoltaic (PV) systems (greater than 20 MW). Thus, a new PV system would necessitate approximately 1,440 acres (equivalent to 2.25 square miles) of land. Additionally, a substantial amount of land would be needed for the associated battery storage system. Given that the total land area of the City is 13.8 square miles, implementing such a system would not be feasible. Secondly, according to NREL (2023, cited in Shahriar, pers. comm., 2024), the capital expenditure for a utility-scale solar system is approximately $1,350/kilowatt. Therefore, a new 200 MW solar system would cost approximately $270 million for infrastructure alone, excluding land acquisition. It is reasonable to estimate that a 60-MW 10-hour duration lithium battery system would be needed to support the 200 MW solar system. According to NREL (2023: Figure 2, cited in Shahriar, pers. comm., 2024), the capital expenditure for a battery system of this size is $3,384/kW. Therefore, a new 60-MW battery system would cost approximately $200 million in infrastructure costs, excluding land acquisition. The total infrastructure cost (excluding land acquisition) to build the 200 MW utility-grade solar system with battery backup would be approximately $470 million; compared to approximately $30 million for the new LEU Guild Substation proposed as part of the project.

For the above reasons, DERI alternatives are dismissed from further evaluation.

3.3.5 Other Suggestions Regarding Alternatives

DESCRIPTION

In addition to some of the alternatives discussed previously (East Kettleman Lane and Victor Road/SR 12), community stakeholders during PG&E's route development phase suggested use of other existing roadways as routing alternatives for a new PG&E 230 kV transmission line. The suggested roadways represent only a small portion of the overall needed alignment and not a full alternative; thus, by themselves, they were not considered as individual alternatives. In addition, existing structures and biological resources would constrain the space needed for a continuous ROW along these roads, and use of these roads would substantially increase the length of the transmission line, result in greater impacts, and be infeasible to construct. Nevertheless, PG&E considered these roadways during its initial development of complete routing alternatives.

Community-suggested roadways include the following:

- North Jack Tone Road, which runs north-south through the project area to the east of PG&E Lockeford Substation;
- East Harney Lane, which runs east-west in the study area between SR 99 and PG&E Brighton-Bellota 230 kV Line;

- East Turner Road, which runs east-west on the north side of the City of Lodi, west of North Guild Avenue;
- East Sargent Road, which runs east of the railroad tracks near SR 99 for approximately 0.63 mile, and is again a paved road for approximately 2.5 miles between Jack Tone Road and North Linn Road;
- Live Oak Road/East Live Oak Road, which in the study area runs east-west between SR 99 and North Tully Road;
- North Furry Road, which in the study area runs north-south to the east of SR 99 between East Hogan Lane and Live Oak Road; and
- Newfield Road, which in the study area is a nonpublic roadway that runs east-west just north of East Kettleman Lane between Alpine Road and North Tretheway Road.

Several community members proposed to LEU three alternative routes between LEU Industrial Substation and PG&E Lockeford Substation. One of these three alignments is generally the same as the western component for the Central Route Alternative (refer to Section 3.2.1) and the Northern Route Alternative (refer to Section 3.2.2), both of which were carried forward for consideration. Each of the other two routes includes a large portion along one of two alignments that were dismissed from further evaluation for reasons discussed previously: Victor Road/SR 12 (refer to Section 3.3.2) and existing 60 kV ROW (refer to Section 3.3.2). Other portions of these two routes cross areas that were not identified as being compatible with siting objectives.

PUBLIC AND AGENCY COMMENTS

As described above, community stakeholders suggested the use of other existing roadways as routing alternatives for a new PG&E 230 kV transmission line. Additionally, CPUC received scoping comments requesting that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property, and that routes with fewer proximate residences, farms, vineyards, and wine-related businesses be identified.

DISCUSSION AND CONCLUSION

As noted above, these community-suggested roadways are dismissed from further evaluation because existing structures and biological resources would constrain the space needed for a continuous ROW along these roads and use of these roads would substantially increase the length of the transmission line, result in greater impacts, and be infeasible to construct.

3.3.6 Scoping Comments Regarding Alternatives

DESCRIPTION

As described in Section 2.1.2, "Public and Stakeholder Scoping," CPUC received numerous comment letters from public agencies, the general public, and other entities. The following comments were received regarding alternatives (with responses provided in *italics*):

- Commenters suggested increasing the capacity of existing power lines, specifically the Lockeford Industrial 60 kV or other 60 kV/115 kV lines, and considering the expansion of existing infrastructure as an alternative to building new towers. For example, upgrading one of the four existing single-circuit 60 kV lines to a double circuit to address overheating and reliability issues was suggested.
  - *Response: System alternatives, including 60kV Reconductoring and Upgrade PG&E Lockeford-Industrial 60kV to 115 kV, were considered and dismissed from further evaluation as described in Section 3.3.1.*
- Commenters expressed support for undergrounding the proposed transmission lines to reduce potential agricultural and aesthetic impacts, as well as minimize impacts on property values.

- *Response: System alternatives, including Undergrounding, were considered and dismissed from further evaluation as described in Section 3.3.1.*

- Commenters requested that power lines be routed along existing power line corridors, major highways, paved roads, rail lines, or property lines rather than cutting across private property. For example, along Kettleman Lane or Harney Lane. An abandoned rail line right of way was also identified as a potential routing option to limit the impact on landowners.
  - *Response: Other routes, including Southern Route East (which uses Harney Lane) and East Kettleman Lane, were considered and dismissed from further evaluation as described in Section 3.3.2 and 3.3.5.*
- Commenters recommended consideration of the Central Route identified by PG&E, along Highway 12/Victor Road, and westward direction along Kettleman Lane rather than diverting south at Highway 88 to cut through multiple farms and vineyards.
  - *Response: The Central Route Alternative is being carried forward for consideration in the EIR, as described in Section 3.2.1. Other routes, including Victor Road/SR 12 and East Kettleman Lane, were considered and dismissed from further evaluation as described in Section 3.3.2 and 3.3.5.*
- A comment suggested two alternatives at Locust Tree Road: extending the line's angle westward to put the line at the property's northern edge or shortening the line to position it along the property's southern boundary.
  - *Response: The suggested route (shown in Figures 1-1, 3-1, and 3-2) would cross North Locust Tree Road and North Alpine Road following an alignment that would cross multiple parcels, rather than following parcel lines. The commenter suggests a route that would follow parcel lines to minimize impacts to their private property. While minimizing impacts to existing land uses was an important consideration in developing alternative routes (see Section 2.2, "Alternatives Screening Methodology"), this portion of the proposed alignment was determined, in part, to avoid existing residences in the vicinity of North Locust Tree Road and North Alpine Road. Additionally, there are engineering limitations in designing power line alignments such that zigzags should be avoided unless all other alternatives are infeasible. The suggested alternative routes at North Locust Tree Road would increase the length of the transmission line and be potentially infeasible to construct.*
- Comments suggested that CPUC identify an alternative route with fewer proximate residences, farms, vineyards, and wine-related businesses.
  - *Response: Numerous routes were considered, including two that were carried forward for consideration in the EIR: the Central Route and Northern Route Alternatives (see Section 3.2). Other routes that were considered and dismissed from further evaluation are described in Section 3.3.2 and 3.3.5.*
- Commenters suggested that the City of Lodi should transition to renewable energy to help meet energy demand. For example, a commenter suggested installing a large solar generation facility to produce power locally rather than transmit it from the north-south Bellota line to the Lockeford substation.
  - *Response: Several alternative energy options were considered and dismissed from further evaluation, including energy storage alternatives (see Section 3.3.3) and demand response alternatives (see Section 3.3.4). Specifically, Section 3.3.4 describes why these alternatives would be infeasible.*
- Some commenters expressed a preference for a "no project" alternative.
  - *Response: The No Project Alternative will be considered in the EIR, as required by CEQA.*

PUBLIC AND AGENCY COMMENTS

As described above, during the scoping period, commenters suggested that CPUC consider potential alternatives to the project, such as siting proposed infrastructure at different locations or using alternative technologies or methods.

DISCUSSION AND CONCLUSION

See above responses to the scoping comments regarding why each suggested alternative was carried forward for consideration in the EIR or dismissed from further evaluation.

4 REFERENCES

CAISO. *See* California Independent System Operator.

California Independent System Operator. 2013 (March 20). *2012-2013 Final ISO Transmission* Plan. Available: http://www.caiso.com/Documents/BoardApproved2012-2013TransmissionPlan.pdf. Accessed May 2024.

———. 2018 (March 22). *2017-2018 Final ISO Transmission Plan*. Available: http://www.caiso.com/Documents/BoardApproved-2017-2018_Transmission_Plan.pdf. Accessed May 2024.

California Public Utilities Commission. 2024a (May). *Scoping Summary Report, Northern San Joaquin 230-kV Transmission Project*. Prepared by Ascent, Sacramento, CA. Available: https://ia.cpuc.ca.gov/environment/info/ascent/NSJTP/index.html. Accessed May 2024.

———. 2024b. Energy and Storage. Available: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/energy-storage. Accessed June 2024.

CPUC. *See* California Public Utilities Commission.

National Renewable Energy Laboratory. 2013 (June). *Land-Use Requirements for Solar Power Plants in the United States*. Technical Report NREL/TP-6A20-56290. Available: https://www.nrel.gov/docs/fy13osti/56290.pdf. Accessed June 2024. Cited in Shahriar, pers. comm., 2024.

———. 2023. *2023 Annual Technology Baseline*. Available: https://atb.nrel.gov/electricity/2023/utility-scale_battery_storage. Accessed June 2024. Cited in Shahriar, pers. comm., 2024.

NREL. *See* National Renewable Energy Laboratory.

Pacific Gas and Electric Company. 2023a (September). *Proponent's Environmental Assessment for Pacific Gas and Electric Company's Northern San Joaquin 230 kV Transmission Project*. Available: https://ia.cpuc.ca.gov/environment/info/ascent/NSJTP/index.html. Accessed May 2024.

———. 2023b (December 22). *Response to Data Request #1, PG&E Northern San Joaquin 230kV Transmission Project (A.23-09-001)*. Available: https://ia.cpuc.ca.gov/environment/info/ascent/NSJTP/index.html. Accessed May 2024.

PG&E. *See* Pacific Gas and Electric Company.

Shahriar, Hasan. Engineering & Operations Manager. City of Lodi – Electric Utility, Lodi, CA. June 5, 2024—email to Sydney Coatsworth of Ascent regarding feasibility of non-wire alternatives and City of Lodi load projections.

This page is intentionally left blank.