

Estrella Substation and Paso Robles Area Reinforcement Project

Draft Alternatives Screening Report

Proceeding A.17-01-023



CALIFORNIA PUBLIC UTILITIES COMMISSION

Prepared by:



March 2019

Page intentionally left blank.

CALIFORNIA PUBLIC UTILITIES COMMISSION

**Estrella Substation and
Paso Robles Area Reinforcement Project**

Draft Alternatives Screening Report

Proceeding A.17-01-023

Prepared for:

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Prepared by:

Horizon Water and Environment, LLC
266 Grand Avenue, Suite 210
Oakland, California 94610
Contact: Tom Engels, Ph.D.
(916) 790-8548

March 2019

Horizon Water and Environment. 2019. California Public Utilities Commission, Estrella Substation and Paso Robles Area Reinforcement Project. Draft Alternatives Screening Report. March. (HWE 17.010) Oakland, CA.

TABLE OF CONTENTS

Chapter 1 Introduction and Project Background	1-1
1.1 Purpose and Background.....	1-1
1.2 Summary of Proposed Project.....	1-2
1.3 Preliminary Project Impacts Analysis	1-11
Chapter 2 Methodology for Identifying and Screening Alternatives	2-1
2.1 Identification of Alternatives	2-1
2.2 Alternatives Screening Methodology.....	2-8
Chapter 3 Alternatives Descriptions and Determinations	3-1
3.1 Summary of Alternatives Screening Analysis Results	3-1
3.2 Substation Siting Alternatives	3-7
3.3 Power Line Route Alternatives	3-13
3.4 Existing Substation Expansion Alternatives.....	3-24
3.5 Existing Substation Expansion – Power Line Route Alternatives.....	3-29
3.6 Battery Storage Alternatives.....	3-40
Chapter 4 References.....	4-1

TABLES

Table 1-1.	Five-Year Outage History of Templeton 21 kilovolt Feeders (February 2012 to February 2017).....	1-9
Table 2-1.	Comment Letters Received by Commenter Type	2-4
Table 2-2.	Most Common Generalized Scoping Comments by Number of Commenters	2-4
Table 2-3.	CAISO Storage Operation Attributes	2-6
Table 3-1.	Summary of Alternatives Screening Analysis Results	3-2
Table 3-2.	Length of Estrella Route Power Line Components by Potential Substation Site Interconnection.....	3-14
Table 3-3.	Length of Creston Route Power Line Components by Potential Substation Site Interconnection.....	3-18
Table 3-4.	Alternative BS-1 Storage Sizing Scenarios to Address Transmission Objective	3-42
Table 3-5.	Preliminary Site Screening Results for Potentially Suitable Battery Storage Locations.....	3-47
Table 3-6.	Energy Storage Potential by Existing Distribution Circuit.....	3-52
Table 3-7.	Example Storage Solution and Aggregated Substation Impact.....	3-53
Table 3-8.	Example Storage Solution Facilities and Space Requirements	3-54

Table 3-9.	Aggregated Peak Loading Information for Paso Robles Distribution Circuits.....	3-58
-------------------	--	------

FIGURES

Figure 1-1.	Proposed Project Overview	1-4
Figure 1-2.	Existing Electric Transmission System	1-5
Figure 1-3.	Proposed Electric Transmission System	1-5
Figure 1-4.	Visual Simulation of the Proposed Estrella Substation from Union Road Looking Northeast.....	1-6
Figure 1-5.	LoadSEER Forecast, Paso Robles DPA.....	1-10
Figure 3-1.	Alternatives Summary Map	3-5
Figure 3-2.	Alternative SS-1: McDonald Ranch Substation Site	3-8
Figure 3-3.	Alternative SS-2: Mill Road West Substation Site	3-11
Figure 3-4.	Alternative PLR-1: Estrella Route	3-15
Figure 3-5.	Alternative PLR-2: Creston Route	3-19
Figure 3-6.	Alternative PLR-3: Strategic Undergrounding.....	3-22
Figure 3-7.	Alternative SE-1: Templeton Substation Expansion	3-26
Figure 3-8.	Alternative SE-PLR-1, -2, and -3: Templeton-Paso 70 kV Routes	3-30
Figure 3-9.	Ring Bus Configuration at the Paso Robles Substation to Accommodate Alternative SE-PLR-1: Templeton-Paso 70 kV Route (Existing)	3-33
Figure 3-10.	Example of Energy Storage Deployment to Transmission – Paso Robles Substation.....	3-43
Figure 3-11.	Example of Energy Storage Deployment to Distribution – Paso Robles Substation.....	3-44
Figure 3-12.	Preliminary Site Screening Results for Potentially Suitable Battery Storage Locations in the Paso Robles Substation Vicinity	3-46
Figure 3-13.	Example Energy Storage Facility Enclosed in Building.....	3-51

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
APMs	Applicant Proposed Measures
APN	Assessor’s Parcel Number
ASR	Alternatives Screening Report
BAAH	breaker-and-a-half
BESS	battery energy storage system
BES	Bulk Electric System
BS	Battery Storage
BTM	behind-the-meter
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
City	City of Paso Robles
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
DDOR	Distribution Deferral Opportunity Report
DEIR	draft environmental impact report
DER	Distributed Energy Resources
DPA	Distribution Planning Area
EBCE	East Bay Community Energy
EIR	environmental impact report
FTM	front-of-the-meter
GHG	greenhouse gas
HOA	Homeowner’s Association
Kevala	Kevala Analytics, Inc.
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hours
MW	megawatt
MWh	megawatt-hour
NEET West	NextEra Energy Transmission West, LLC
NEER	NextEra Energy Resources
NERC	National Electric Reliability Commission
NOP	Notice of Preparation
PEA	Proponent’s Environmental Assessment
PG&E	Pacific Gas & Electric Company
PLR	Power Line Route

Proposed Project	Estrella Substation and Paso Robles Area Reinforcement Project
PTC	Permit to Construct
RA	Resource Adequacy
SR	State Route
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
SE	Substation Expansion
SS	Substation Siting
UL	Underwriters Laboratories mark of approval
USFWS	U.S. Fish and Wildlife Service
WECC	Western Electricity Coordinating Council

Chapter 1

INTRODUCTION AND PROJECT BACKGROUND

1.1 PURPOSE AND BACKGROUND

The purpose of the 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 Estrella Substation and Paso Robles Area Reinforcement Project (Proposed Project). The ASR will support and inform the analysis of project alternatives in the draft environmental impact report (DEIR) that is being prepared for the Proposed Project. This ASR is intended to identify a reasonable range of potentially feasible alternatives that will be carried forward as part of the DEIR's detailed environmental analysis.

Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15126.6(a), an environmental impact report (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 also requires consideration of a No Project Alternative (CEQA Guidelines Section 15126.6[e]). Due to the complex nature of the Proposed Project and number of potential alternatives identified during the scoping period, it was determined that an alternatives screening process would benefit the development of alternatives in the EIR. Therefore, the ASR will help the CPUC understand the range and potential feasibility of alternatives to the Proposed Project prior to conducting a detailed analysis of alternatives in the EIR.

Public Outreach

CPUC circulated a Notice of Preparation (NOP) of an EIR for the Proposed Project on July 30, 2018, and a revised NOP on August 1, 2018. Circulation of the NOP initiated the scoping period for the Proposed Project, which lasted until August 31, 2018. CPUC held a public scoping meeting on Tuesday, August 7, 2018 from 6 p.m. to 8 p.m. at the Winifred Pifer Elementary School located at 1350 Creston Road in Paso Robles. 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 here: www.cpuc.ca.gov/environment/info/horizonh2o/estrella/index.html

Refer to Section 2.1.2 of this ASR for further details on the Proposed Project's scoping process. For information on the CPUC Proceeding for the Proposed Project (Application 17-01-023), 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 PROPOSED PROJECT

1.2.1 PROPOSED PROJECT OVERVIEW

NextEra Energy Transmission West, LLC (NEET West) and Pacific Gas & Electric Company (PG&E), together referred to as the “Applicants,” submitted Application 17-01-023 to the CPUC requesting a Permit to Construct (PTC) for the Proposed Project, pursuant to the requirements in CPUC General Order 131-D. CPUC is the state agency responsible for regulating public utilities in California, and must conduct an independent environmental review of the Proposed Project, including evaluation of potential project alternatives, prior to issuing a PTC. The Proposed Project was identified as a needed project to address deficiencies in the Los Padres 70 kilovolt (kV) system (see Section 1.2.2 for further discussion regarding the background and need for the Proposed Project) by the California Independent System Operator (CAISO) in its 2013-2014 Transmission Plan.

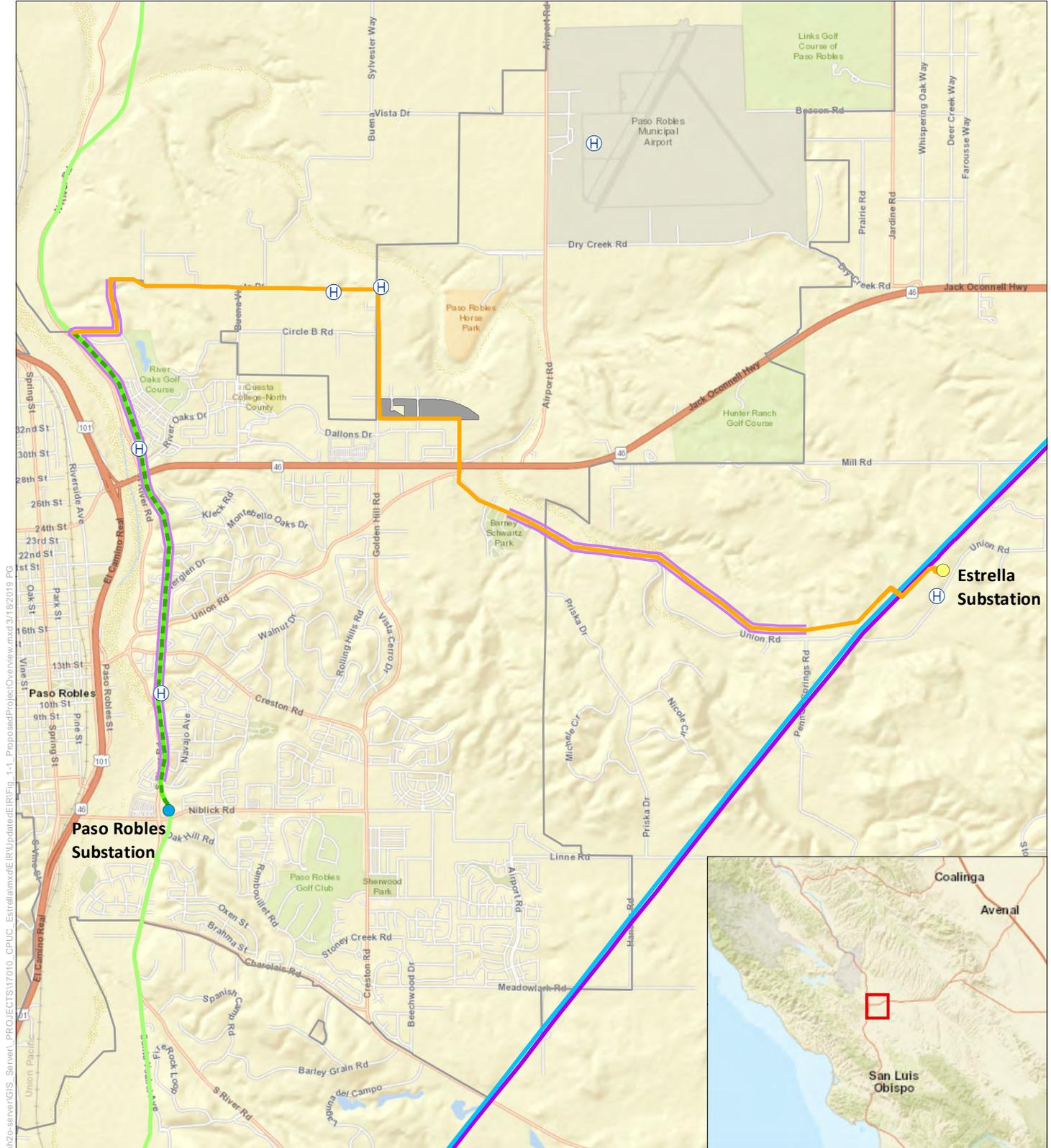
In essence, the Proposed Project would provide system redundancy and increased capacity in the Paso Robles area by adding an area substation and providing an additional source of power to the existing Paso Robles Substation. The Proposed Project would include the following primary components:

- Estrella Substation
 - Constructing a new 230 kV substation to be operated by NEET West
 - Constructing a new 70 kV substation to be operated by PG&E, with a location for future 70/21 kV distribution facilities
 - Constructing a 230 kV transmission line interconnection to be operated by PG&E
- 70 kV Power Line
 - Constructing a new 70 kV double-circuit power line between the new 70 kV substation and the existing San Miguel-Paso Robles 70 kV Power Line (new 70 kV power line segment), to be operated by PG&E
 - Replacement (reconductoring and pole replacement) of a portion of the existing 70 kV power line between the interconnection point of the new 70 kV power line segment and Paso Robles Substation, to be operated by PG&E

The new Estrella Substation would be constructed on an approximately 15-acre site within an existing vineyard off of Union Road in San Luis Obispo County east of the City of Paso Robles. This substation would be looped into the existing Gates-Morro Bay 230 kV line and would connect to the existing Paso Robles Substation via the new and reconducted 70 kV power line.

The new power line segment would extend approximately 7 miles from the Estrella Substation through primarily agricultural, commercial, and rural residential areas before joining the existing San Miguel-Paso Robles 70 kV line. An approximately 3-mile-long segment of this existing line would then be replaced/reconducted from the interconnection with the new 70 kV line originating from Estrella Substation south to the existing Paso Robles Substation. This reconducted line segment would pass through open space and residential areas.

Figure 1-1 shows the Proposed Project location and components. **Figures 1-2** and **1-3** show the existing electric transmission system and the proposed electric transmission system with the addition of the Proposed Project. **Figure 1-4** shows a visual simulation of the proposed Estrella Substation.



\\zoo-server\GIS_Server\PROJECTS\17010_CPUC_Estrella\mxd\ER\Update\ER\Fig_1-1_ProposedProject\Overview.mxd,3/19/2019 PG

Basemap Sources: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

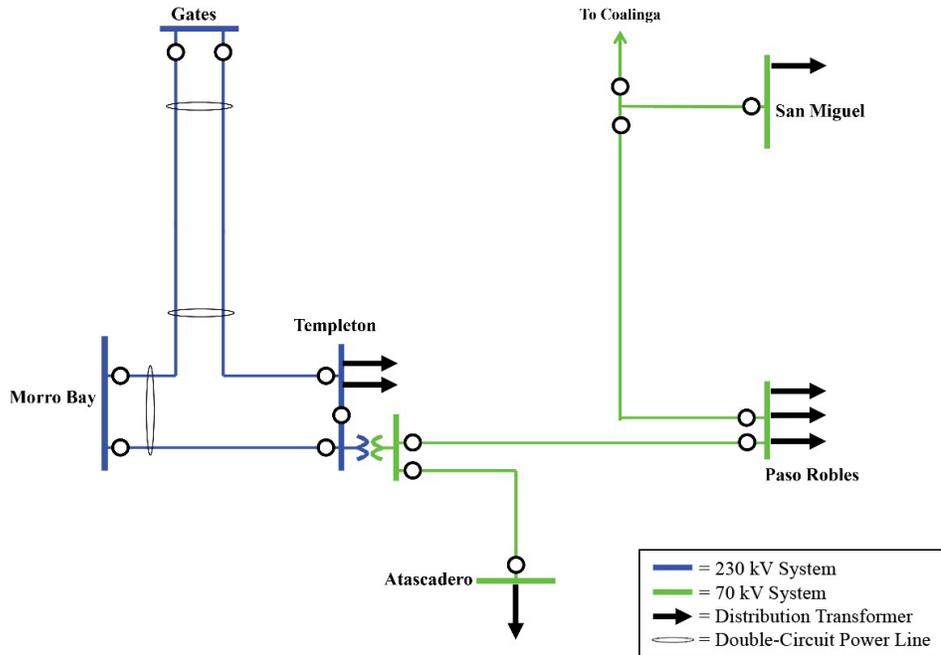
0 0.25 0.5
Miles

Source: Source: NEET West and PG&E 2017

- | | |
|------------------------------|-----------------------------------|
| Paso Robles city limits | Helicopter Landing Zones |
| Proposed Project | Existing Infrastructure |
| New 70kV Power Line Segment | Existing 500 kV Transmission Line |
| Proposed Estrella Substation | Existing 230 kV Transmission Line |
| Reconductoring Segment | Existing 70 kV Power Line |
| Distribution Underbuild | Paso Robles Substation |
| Power Line Staging Areas | |

Figure 1-1
Proposed Project
Location and Overview

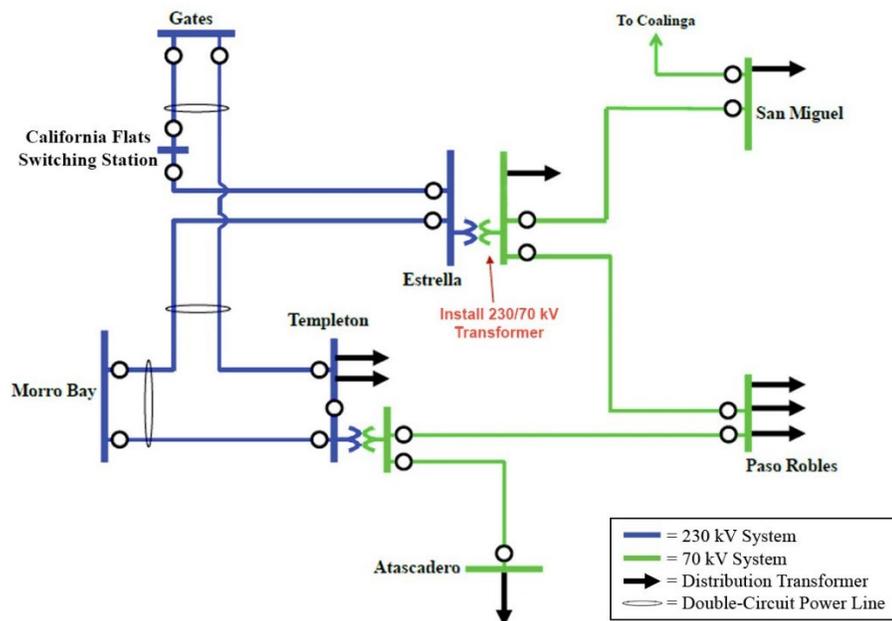
Estrella Substation and Paso Robles Area Reinforcement Project



Note: kV = kilovolt

Source: NEET West and PG&E 2017

Figure 1-2. Existing Electric Transmission System



Note: kV = kilovolt

Source: NEET West and PG&E 2017

Figure 1-3. Proposed Electric Transmission System



Source: NEET West and PG&E 2017

Figure 1-4. Visual Simulation of the Proposed Estrella Substation From Union Road Looking Northeast

Prepared by:



Estrella Substation and Paso Robles Area
Reinforcement Project

1.2.2 PURPOSE AND NEED FOR THE PROPOSED PROJECT

Transmission System

The Proposed Project was identified in the CAISO's 2013-2014 Transmission Plan as a project needed to mitigate thermal overloads and voltage concerns in the Los Padres 70 kV system (specifically in the San Miguel, Paso Robles, Templeton, Atascadero, Cayucos and San Luis Obispo areas) (CAISO 2014a). CAISO modeling determined that thermal overloads and very low voltage conditions could occur in this system following either one of two Category B¹ contingencies: loss of the Templeton 230 kV/70 kV #1 Transformer Bank or loss of the Paso Robles-Templeton 70 kV Transmission Line.

Essentially, if either the #1 Transformer Bank at the Templeton Substation or the 70 kV transmission line connecting the Paso Robles and Templeton Substations were to fail for any reason (e.g., vehicular impact to existing infrastructure, such as a pole; vegetation and/or storm damage to the existing transmission line, wildlife damage to existing electrical connections, and/or mechanical failure), it would result in dangerous overloading and low voltage conditions in the regional system. This is both due to high load (i.e., electrical service demand) in the Paso Robles area relative to substation capacity as well as lack of redundancy in the system. Currently, the only sources of power to the Paso Robles Substation are the San Miguel-Paso Robles 70 kV Transmission Line from the north and the Paso Robles-Templeton 70 kV Transmission Line from the south, with the latter providing the bulk of the power and the nearest connection to a 230 kV power source. The San Miguel-Paso Robles 70 kV Transmission Line does not have the capacity to accommodate the load served through the Paso Robles Substation should the power source from Templeton Substation fail; therefore,

¹ The CAISO uses the National Electric Reliability Commission (NERC) reliability standards to analyze the need for transmission system upgrades. The NERC standards provide criteria for system performance requirements that must be met under a varied but specific set of operating conditions, and prior to 2012, included the following categories:

- Category A – System Performance Under Normal Conditions
- Category B – System Performance Following Loss of a Single Bulk Electric System (BES) Element
- Category C – System Performance Following Loss of Two or More BES Elements
- Category D – System Performance Following Extreme BES Events

The latest adopted NERC TPL-001-4 transmission reliability standard applies new terminology; P0 through P7 define different scenarios based on the initial system condition and nature of the event (e.g., loss of generator, transmission circuit, bus section fault, etc.). The Category B contingencies identified for the Proposed Project would equate to a P1 (single contingency), while the Category C3 contingency would equate to a P6 (multiple contingency; two overlapping singles) (NERC No Date). The NERC standards allow for load to be dropped for a P6 contingency, but not for a P1 contingency.

NERC also refers to single contingencies (i.e., loss of a single BES element) as N-1 events. A multiple contingency where both BES elements fail at the same time (e.g., two circuits on the same pole line fail when a pole is hit by a vehicle) is known as an N-2 event. A multiple contingency involving the consecutive loss of two single BES elements that are not physically or electrically connected is known as an N-1-1 event. The Category B/P1 contingencies identified for the Proposed Project would be N-1 events, whereas the Category C3/P6 contingency would be an N-1-1 event.

thermal overloads and low voltage could occur on this line during one of the Category B contingencies identified by CAISO (NEET West and PG&E 2018a).

Because PG&E has an Under-Voltage Load Shedding scheme that serves to protect the transmission system infrastructure in the event of such overload scenarios; rather than allow the transmission line to melt or completely fail, load would be systematically dropped to bring voltages to acceptable levels. Practically, without the Proposed Project, this could result in 60-70 megawatt (MW) of load in Paso Robles being dropped during one of the Category B contingencies described above (CAISO 2014a).

In addition to the above issues, CAISO also identified a Category C3 contingency condition involving loss of the Morro Bay-Templeton and Templeton-Gates 230 kV lines that would result in thermal overloads and low voltages in the underlying kV system. The 2013-2014 Transmission Plan states that with the additional source from the Gates 230 kV system, the Proposed Project would provide robust system reinforcement to the Paso Robles and Templeton 70 kV system operations (CAISO 2014a). Because load can be dropped for a Category C3 (i.e., P6) contingency, this contingency is not the primary driver of the Proposed Project. Rather, the two Category B (i.e., P1) contingencies are considered the primary drivers for the Proposed Project.

Distribution System

In addition to the transmission-level issues described above, the Proposed Project also would address existing undesirable conditions and projected load growth in the distribution system in the Paso Robles area. As described in detail in Appendix G of the Proponent's Environmental Assessment (PEA) provided by the Applicants, the Paso Robles system is characterized by very long distribution feeders², particularly those extending from Templeton Substation. This is undesirable because long feeders are more susceptible to potential outages caused by vehicle pole strikes, downed vegetation from storms, or other incidents (PG&E and NEET West 2018a). Additionally, outages that occur on long feeders may affect larger numbers of people than similar events that occur on feeders of moderate length. In general, PG&E states that, "Reliable distribution systems consist of substations located at regular intervals and sized correctly in terms of capacity and number of feeders to cover the area between substations without overextending some substations and underutilizing others. The Paso Robles Distribution Planning Area (DPA) is not currently in line with these system goals (PG&E and NEET West 2018a)."

Locating the new substation at its proposed location would allow for the long feeders to be split in half and for some of the load currently being served by the Templeton Substation to be served by the new Estrella Substation. Reducing the length of these feeders would reduce potential outages for customers and improve the reliability of the distribution system in this area. **Table 1-1** shows historical outages on the Templeton feeders.

² Distribution *circuits* (i.e., electrical lines or conductors) are commonly referred to as *feeders*. They operate at voltage under 50 kV.

Table 1-1. Five-Year Outage History of Templeton 21 kilovolt Feeders
(February 2012 to February 2017)

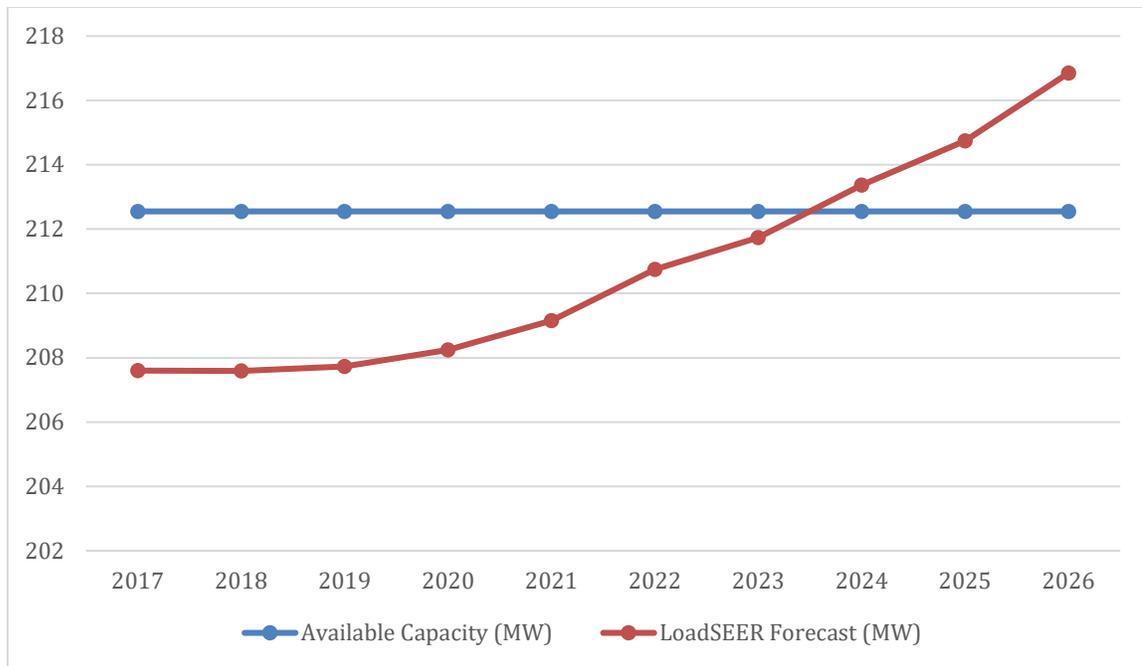
Feeder Name	Area Served Where Outages Occurred	No. of Sustained Outages	No. of Momentary Outages	Average No. of Customer Connections Affected Per Event	Highest No. of Customer Connections Affected by an Event
Templeton 2108	Northern Atascadero	7	10	2,955	3,189
Templeton 2109	Northeast Paso Robles	5	9	2,957	4,325
Templeton 2110	Rural West Paso Robles	4	20	1,802	2,926
Templeton 2111	Western Atascadero	6	10	1,847	2,433
Templeton 2112	Southern Paso Robles	3	10	475	1,068
Templeton 2113	Santa Margarita	7	25	1,911	5,446

Source: NEET West and PG&E 2018a

In addition to the issue of long feeders, the projected growth within the Paso Robles DPA is anticipated to exceed the capacity of the system in the near future. The City of Paso Robles (City) expects strong industrial growth to occur north of State Route (SR) 46 in the Paso Robles city limits (in particular within the Golden Hill Industrial Park and directly south of Paso Robles Airport along Dry Creek Road) within the next 10 years, and a resurgence of residential growth south of SR 46 (NEET West and PG&E 2018a). Overall, City planners are estimating a 50 percent increase in the population of Paso Robles by 2045.

Increases in electrical demand (i.e., load) will place increased demands on the distribution and transmission systems. Using the LoadSEER³ forecasting tool, PG&E predicts that anticipated normal growth in the area, coupled with the addition of large “block loads” (e.g., large new businesses or developments that require large amounts of electricity), will exceed the available capacity of the Paso Robles system by roughly 2024 (see **Figure 1-5**).

³ LoadSEER is a spatial load forecasting tool which is used by electric distribution system planners to predict load and power changes, where on the grid the loads will occur, how distributed generation changes the load shape, and when it must be supplied (Integral Analytics No Date). PG&E utilizes the LoadSEER forecasting tool to predict growth in area electrical demand within a DPA for a 10-year period into the future, incorporating the most recent 13 years of substation historical peak-load data.



Source: NEET West and PG&E 2018a

Figure 1-5. LoadSEER Forecast, Paso Robles DPA

As shown in Figure 1-5, the available capacity in the Paso Robles DPA is currently static at just over 212 MW. This capacity is equal to the cumulative capacities of the four substations (Atascadero, Paso Robles, Templeton, and San Miguel) in the DPA, whereas the “LoadSEER Forecast” represents the cumulative load that must be served by the distribution system for this area. As shown in Figure 1-5, the forecasted load will exceed available capacity in the year 2024. In a practical sense, without addition of a new or expanded substation or other facilities to serve the projected increased load, this situation could result in thermal overloads, low voltage, and electrical service outages, as the infrastructure is unable to meet demands.

The intent of the Proposed Project is to add capacity to the system with the addition of the new Estrella Substation, which will be able to absorb load currently served by other substations within the DPA. Additionally, since the new industrial growth is anticipated to occur in the Golden Hill Industrial Park area, the new substation will be able to accommodate this new growth by adding new feeder lines when the need materializes. Please refer to Appendix G of the Applicants’ PEA for detailed discussion of the Proposed Project purpose and need, and the modeling conducted for the existing distribution system.

1.2.3 PROPOSED PROJECT OBJECTIVES

Applicants’ Stated Objectives

In their PEA, the Applicants identified the following objectives for the Proposed Project:

- **Reinforce Electrical Reliability by Implementing the CAISO-Approved Electrical Plan of Service.** Increase reliability and mitigate thermal overloads and voltage

concerns in the area by having an additional 230 kV source of power that will increase service reliability in northern San Luis Obispo County, and maintain compliance with NERC reliability standards, as described in the *Estrella Substation Project Functional Specifications* issued by CAISO in June 2014. The Estrella Project is also intended to allow NEET West and PG&E to meet their obligation to add the CAISO-approved project to the CAISO-controlled grid, as defined in the *Functional Specifications* and the Approved Project Sponsor Agreement.

- **Meet Expected Future Electric Distribution Demand.** Provide a location for future 21 kV distribution facilities with a 230/70 kV source near the anticipated growth areas in northern Paso Robles to efficiently add distribution capacity and improve service reliability when required in the Paso Robles DPA.
- **Balance Safety, Cost, and Environmental Impacts.** Locate, design, and build the project in a safe, cost-effective manner that will also minimize environmental impacts.

CPUC's Project Objectives

As part of its authority as the lead agency under CEQA for preparation of the EIR for the Proposed Project, CPUC is responsible for identifying appropriate project objectives to inform the CEQA process/evaluation, including the development and screening of project alternatives. These objectives may differ from the Applicants' stated objectives in their PEA. Based on its understanding of the fundamental underlying purpose of the Proposed Project, CPUC and its consultants have identified the following CEQA objectives for the Proposed Project:

- **Transmission Objective:** Mitigate thermal overload and low voltage concerns in the Los Padres 70 kV system during Category B contingency scenarios, as identified by the CAISO in its 2013-2014 Transmission Plan.
- **Distribution Objective:** Accommodate expected future increased electric distribution demand in the Paso Robles DPA, particularly in the anticipated growth areas in northeast Paso Robles.

The issue of long feeders and poor service reliability was not identified as a fundamental project objective by the Applicants or CPUC; however, it is considered a beneficial effect of the Proposed Project, and will be considered during development and screening of project alternatives.

1.3 PRELIMINARY PROJECT IMPACTS ANALYSIS

The EIR analysis has not yet been completed for the Proposed 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 Proposed Project. As described further in Chapter 2, *Methodology for Identifying and Screening Alternatives*, CEQA alternatives should avoid or reduce at least one of the Proposed Project's potentially significant effects. Therefore, a preliminary discussion of the Proposed 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 the Applicants identified no potentially significant impacts that would occur as a result of the Proposed Project. However, the PEA included a number of Applicant Proposed Measures (APMs) 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, etc.). Without assuming implementation of these APMs, a number of the impacts identified in the PEA would be potentially significant (but could be reduced to less than significant through implementation of mitigation measures). The impact conclusions in the PEA do not necessarily reflect those of CPUC in its DEIR.

1.3.2 IMPACTS IDENTIFIED IN THE PRELIMINARY EIR ANALYSIS

Preliminary analysis of potential Proposed 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:

- Aesthetic impacts from the placement of the approximately 15-acre Estrella Substation along Union Road, which traverses an area typified by rolling hills and vineyards;
- Aesthetic impacts from the new overhead 70 kV power line, particularly in the area of Golden Hill Road, where the line would pass through industrial, commercial, and residential areas that do not currently have overhead power lines; and
- Agricultural resources impacts from permanent conversion of at least 15 acres of Important Farmland as a result of construction of the proposed Estrella Substation and power line.

Additionally, review of the Proposed Project materials and scoping comments indicates that the Proposed Project could impact biological resources and cultural resources, and potentially increase wildfire risk due to the new overhead power lines; however, it is anticipated that mitigation measures could be implemented that would be sufficient to avoid or reduce these potential impacts to a level that is less than significant.

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 Proposed 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 Proposed Project by CPUC staff and consultants and consideration of CPUC initiatives. As explained further in Section 2.2, the purpose of alternatives under CEQA is to reduce or avoid one or more significant impacts of the Proposed 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 the 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.

Substation Siting Alternatives

As explained by NEET West and PG&E in their PEA (NEET West and PG&E 2017), potential substation locations were physically and technically limited by the need to improve distribution reliability for the local DPA. As described in Section 1.2.2, new industrial growth is anticipated to occur in the Paso Robles Airport area and the Golden Hill Industrial Park south of the airport; new distribution service for this area is anticipated to be needed in 5 to 15 years. Additionally, long feeders in the Paso Robles DPA are compromising distribution reliability; therefore, locating the substation in an area where these feeders could be split in half or shortened would be a benefit with respect to reliability.

During its process of selecting NEET West and PG&E as the project sponsors, CAISO identified the location for the new substation to be within a 2.2-mile radius from the intersection of SR 46 and the Morro Bay-Gates/Templeton-Gates 230 kV transmission corridor. This location was a result of a recommendation to CAISO from PG&E's distribution planning engineers, based upon several considerations:

1. The anticipated growth areas are north and east of Paso Robles Substation, so the new distribution substation should be north and east of Paso Robles Substation in order to place the new distribution substation near the growth.

2. Since the new distribution substation would be fed from the 230 kV transmission source, the new substation should be located along the Morro Bay-Gates 230 kV transmission lines to minimize costs and potential project impacts.
3. The locality known as “Estrella” offers the operational advantage of being located where long distribution lines from four existing substations end (i.e., San Miguel, Paso Robles, Cholame, and Templeton). Thus, placing the substation in Estrella would make it possible to back feed and split in half long existing distribution lines from these four sources.

Of the potential sites in Estrella, those north of Estrella Road would place the new substation off in a northeast corner of the DPA and too far from the growth areas near Paso Robles Airport and Golden Hill Industrial Park. Therefore, the northern-most site considered was a site where the 230 kV lines cross Estrella Road, approximately 2.2 miles northeast of SR 46 along the 230 kV right-of-way. The southern-most site that distribution planning engineers felt was acceptable (i.e., not too close to Templeton or Paso Robles substations and not too far from the growth areas) was a site where Union Road comes close to the Morro Bay-Gates 230 kV lines. This southern-most site is the Proposed Project site.

In addition to the factors described above, potential substation sites needed to be available for outright purchase, and of the size and topography necessary to support the substation design. Also, due to reliability issues in crossing existing 500 kV transmission line, the Applicants focused on potential sites that were located on the east side of the 230/500 kV transmission corridor to avoid crossing under or over the existing 500 kV transmission line.

Based on these criteria, the Applicants’ parcel search identified 19 parcels that contained potential sites for the 15-acre substation. Ultimately, following outreach efforts to the landowners of the identified parcels, three substation sites (including the proposed site) were carried forward for further analysis.

Power Line Route Alternatives

Once the proposed substation site was identified, the Applicants developed routing options based on the CAISO Functional Specifications (CAISO 2014b) and that took into account the following goals:

- Construct a safe and reliable system;
- Minimize conflicts with established land uses, including agriculture;
- Minimize the length of the electric power line to reduce the costs and overall footprint;
- Minimize the potential impacts on special-status species and habitats;
- Minimize permitting requirements and potential schedule delays for an in-service date of 2019;
- Minimize constructability and operational constraints;
- Minimize costs to customers;

- Minimize the division of parcels by locating routes near the edge of parcels; and,
- Maximize the use of existing corridors by co-location when feasible.

The Applicants' routing process was separated into the following four distinct stages: study area development, corridor development, route segment development, and final route identification. These stages allowed the team to establish a large 54.8-square-mile study area that would then be narrowed into 42 corridors and 125 route segments that could be evaluated and connected together to build a complete route.

Segments were assigned compatibility ratings, and a spatial analysis was prepared to evaluate the potential for overhead power line structures to interfere with or obstruct navigable air space associated with the Paso Robles Municipal Airport. PG&E conducted desktop technical review and aerial field inspections using helicopters to determine constructability of the various route segments. Route corridors and segments were then further defined and narrowed during outreach activities that were initiated in July 2015, concurrently with the beginning of the routing process.

Ultimately, as a result of this review process, PG&E narrowed the previous 42 corridors and 125 route segments down to three alternative routes (including the proposed route) (NEET West and PG&E 2017).

2.1.2 PUBLIC AND STAKEHOLDER SCOPING

In accordance with CEQA requirements, CPUC staff and consultants circulated a NOP to interested members of the public on July 30, 2018. A revised NOP was circulated on August 1, 2018 to correct a map depicting potential alternatives, which had inadvertently omitted several possible alternatives. Circulation of the NOP initiated the scoping period, which lasted until August 31, 2018, although several comment letters were accepted beyond this date.

CPUC staff and consultants conducted a public scoping meeting for the Proposed Project on Tuesday, August 7, 2018, from 6 p.m. to 8 p.m. at the Winifred Pifer Elementary School located at 1350 Creston Road in Paso Robles. The meeting was publicized in the local area newspaper and details of the meeting time and location were provided in the NOP, which was sent via direct mailings to numerous households, offices, and agencies. The scoping meeting format consisted of a presentation by CPUC staff and consultants followed by opportunities for attendees to ask questions and submit comments. Written comment cards were provided to all meeting attendees, as well as information on how to access project documents and participate in the public review process going forward. A total of 50 individuals signed in to the meeting in Paso Robles.

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
Public Agencies	5
General Public	37
Community Organization / Group (e.g., neighborhood HOA)	2
Parties to the CPUC Formal Proceeding	1
Tribes	1

The public agencies that submitted scoping comment letters are as follows:

- City of El Paso de Robles
- County of San Luis Obispo
- California Department of Conservation
- California Native American Heritage Commission
- California Department of Conservation, Division of Oil, Gas, and Geothermal Resources

The specific comments within the comment letters submitted on the Proposed 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** below. Key concepts and phrases within the comments shown in Table 2-2 are shown in bold.

Table 2-2. Most Common Generalized Scoping Comments by Number of Commenters

Comment	No. of Commenters
The proposed overhead power lines would have aesthetic impacts and be out of scale with the community.	23
Overhead power lines should be placed underground to reduce aesthetic impacts and/or minimize fire risk.	16
Overhead power lines could present hazards associated with electromagnetic fields.	15
The addition of overhead power lines could decrease property values for nearby properties.	11
The overhead power lines could present a fire hazard risk (e.g., if they were downed in an earthquake or high winds).	9
General opposition to the Proposed Project power line route.	8
The overhead power lines would have noise impacts from the “buzzing” during operation.	7
Why is the project needed? The rationale for the Proposed Project is not well-founded.	6

Comment	No. of Commenters
The overhead power lines could adversely affect the flight path for California Department of Forestry and Fire Protection (CAL FIRE) helicopters accessing the pond by the Circle B properties.	6
The Project 70 kV route alignments could necessitate removal of oak trees .	5
The Proposed Project and alternatives could impact bald and golden eagles in the area.	5
Project construction ground-disturbing activities could impact cultural resources .	4
Project construction activities could result in noise impacts .	4
There would be traffic impacts during Project construction.	4
Support for the Proposed Project power line route.	4

As shown in Table 2-2, many of the comments received during the scoping period related to potential impacts (e.g., aesthetic impacts, fire hazard risk, noise impacts, etc.) of the overhead power lines associated with the Proposed Project and alternatives. One of the most common generalized comments received was that the proposed overhead power lines should be placed underground.

Other notable comments included the comments from the City of Paso Robles, which expressed concern regarding potential aesthetic impacts of the proposed overhead power lines (particularly with respect to their height) and compatibility of the power line crossing of SR 46 with a planned interchange project at that location. The City also expressed concern regarding a possible battery storage alternative that would expand, or place a large battery at or near, the existing Paso Robles Substation. The City stated that such an alternative could potentially result in a variety of adverse impacts, such as aesthetics, traffic, safety, and land use, particularly due to the fact that the substation is surrounded on all sides by multi-family residential and commercial uses. The City also noted that Niblick Road, which is located immediately south of the existing substation, may need to be expanded in the future, which would further constrain the potential expansion of Paso Robles Substation.

Another individual member of the public commented that expansion of the existing Templeton Substation (i.e., adding transformer capacity) and addition of a second circuit on the existing Templeton-Paso Robles 70 kV Transmission Line would solve the CAISO-identified issues. This individual also noted that this arrangement (a double-circuit line from Templeton Substation to Paso Robles Substation) was originally proposed, but the approach was abandoned due to cost and budgeting issues. The individual argued that this double-circuit approach still makes sense today and that use of steel poles would sufficiently minimize the N-2 exposure (i.e., two circuits on one pole being taken down due to vehicle impact, other manmade causes, or natural causes) associated with this alternative. This individual's comments align closely with Alternative SE-1: Templeton Substation Expansion and Alternative SE-PLR-1: Existing 70 kV Power Line Route considered in this ASR (see Sections 3.4 and 3.5.1).

2.1.3 INDEPENDENT EVALUATION AND CONSIDERATION OF CPUC INITIATIVES

As part of the independent evaluation of the Proposed Project for the EIR, CPUC staff and consultants identified and considered possible alternatives to the Proposed 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.

Battery Storage Initiatives and Rulings

The CPUC adopted Decision 13-10-040 on October 17, 2013, which established an Energy Storage Procurement Framework and design program. In accordance with Assembly Bill (AB) 2514, the decision established the policies and mechanisms for procurement of electric energy storage, including:

1. Procurement targets for each of the investor-owned utilities and procurement requirements for other load serving entities;
2. Mechanisms to procure storage and means to adjust the targets, as necessary; and
3. Program evaluation criteria.

The decision specifically established a target of 1,325 MW of energy storage to be procured by PG&E, Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) by 2020, with installations required no later than the end of 2024, and sets a schedule for procurement of energy storage. Of the 1,325 MW total, 700 MW shall be transmission-connected, 425 MW shall be distribution-connected, and 200 MW shall be customer-side (CAISO 2018a). The CAISO considers these targets and connection domains when evaluating potential mitigation to transmission constraints in local areas as part of its transmission planning process. **Table 2-3** shows CAISO's operational attribute assumptions for these classes of energy storage and the targets mandated under Decision 13-10-040.

Table 2-3. CAISO Storage Operation Attributes

Values are megawatts in 2024	Transmission-Connected	Distribution-Connected	Customer-Side
Total Installed Capacity	700	425	279
Amount Providing Capacity in Power Flow Studies	560	170	135
Amount Providing Flexibility	700	212.5	135
Amount with 2 Hours of Storage	280	170	100
Amount with 4 Hours of Storage	256	170	135
Amount with 6 Hours of Storage	124	85	0

Source: CAISO 2018a

In addition to Decision 13-10-040, various requirements related to energy storage are included in the Public Utilities Code; in particular, Section 2837(g) states that each electrical

corporation's renewable energy procurement plan should address the acquisition and use of energy storage systems to avoid or delay investments in transmission and distribution system upgrades.

In April 2015, the CPUC opened an Order Instituting Rulemaking in response to the enactment and ongoing implementation of Assembly Bill 2514 and to continue to refine policies and program details, such as the Energy Storage Procurement Framework (Proceeding R.15-03-011). The rulemaking considered recommendations included in the California Energy Storage Roadmap, an interagency guidance document jointly developed by CAISO, California Energy Commission, and CPUC.

Assembly Bill 2868 passed in 2016 to spur further Distributed Energy Resources (DER) implementation. It required the CPUC to direct PG&E, SCE, and SDG&E to develop programs to accelerate deployment of an additional 500 MW of distributed energy storage systems. CPUC Decision D.17-04-039 ordered each of the three utility companies to add up to 166.66 MW of distributed energy storage systems to their energy storage procurement and investment plans. This established a new target of 1,825 MW of energy storage procurement by 2020 (CPUC 2017). To date, PG&E has reported its procurement of extensive amounts of transmission-connected energy storage and limited amounts of distribution-connected and customer-connected (behind the meter)⁴ energy storage (CPUC 2019a).

Public Utilities Code Considerations for Alternatives and Certificate of Public Convenience and Necessity (CPCN) Applications

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

Public Utilities Code Section 1002.3 requires CPUC to "...consider cost-effective alternatives to transmission facilities that meet the need for an efficient, reliable, and affordable supply of electricity...", and 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."

Additionally, Public Utilities Code Section 1002 states the following with respect to issuance of 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.

⁴ 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).

- (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 accomplish all or most of the basic project objectives?
- Is the alternative potentially feasible (e.g., from economic, environmental, legal, social, and technical standpoints)?
- Does the alternative avoid or substantially lessen any significant effects of the Proposed Project?

Each criteria 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

As described in Section 1.2.3, CPUC identified the following basic project objectives for the Proposed Project:

- **Transmission Objective:** Mitigate thermal overload and low voltage concerns in the Los Padres 70 kV system during Category B contingency scenarios, as identified by the CAISO in its 2013-2014 Transmission Plan.
- **Distribution Objective:** Accommodate expected future increased electric distribution demand in the Paso Robles DPA, particularly in the anticipated growth areas in northeast Paso Robles.

The screening process considered whether a potential alternative addressed at least one of the two basic objectives. Because the two fundamental project objectives address two essentially separate (although interconnected in some ways) issues, alternatives addressing either one of the two objectives could potentially be combined or constructed in tandem to meet all of the basic project needs. Additionally, because the Proposed Project involves two primary components (i.e., substation and a new/reconductored power line), certain alternatives (e.g., substation siting alternatives or power line routing alternatives) may not

on their own meet the project objectives, but could be combined with other alternatives to meet the project needs.

2.2.2 FEASIBILITY

The alternatives screening process also considered whether the alternative is potentially feasible. CEQA Guidelines Section 15364 defines feasibility as "...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." According to CEQA Guidelines Section 15126.6(f)(1), the factors that may be considered when addressing the potential feasibility of alternatives include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or other regulatory limitations, jurisdictional boundaries, and the project proponent's control over alternative sites.

For the screening analysis, the potential feasibility of alternatives was assessed by considering the following factors:

- **Economic Feasibility.** Is the alternative so costly that implementation would be prohibitive? CEQA Guidelines Section 15126.6(b) requires consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of the project objectives, or would be more costly". The Court of Appeals determined in *Citizens of Goleta Valley v. Board of Supervisors* (2nd Dist. 1988) 197 Cal.App.3d 1167, p. 1181 (see also *Kings County Farm Bureau v. City of Hanford* [5th Dist. 1990] 221 Cal.App.3d 692, 736): "[t]he fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project."
- **Environmental Feasibility.** Would implementation of the alternative cause substantially greater environmental damage than the Proposed Project, thereby making the alternative clearly inferior from an environmental standpoint? To the extent that the alternative could introduce a new significant effect, or increase the severity of a significant effect, this could render the alternative environmentally infeasible.
- **Legal Feasibility.** Does the alternative have the potential to encounter lands that have legal protection that may prohibit or substantially limit the feasibility of permitting a substation and power line, or energy storage facility? Lands that are afforded legal protections that would prohibit the construction of the project, or that would require an act of Congress for permitting, are generally considered infeasible locations for the project. These land use designations include wilderness areas, wilderness study areas, restricted military bases, airports, and Native American reservations.
- **Social Feasibility.** Is the alternative inconsistent with an adopted goal or policy of the CPUC or other applicable agency?
- **Technical Feasibility.** Is the alternative potentially feasible from a technological perspective, considering available technology? Are there any construction, operation, or maintenance constraints that cannot be overcome? Can the transmission,

distribution, or energy storage facilities associated with the alternative be feasibly connected to existing transmission and/or distribution system infrastructure?

2.2.3 POTENTIAL TO ELIMINATE SIGNIFICANT ENVIRONMENTAL EFFECTS

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 Proposed Project. At the screening stage, it is not possible to evaluate all the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. However, it is possible to identify elements of an alternative that are likely to be the sources of impacts and to relate them, to the extent possible, to general conditions in the subject area, and to the preliminary identified impacts of the Proposed Project.

Chapter 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 an EIR; as such, it is not discussed here.

As noted in Chapter 2, due to the nature of the project, alternatives are considered separately for the different primary project components. Specifically, alternatives are considered separately for substation siting and routing of the 70 kV power line. Additionally, wholly different project approaches, such as battery storage, are considered in the analysis.

3.1 SUMMARY OF ALTERNATIVES SCREENING ANALYSIS RESULTS

In total, 7 out of the 11 total alternatives considered were retained for detailed analysis in the EIR. Two of these alternatives (BS-1 and BS-2) are not sufficiently defined at this time to definitively determine feasibility and evaluate environmental impacts; but for the purposes of this analysis, the alternatives are considered potentially feasible and likely to reduce significant environmental impacts, and, therefore, are retained for full analysis. Additionally, one alternative (BS-3) is not sufficiently defined at this time to render any conclusion, and, therefore, is discussed briefly and will be further defined and evaluated in the future. One variation of Alternative PLR-1: Estrella Route (i.e., Alternative PLR-1B) was screened out from full analysis in the EIR because this alternative would only be used with Alternative SS-2: Mill Road West Substation Site, which was itself screened out.

Table 3-1 provides a summary of the alternatives screening analysis results. Sections 3.2 through 3.6 provide detailed analysis to support determinations provided in this summary table. **Figure 3-1** shows a summary map depicting all of the alternatives considered in this analysis.

Table 3-1. Summary of Alternatives Screening Analysis Results

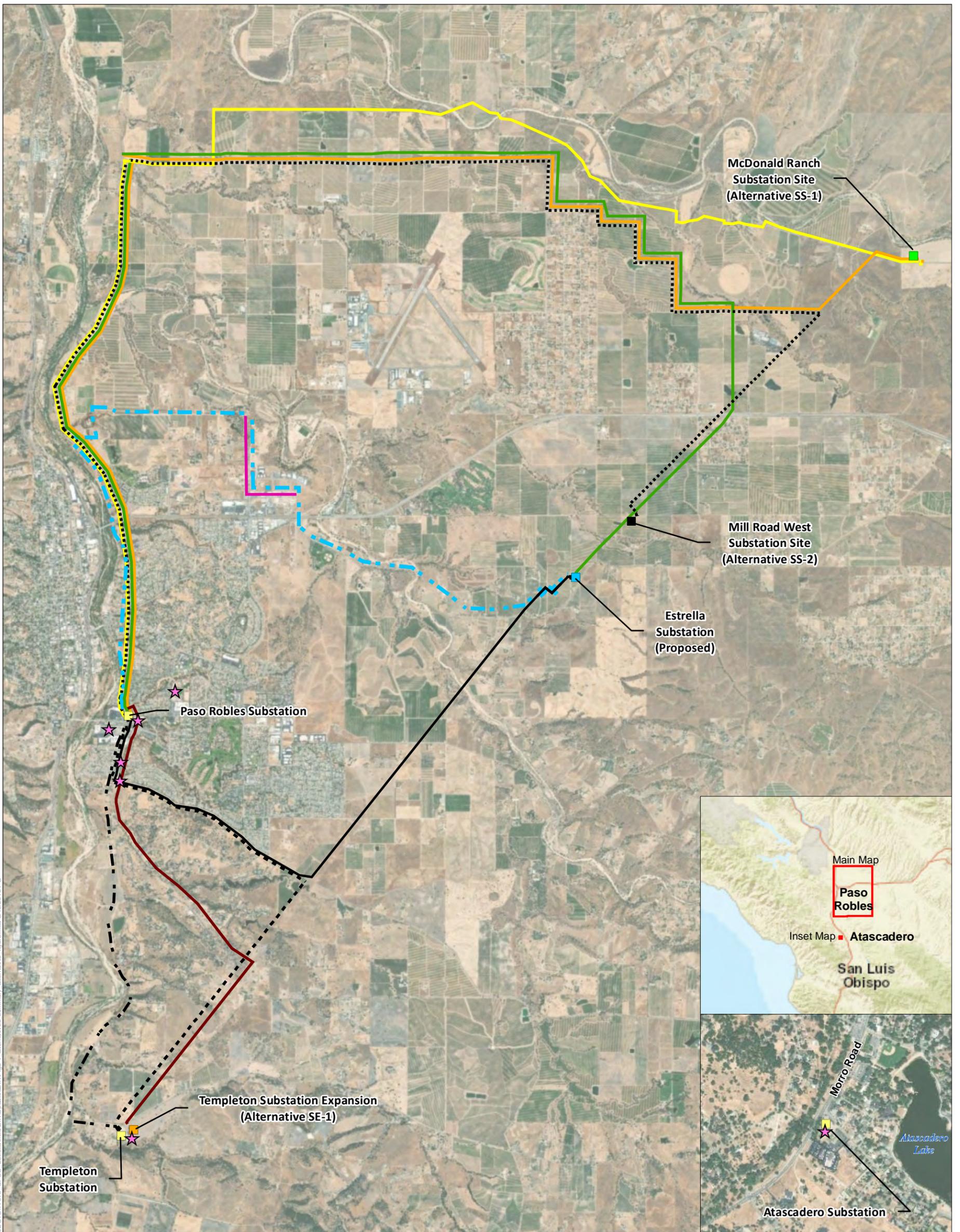
Name of Alternative	Project Objective	Potential Feasibility	Potential to Reduce Significant Environmental Effects, As Compared to Proposed Project
Alternatives Retained for Full Analysis in the EIR			
Alternative SS-1: McDonald Ranch Substation Site	Meets both objectives.	Potentially feasible based on its consideration in the PEA. Could increase some environmental effects due to longer 230 kV interconnection, but these effects would likely not be significant.	Would reduce aesthetics impacts due to its more rural location and would reduce agricultural resources impacts.
Alternative PLR-1: Estrella Route (<i>Variations: Alternative PLR-1A, PLR-1C, and PLR-1D</i>)	Meets both objectives.	Potentially feasible based on its consideration in the PEA. Would increase some environmental effects due to longer power line length, but these effects would likely not be significant.	Could reduce potential impacts to biological resources and would reduce aesthetic impacts.
Alternative PLR-3: Strategic Undergrounding	Meets both objectives.	Potentially feasible. Could increase some environmental effects associated with trenching for installation of underground line, but these are unlikely to be significant.	Would reduce aesthetic impacts and could reduce potential impacts to special-status birds.
Alternative SE-1: Templeton Substation Expansion	Would meet Transmission Objective. Could be paired with an alternative that meets Distribution Objective.	Potentially feasible.	Would reduce aesthetic and agricultural resources impacts.
Alternative SE-PLR-2: Templeton-Paso South River Route	Would meet Transmission Objective. Could be paired with an alternative that meets Distribution Objective.	Potentially feasible.	Would involve less overall ground disturbance and construction activity due to avoided need for a reconductoring segment/reduced overall 70 kV power line length.
Alternative BS-1: Battery Storage to Address Transmission Objective (<i>Variations: Alternative BS-1A, BS-1B, BS-1C, BS-1D, and BS-1E</i>)	Would meet the Transmission Objective. Could be paired with an alternative that meets Distribution Objective.	Potential feasibility constraints due to limited sites/built-out nature of Paso Robles Substation vicinity. Safety and fire risk considerations to be investigated in the EIR.	Could potentially reduce aesthetics and agricultural resources impacts.

Name of Alternative	Project Objective	Potential Feasibility	Potential to Reduce Significant Environmental Effects, As Compared to Proposed Project
Alternative BS-2: Battery Storage to Address Distribution Objective	Would meet Distribution Objective. Could be paired with alternative that meets Transmission Objective.	Feasibility to be evaluated in coordination with Applicants. Safety and fire risk considerations to be investigated in the EIR.	Would likely reduce aesthetic and agricultural resources impacts.
Alternative BS-3: Behind-the-Meter Battery Storage	TBD	TBD	TBD
Alternatives Screened Out from Full Analysis in the EIR			
Alternative SS-2: Mill Road West Substation Site	Meets both objectives.	Potentially feasible based on its consideration in the PEA. Would require more ground disturbance and construction activity due to need to improve access road, but these environmental effects unlikely to be significant.	May reduce but not altogether eliminate aesthetics impacts. Would have similar agricultural resources impacts.
Alternative PLR-1: Estrella Route (<i>Variations: Alternative PLR-1B</i>)	Meets both objectives.	Potentially feasible based on its consideration in the PEA. Would increase some environmental effects due to longer power line length, but these effects are unlikely to be significant.	Could reduce potential impacts to biological resources and would reduce aesthetic impacts.
Alternative PLR-2: Creston Route (<i>Variations: Alternative PLR-2A, PLR-2B, and PLR-2C</i>)	Meets both objectives.	Potential engineering feasibility constraints. Would have similar or possibly more significant aesthetics impacts.	Would not avoid or reduce any significant effects of the Proposed Project.
Alternative SE-PLR-1: Templeton-Paso 70 kV Route (Existing)	Would meet Transmission Objective, although would create potential for N-2 contingency (i.e., two lines on one pole being taken down due to vehicular impact, other causes). Could be paired with an alternative that meets Distribution Objective.	Potential feasibility constraints associated with need for expansion of Paso Robles Substation to ring bus configuration.	Could reduce aesthetics and agricultural resources impacts. Would involve less overall ground disturbance and construction activity due to avoided need for a reconductoring segment/reduced overall 70 kV power line length. Would reduce new permanent disturbance areas due to utilization of an existing transmission line.

Name of Alternative	Project Objective	Potential Feasibility	Potential to Reduce Significant Environmental Effects, As Compared to Proposed Project
Alternative SE-PLR-3: Templeton-Paso Creston Route	Would meet Transmission Objective. Could be paired with an alternative that meets Distribution Objective.	Potential engineering feasibility constraints. Would have similar or possibly more significant aesthetics impacts.	Would involve less overall ground disturbance and construction activity due to avoided need for a reconductoring segment/reduced overall 70 kV power line length.

Notes:

SS = Substation Siting; PLR = Power Line Route; SE = Substation Expansion; BS = Battery Storage; kV = kilovolt; PEA = Proponent’s Environmental Assessment; EIR = Environmental Impact Report; TBD = to be determined



\\H2O-SERVER\GIS_Serv\PROJECTS\17010_CPUC_Estrella\mxd\UR\Upd\alt\fig-3-1_alternatives_summary_figure.mxd 3/18/2019 10:00 AM

Basemap Sources: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

- Estrella Substation
- Existing Substation
- - - Proposed Project 70-kV Route

Project Alternatives Retained for Full Analysis

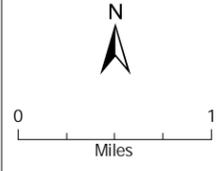
- Alternative SS-1: McDonald Ranch Substation Site
- Alternative PLR-1A: Estrella Route to Estrella Substation
- Alternative PLR-1C: Estrella Route to McDonald Ranch, Option 1
- Alternative PLR-1D: Estrella Route to McDonald Ranch, Option 2
- Alternative PLR-3: Strategic Undergrounding
- Alternative SE-1: Templeton Substation Expansion
- Alternative SE-PLR-2: Templeton-Paso South River Road Route
- ★ Potential Front-of-the-Meter Battery Storage Location (Alternative BS-1 & BS-2)
Note: Behind-the-meter battery storage still under review (Alternative BS-3). All variations of Alternative BS-1 carried forward.

Other Project Alternatives Considered

- Alternative SS-2: Mill Road West Substation Site
- - - - - Alternative PLR-1B: Estrella Route to Mill Road West
- Alternative PLR-2: Creston Route (Variations not shown; not carried forward)
- - - - - Alternative SE-PLR-1: Templeton-Paso 70kV Route (Existing)
- - - - - Alternative SE-PLR-3: Templeton-Paso Creston Route

Figure 3-1
Alternatives Summary Map

Note: The route variations shown are offset in order to display the alignments of the alternative routes that may overlap in places.



Source: NEET West and PG&E 2017.

Estrella Substation and Paso Robles Area Reinforcement Project

Page intentionally left blank.

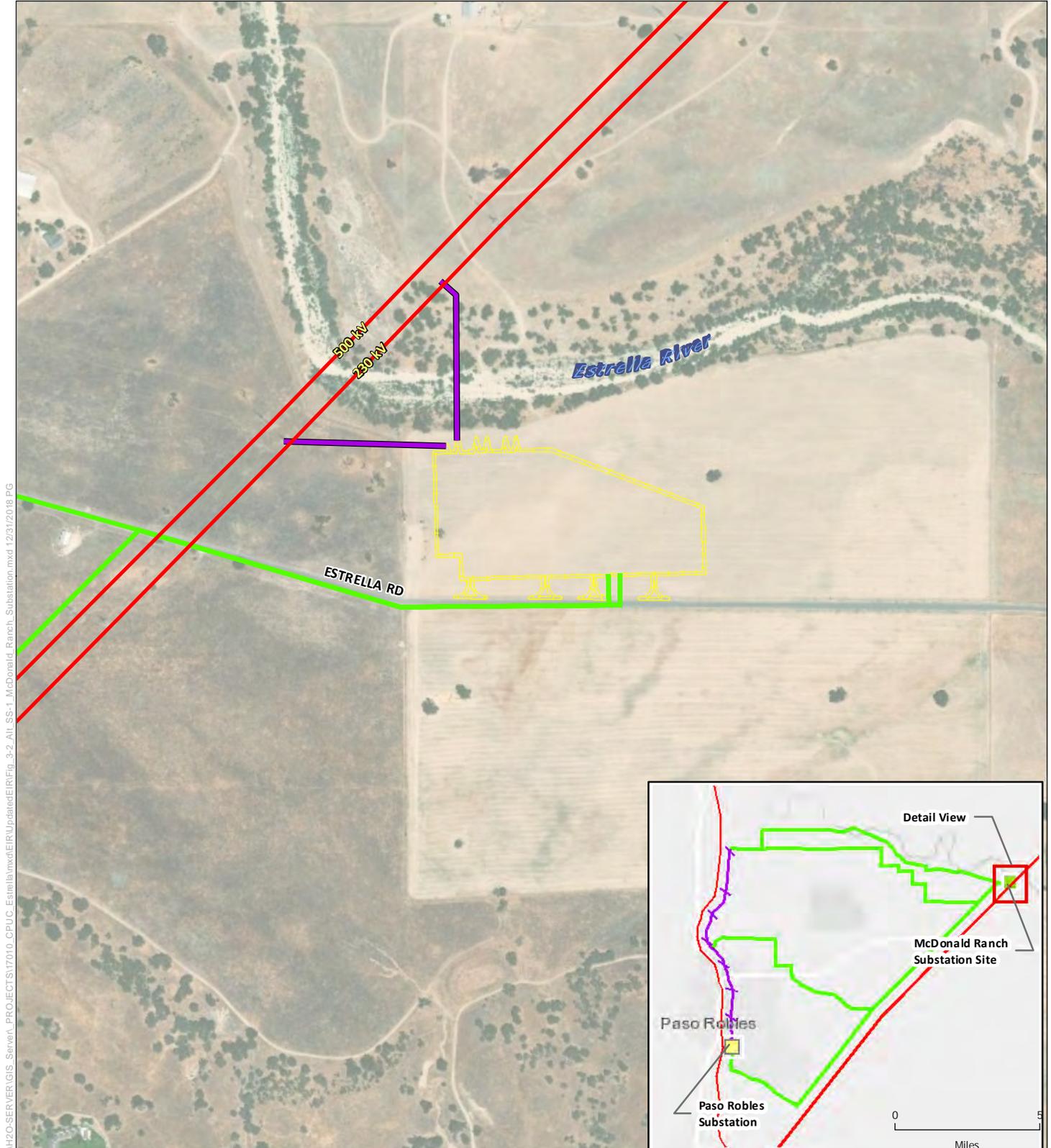
3.2 SUBSTATION SITING (SS) ALTERNATIVES

3.2.1 ALTERNATIVE SS-1: McDONALD RANCH SUBSTATION SITE

Description

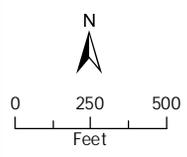
The McDonald Ranch Substation Site is situated on an approximately 72-acre parcel, of which the substation would occupy approximately 15 acres. This site is bordered by the Estrella River to the north and Estrella Road to the south, and is generally surrounded by rural development. The McDonald Ranch site is located within the County of San Luis Obispo North County Planning Area, El Pomar-Estrella Sub Area, and is currently use to grow alfalfa. Adjacent land uses are also agricultural, including fallow land, livestock grazing, alfalfa, dry farming, and vineyards. Scattered residences are present in the area.

If the substation were constructed at the McDonald Ranch Substation Site, it could be connected to the existing Paso Robles Substation via a 70 kV power line following either the Estrella Route (Alternative PLR-1), the Proposed Project power line route, or the Creston Route (Alternative PLR-2). **Figure 3-2** shows Alternative SS-1: McDonald Ranch Substation Site and potential power line route alignments.



\\H2O-SERVER\GIS_Server\PROJECT\SAT17010_CPUC_Estrella\mxd\EIR\Updated\EIR\Fig_3-2_Alt_SS-1_McDonald_Ranch_Substation.mxd 12/31/2018 PG

BaseMap Sources: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap



- Alternative Components**
- Substation Footprint
 - 230 kV Interconnections
 - 70-kV Power Line Routes that Could be Used for the McDonald Ranch Substation Site
 - Reconductoring Segment
 - Substation Site Alternatives

- Existing Infrastructure**
- Transmission Lines (offset)
 - Substation



Figure 3-2
Alternative SS-1
McDonald Ranch
Substation Site



Source: Source: NEET West and PG&E 2017; California Energy Commission 2018

Estrella Substation and Paso Robles Area Reinforcement Project

Consideration of CEQA Criteria

Project Objectives

Alternative SS-1: McDonald Ranch Substation Site, when combined with one of the power line route alternatives, would meet both of the project objectives. The substation and power line would provide the same functions as the Proposed Project, including addressing the CAISO-identified Category B contingencies and accommodating future additional load demand in the DPA. Due to its more remote location, however, the McDonald Ranch Substation Site may provide a less ideal location for extending future distribution service and splitting in half of existing long feeders in the DPA, as compared to the proposed Estrella Substation site.

Feasibility

The McDonald Ranch Substation Site was originally identified by the Applicants as part of the PEA. The identification of alternatives as part of the PEA considered feasibility, as discussed above in Section 2.1.1, and in the PEA (page 4-3). As this alternative was analyzed with a substantial level of detail in the PEA, it is reasonable to assume that the alternative is potentially feasible from a legal and technical standpoint. The substation site is not on lands afforded legal protections and no regulatory or technical constraints were identified.

Compared to the proposed substation site, Alternative SS-1: McDonald Ranch Substation Site would require a longer 230 kV interconnection to the substation (approximately 1,100 feet), which would span the Estrella River. This would require more overall vegetation removal (both temporary and permanent) due to the presence of riparian habitat that extends along the river. Additionally, the site's close proximity to Estrella River would create the potential for impacting unknown cultural and tribal resources, which have a higher likelihood of occurring in areas near watercourses.

Due to the longer interconnection and associated ground disturbance/vegetation removal, construction of Alternative SS-1: McDonald Ranch Substation Site also would take longer (i.e., estimated 1 to 2 months longer construction duration). This could result in a potential for increased soil erosion and sedimentation, as well as increased fugitive dust. The site's close proximity to Estrella River also may necessitate additional import/export of fill material to accommodate soils near the river that are less conducive to compaction. The increased truck trips that would result from the additional soil import/export would increase construction-related air contaminant and greenhouse gas (GHG) emissions compared to the proposed substation site.

These environmental impacts could likely be minimized through mitigation measures, however, and are not anticipated to be significant following mitigation. Therefore, they would not render the alternative environmentally infeasible. Overall, the alternative is considered potentially feasible.

Potential to Reduce Significant Environmental Impacts

Alternative SS-1: McDonald Ranch Substation Site could reduce identified impacts of the Proposed Project related to aesthetics and agricultural resources. Due its location along the more rural Estrella Road, which is further removed to the east from the City of Paso Robles compared to the proposed substation site, the visual impacts of this alternative would likely affect a fewer number of receptors (e.g., motorists traveling on adjacent roadways).

Additionally, the portion of Estrella Road on which the McDonald Ranch Substation Site is located is not visible from any vineyards or wineries, and Estrella Road is not included on the “Wine Line” wine touring route (whereas the proposed substation site is visible from several vineyards and wineries identified as “Wine Line” stops). SR 46 is an Eligible State Scenic Highway (California Department of Transportation [Caltrans] 2018); due to the McDonald Ranch Substation Site’s distance (1.7 miles) from SR 46, it likely would not be visible by motorists using this highway, but this would need to be confirmed in the EIR.

Additionally, while the McDonald Ranch Substation Site is designated as Farmland of Local Importance, building the substation on this site would not affect Unique Farmland, Farmland of Statewide Importance, or Prime Farmland (California Department of Conservation [CDOC] 2016a). By contrast, construction of the proposed substation would result in the conversion of 11.73 acres of Unique Farmland and 2.66 acres of Farmland of Statewide Importance (NEET West and PG&E 2017). Unique Farmland and Farmland of Statewide Importance are generally considered superior agricultural lands to Farmland of Local Importance, as Farmland of Local Importance are lands that do not meet the criteria of the former two categories but are nevertheless determined to be important to the local economy (CDOC 2016b). In San Luis Obispo County, Farmland of Local Importance are those lands which meet all the characteristics for Prime Farmland or Farmland of Statewide Importance with the exception of irrigation (CDOC 2016b).

Conclusion

Alternative SS-1: McDonald Ranch Substation Site would meet both of the project objectives and is potentially feasible. The alternative has the potential to reduce aesthetic and agricultural resources impacts, which are considered potentially significant impacts for the Proposed Project. Therefore, Alternative SS-1: McDonald Ranch Substation Site is **retained** for full analysis in the EIR.

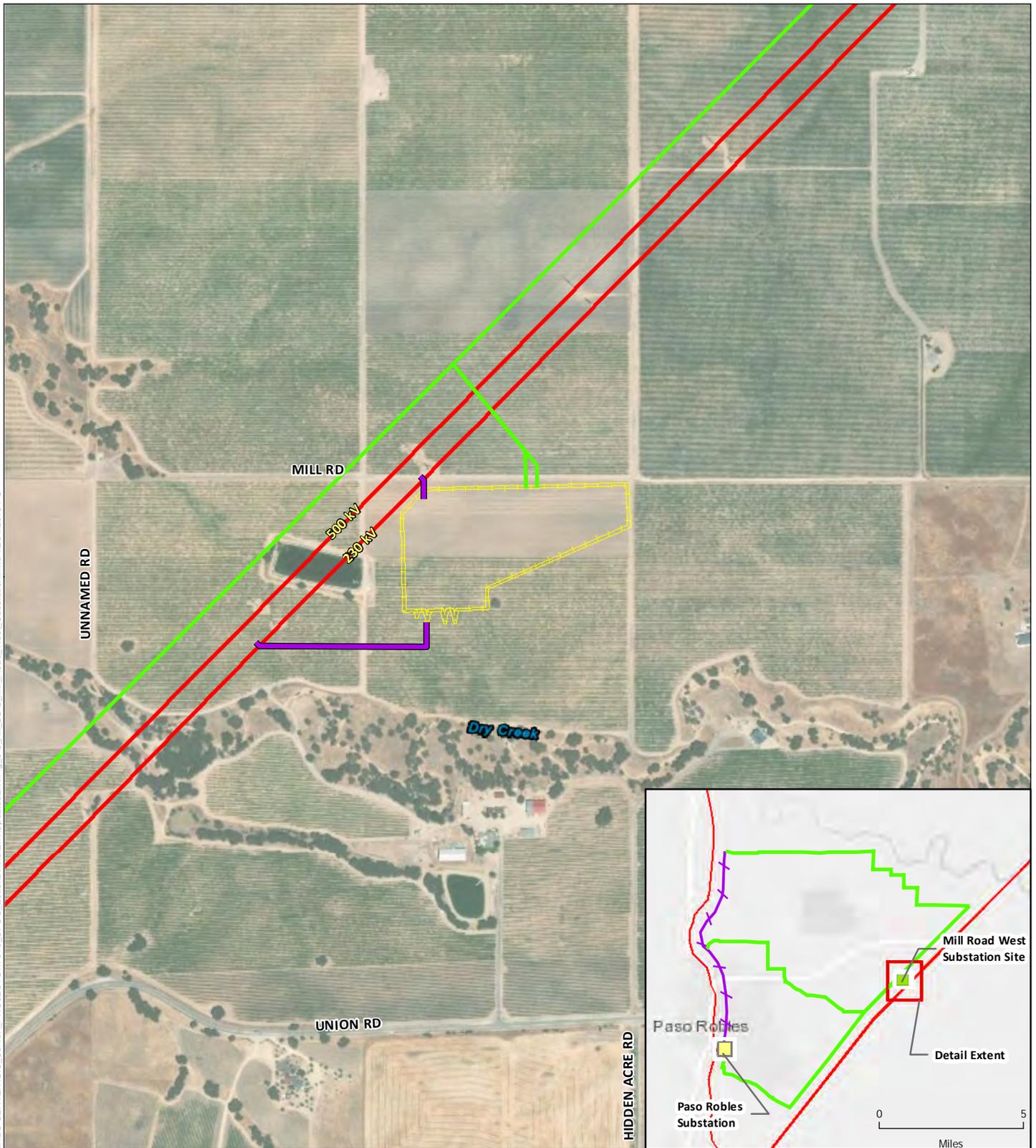
3.2.2 ALTERNATIVE SS-2: MILL ROAD WEST SUBSTATION SITE

Description

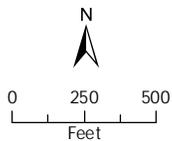
The Mill Road West Substation Site is situated on an approximately 42-acre parcel located approximately 0.5 mile east of the proposed Estrella Substation site and Union Road. Similar to the Proposed Project, the substation would occupy an approximately 15-acre portion of the parcel. The site is bounded on the north by Mill Road, the west by an unpaved private road and retention pond, and the south by an unpaved private road and moderate rolling hills, and is located within the County of San Luis Obispo North County Planning Area, El Pomar-Estrella Sub Area. The site is currently used to grow wine grapes. Adjacent land uses include primarily vineyards and associated wine processing facilities and wine tasting venues. Scattered residences are also present in the area.

The Mill Road West Substation Site could be connected to the existing Paso Robles Substation via either the Proposed Project power line route, the Estrella Route (Alternative PLR-1), or the Creston Route (Alternative PLR-2). **Figure 3-3** shows the Mill Road West Substation Site and possible 70 kV power line alignments.

\\H2O-SERVER\GIS_Server\PROJECTS\17010_CPUC_Estrella\mxd\EIRUpdated\EIRFig_3-3_Alt_SS-2_Mill_Road_West_Substation.mxd 1/23/2018 PG



BaseMap Sources: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap



Alternative

-  Substation Footprint
-  230 kV Interconnections
-  70-kV Power Line Routes that Could be Used for the Mill Road West Substation Site

-  Reconductoring Segment
-  Substation Site Alternatives

Existing Infrastructure

-  Transmission Line (offset)
-  Substation

Figure 3-3
Alternative SS-2:
Mill Road West
Substation Site



Source: Source: NEET West and PG&E 2017

Estrella Substation and Paso Robles Area Reinforcement Project

Consideration of CEQA Criteria

Project Objectives

Alternative SS-2: Mill Road West Substation Site, when combined with one of the power line route alternatives, would meet both of the project objectives. The substation and power line would provide the same functions as the Proposed Project, and would address the CAISO-identified Category B contingencies, as well as accommodate additional future load demand in the DPA.

Feasibility

The Mill Road West Substation Site was originally identified by the Applicants in the PEA. As this alternative was analyzed with a substantial level of detail in the PEA, it is reasonable to assume that the alternative is potentially feasible from a legal and technical standpoint. The substation site is not on lands afforded legal protections and no regulatory or technical constraints were identified.

The Mill Road West Substation Site would require additional road improvements in order to accommodate construction equipment and all-weather access during operations and maintenance (approximately 1 mile of an existing dirt road would require improvements such as widening, paving, and associated improvements). The alternative also would require a longer 230 kV interconnection compared to the Proposed Project. As a result, this alternative would require more temporary and permanent ground disturbance and create the potential for increased indirect hydrology and water quality impacts. Additionally, due to the presence of water features (e.g., an irrigation pond, Dry Creek) in the area of the site, there is potential for the alternative to affect wetlands.

These environmental effects could likely be minimized through mitigation measures, however, and are not anticipated to be significant following mitigation. Therefore, they would not render the alternative environmentally infeasible. Overall, Alternative SS-2 is considered potentially feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

As the Mill Road West Substation Site is located approximately 0.5 mile northeast of Union Road, it would be somewhat less visually prominent to drivers traveling along Union Road compared to the Proposed Project site; however, the new substation may still be visible to motorists, as well as other sensitive receptors in the area (e.g., residences). The Mill Road West Substation Site, like the proposed substation site, is located in an area typified by rolling hills and vineyards, which features stops along the “Wine Line” bus tour. As a result, the alternative substation would not completely eliminate the potential for visual impacts.

The Mill Road West Substation Site would be located primarily on Farmland of Statewide Importance and Unique Farmland (CDOC 2016a); therefore, it would have similar agricultural resources impacts as the Proposed Project.

Conclusion

Alternative SS-2: Mill Road West Substation Site would meet both of the project objectives and would be potentially feasible; however, the alternative would not eliminate or

substantially reduce any of the potentially significant impacts of the Proposed Project. Therefore, Alternative SS-2: Mill Road West Substation Site is **screened out** from full analysis in the EIR.

3.3 POWER LINE ROUTE (PLR) ALTERNATIVES

3.3.1 ALTERNATIVE PLR-1: ESTRELLA ROUTE

Description

The Estrella Route is an alternative route for the 70 kV power line that would connect the proposed Estrella Substation or one of the alternative substation sites (i.e., Alternative SS-1: McDonald Ranch Substation Site or Alternative SS-2: Mill Road West Substation Site) to the existing Paso Robles Substation. The Estrella Route would allow for the power line to pass north of the Paso Robles Municipal Airport in a low-density area (see **Figure 3-4**).

Depending on which potential substation site is utilized, four variations of the Estrella Route are possible:

- **Alternative PLR-1A: Estrella Route to Estrella Substation.** This route would be used to connect the proposed Estrella Substation to Paso Robles Substation. As shown on Figure 3-4, this route would follow the existing 230/500 kV transmission corridor northeast until veering north at roughly the intersection of the transmission corridor with Highway 46. The route would then zig zag in a northwest direction through agricultural lands until meeting Wellsona Road. At this point, the route would follow Wellsona Road due west until meeting the existing San Miguel-Paso Robles 70 kV Transmission Line. This existing line would then be reconducted south to the existing Paso Robles Substation.
- **Alternative PLR-1B: Estrella Route to Mill Road West.** This route would be used to connect a substation at the Mill Road West Substation Site (Alternative SS-2) to the Paso Robles Substation. The route would be very similar to Alternative PLR-1A, but would follow the existing 230/500 kV transmission corridor further northeast and veer over to the zig zag to Wellsona Road north of Highway 46.
- **Alternative PLR-1C: Estrella Route to McDonald Ranch, Option One.** This route is one of the options that could be used to connect a substation at the McDonald Ranch Substation Site (Alternative SS-1) to Paso Robles Substation. As shown in Figure 3-4, the route would be very similar to Alternatives PLR-1A and -1B, and would cut over to the zig zag to Wellsona Road at the same point as Alternative PLR-1B.
- **Alternative PLR-1D: Estrella Route to McDonald Ranch, Option Two.** This route is the second of two options that could be used to connect a substation at the McDonald Ranch Substation Site (Alternative SS-1) to Paso Robles Substation. As opposed to Alternatives PLR-1A, -1B, and -1C, this route would follow Estrella Road northwest until roughly the junction with Jardine Road, at which point it would veer to the west through agricultural lands before ultimately joining Wellsona Road and then intersecting with the existing 70 kV San Miguel-Paso Robles Power Line. Like the other Estrella Route variations, the existing 70 kV line would then be reconducted

from this point south to the existing Paso Robles Substation.

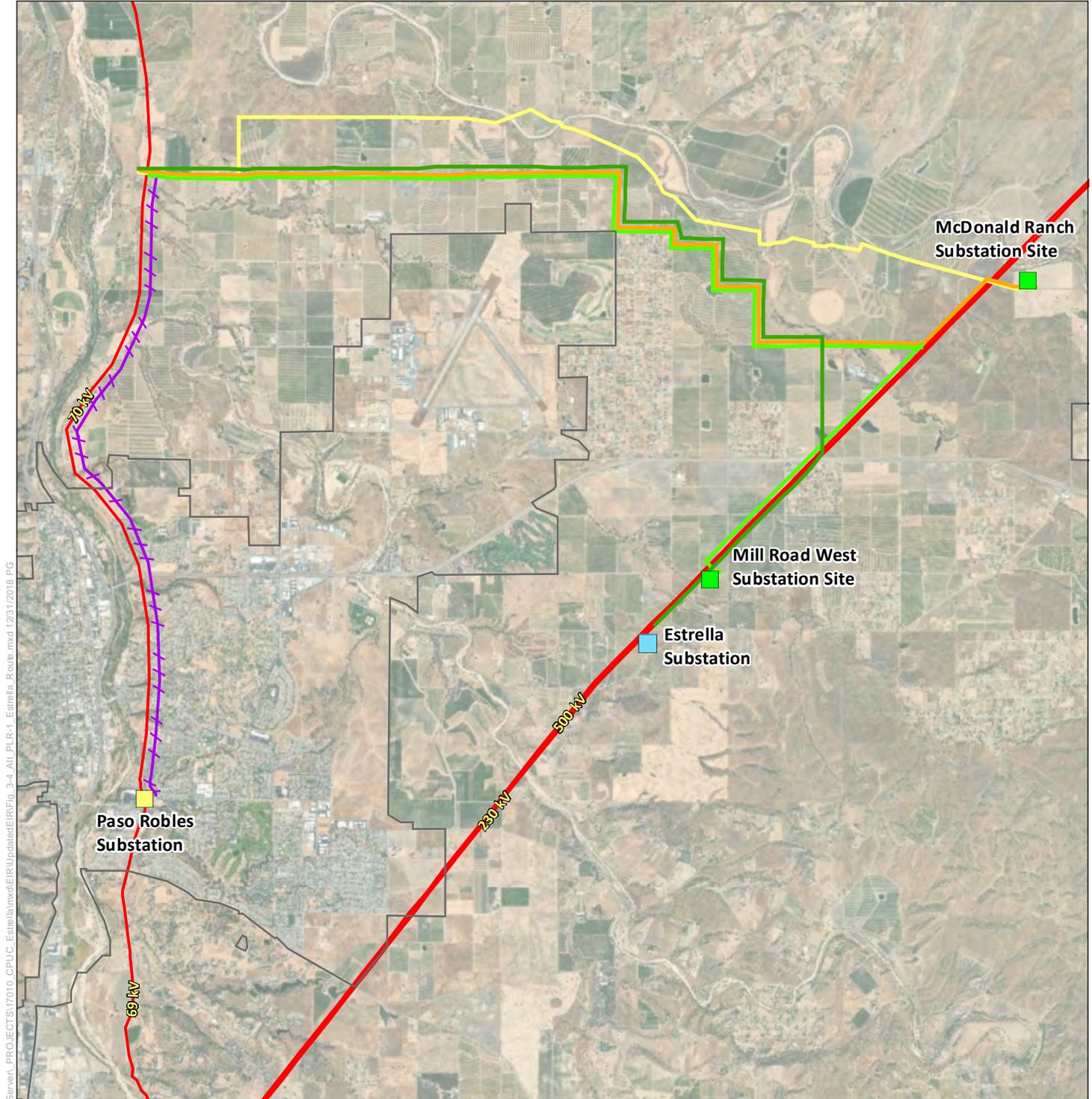
Land uses surrounding the Estrella Route primarily consist of urban and rural residential developments and agricultural areas dominated by vineyards. Alternative PLR-1D traverses more rural, agricultural areas compared to the other alignments. **Table 3-2** shows the length of the Estrella Route variations, as dictated by the potential substation site connection.

Table 3-2. Length of Estrella Route Power Line Components by Potential Substation Site Interconnection

Component	Length of Improvements / New Construction (miles)			
	Alternative PLR-1A: Estrella Route to Estrella Substation	Alternative PLR- 1B: Estrella Route to Mill Road West	Alternative PLR-1C: Estrella Route to McDonald Ranch, Option One	Alternative PLR- 1D: Estrella Route to McDonald Ranch, Option Two
New Double-Circuit 70 kV Power Line	10.5	11.25	10	9
Reconductoring of Existing 70 kV San Miguel-Paso Robles Power Line	6	6	6	6
Total	16.5	17.25	16	15

Note: kV = kilovolt

Conductors on the new 70 kV power line and the reconductoring segment for the Estrella Route would be supported by a combination of the same types of structures and conductor configuration as the Proposed Project route. Construction methods and operation and maintenance activities would be identical to the Proposed Project route.



\\H2O-SERVER\GIS_Server\PROJECT\SAT7010_CPUC_Estrella\mxd\EIR\Updated\EIR\Fig_3-4_Alt_PLR-1_Estrella_Route.mxd 12/31/2018 PG

BaseMap Sources:
Sources: Esri, DeLorme,

Alternative

-  Alternative PLR-1A:
Estrella Route to Estrella Substation
-  Alternative PLR-1B:
Estrella Route to Mill Road West
-  Alternative PLR-1C:
Estrella Route to McDonald Ranch, Option 1
-  Alternative PLR-1D:
Estrella Route to McDonald Ranch, Option 2
-  Reconductoring Segment

-  Estrella Substation
-  Substation Site Alternatives
-  Paso Robles City Limits
-  Substation
-  Transmission Line

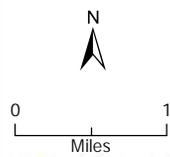


Figure 3-4
Alternative PLR-1:
Estrella Route

Note: The route variations shown are offset in order to display the alignments of the alternative routes.



Source: Source: NEET West and PG&E 2017

Estrella Substation and Paso Robles Area Reinforcement Project

Consideration of CEQA Criteria

Project Objectives

Alternative PLR-1: Estrella Route, when combined with one of the substation siting alternatives, would meet both of the project objectives. The substation and power line would provide the same functions as the Proposed Project, including addressing the CAISO-identified Category B contingencies. Utilization of this power line route would not affect the substation's ability to accommodate existing load demand in the DPA and provide for future distribution service for anticipated growth.

Feasibility

The Estrella Route was originally identified by the Proposed Project Applicants as part of the PEA. As described in Section 2.1.1, the Applicants considered legal, technical, and other potential constraints in developing the power line alignment alternatives. As this alternative was analyzed with a substantial level of detail in the PEA, it is reasonable to assume that the alternative is potentially feasible from a legal and technical standpoint.

Due to its longer length (from 2 to 4.25 additional miles of new pole line and 3 additional miles of reconducted line, depending on the variation), Alternative PLR-1: Estrella Route would increase some environmental impacts associated with additional construction activity and a longer construction duration, such as those related to air quality, GHG emissions, cultural resources, noise, and traffic. Compared to the Proposed Project route, the Estrella Route would involve greater overall ground disturbance and operation of construction equipment, thereby resulting in greater construction-related effects. The proximity of the Estrella Route to the Paso Robles Municipal Airport also would reduce the ability for the new power line to follow property lines, causing a number of properties to be severed by the new utility route; this would also have the effect of reducing maintenance access for PG&E.

None of these increased effects are anticipated to be significant following mitigation, however, and therefore would not render the alternative environmentally infeasible. Overall, Alternative PLR-1 is considered potentially feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

Because the Estrella Route would pass through a more rural area of San Luis Obispo County and would avoid certain areas of high viewer sensitivity documented during the project scoping period, it could reduce aesthetic impacts compared to the Proposed Project. The Estrella Route would avoid the potentially significant effects on the existing visual quality and character of the areas along Golden Hill Road in the City of Paso Robles that would result from the Proposed Project route. While the Estrella Route could still result in aesthetics impacts in other locations (this would need to be further evaluated in the EIR), at this screening level of analysis, it is believed that the Estrella Route could reduce overall aesthetics impacts compared to the Proposed Project.

Additionally, the Estrella Route would reduce impacts to sensitive natural communities (i.e., blue oak woodlands, sandy wash, Central Coast cottonwood-sycamore riparian forest, and coastal and valley freshwater marsh), as this route would not pass through such sensitive areas. The Estrella Route also would pass substantially further (i.e., approximately 3 mile northeast) from the golden eagle nest documented near the Proposed Project route by

Huerhuero Creek north of the Golden Hill Road Industrial Park (see NEET West and PG&E 2017, page 3.4-37); thereby, reducing the potential to impact this nesting golden eagle pair.

Conclusion

Alternative PLR-1: Estrella Route would meet both of the basic project objectives and is potentially feasible. The alternative could reduce potentially significant effects (i.e., aesthetics and biological resources) of the Proposed Project. Because Alternative SS-2: Mill Road West Substation Site was screened out from full analysis in the EIR, Alternative PLR-1B, also, is screened out. Alternatives PLR-1A, -1C and -1D are **retained** for full analysis in the EIR.

3.3.2 ALTERNATIVE PLR-2: CRESTON ROUTE

Description

The Creston Route is a 70 kV power line route that could be used for either the proposed Estrella Substation, Alternative SS-1: McDonald Ranch Substation Site, or Alternative SS-2: Mill Road West Substation Site. In each case, a new double-circuit 70 kV power line would be installed along the route to connect the substation to the Paso Robles Substation. **Figure 3-5** shows the Creston Route.

The Creston Route variations are identified as follows:

- **Alternative PLR-2A: Creston Route to Estrella.** This route would be used to connect the proposed Estrella Substation to Paso Robles Substation. From the new Estrella Substation, the route would follow the existing 230/500 kV transmission corridor south to roughly the intersection with Creston Road. At this point, the route would veer to the northwest and follow Creston Road, then Charolais Road, and then South River Road before meeting the Paso Robles Substation.
- **Alternative PLR-2B: Creston Route to Mill Road West.** This route would be used to connect a substation at the Mill Road West Substation Site (Alternative SS-2) to Paso Robles Substation. The route would be identical to Alternative PLR-2A except that it would extend further northwest along the existing 230/500 kV transmission corridor to connect with the more northwesterly Mill Road West Substation Site.
- **Alternative PLR-2C: Creston Route to McDonald Ranch.** This route would be used to connect a substation at the McDonald Ranch Substation Site (Alternative SS-1) to Paso Robles Substation. The route would be identical to Alternatives PLR-2A and -2B except that it would extend further northwest along the existing 230/500 kV transmission Corridor to connect with the more northwesterly McDonald Ranch Substation Site.

Land use within the portion of the Creston Route following the 230/500 kV transmission corridor is primarily agricultural and rural residential, while the land use along the portion of the route that follows Creston Road, Charolais Road, and then South River Road varies from rural residential to urban development. The alternative is located on a combination of privately-owned property and PG&E easements, with one parcel owned by the Land Conservancy of San Luis Obispo County. **Table 3-3** shows the length of the new line

associated with each variation/potential substation site. The 3-mile-long reconductoring segment would not be required under Alternative PLR-2: Creston Route.

Table 3-3. Length of Creston Route Power Line Components by Potential Substation Site Interconnection

	Length of Improvements / New Construction (miles)		
	Alternative PLR-2A: Creston Route to Estrella Substation	Alternative PLR-2B: Creston Route to Mill Road West	Alternative PLR-2C: Creston Route to McDonald Ranch
New Double-Circuit 70 kV Power Line	11.5	8	7.5

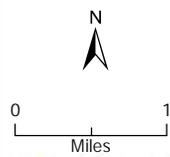
Note: kV = kilovolt

Conductors along the Creston Route would be supported by a combination of the same types of structures and conductor configuration as for the Proposed Project route's new 70 kV power line segment. Construction methods and operation and maintenance activities would be nearly identical to the Proposed Project route for most of the new 70 kV power line segment. Temporary and permanent disturbance area assumptions are the same as identified for the Proposed Project route's new 70 kV power line segment along the transmission corridor and along the south side of Creston Road to the south side of Charolais Road.



\\H2O-SERVER\GIS_Server\PROJECT\SAT17010_CPUC_Estrella\mxd\EIR\Updated\EIR\Fig_3-5_Alt_PLR-2_Creston_Route.mxd 12/31/2018 PG

BaseMap Sources: Sources: Esri, DeLorme, USGS, NPS



Source: Source: NEET West and PG&E 2017

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> Paso Robles City Limits Estrella Substation Substation Site Alternatives | <p>Alternative</p> <ul style="list-style-type: none"> Alternative PLR-2A: Creston Route to Estrella Alternative PLR-2B: Creston Route to Mill Road West Alternative PLR-2C: Creston Route to McDonald Ranch | <p>Existing Infrastructure</p> <ul style="list-style-type: none"> Existing Substation Existing Transmission Lines |
|---|--|--|

Figure 3-5
Alternative PLR-2:
Creston Route

Note: The route variations shown are offset in order to display the alignments of the alternative routes that may overlap in places.

Estrella Substation and Paso Robles Area Reinforcement Project

Consideration of CEQA Criteria

Project Objective

This alternative, when combined with one of the substation siting alternatives, would meet both project objectives.

Feasibility

As discussed in the PEA, the Creston Route has potential engineering feasibility conflicts with existing utilities (NEET West and PG&E 2017; page 4-15).

With respect to environmental feasibility, compared to the Proposed Project power line alignment, the Creston Route would have similar, or possibly more significant, aesthetics impacts. The portion of the Creston Route that follows Creston Road passes through a relatively densely populated residential area that does not currently have a transmission line (although there is an existing distribution line). Therefore, addition of the new 70 kV power line along this alignment would subject these residents to adverse visual impacts and cause a decrease in the visual quality of the area. Impacts along the portion of the alignment along South River Road would be less severe considering that the baseline condition in this area includes transmission infrastructure (i.e., the San Miguel–Paso Robles 70 kV Transmission Line). In many respects, these aesthetic impacts would be similar to those for the Proposed Project power line, but could potentially be more severe considering that the Creston Road area is more densely populated than the areas through which the Proposed Project power line would traverse.

The Creston Route also would traverse sensitive habitats, and could potentially increase impacts on heritage oaks and could create potential for impacts to vernal pool fairy shrimp. A number of large heritage oaks are located along Charolais Road and South River Road, which would require removal for implementation of the Creston Route Alternative. These heritage oaks are part of the historic blue oak forest and are highly regarded by the community (NEET West and PG&E 2017). While the Proposed Project power line would require trimming of heritage oak trees, the Creston Route Alternative would require trimming and removal of such trees. The Creston Route could also result in direct or indirect impacts to vernal pool fairy shrimp and/or vernal pool fairy shrimp habitat, whereas the proposed route would avoid such habitat.

The potential for engineering feasibility conflicts and increased potentially significant impacts to aesthetics and biological resources suggest that Alternative PLR-2 may not be feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

The Creston Route would have similar, if somewhat reduced, agricultural resources impacts compared to the Proposed Project. There appear to be fewer agricultural lands and lands designated as Important Farmland by the CDOC along the Creston Route as compared to the Proposed Project power line route; however, the primary impacts of the Proposed Project on agricultural lands are from the permanent loss of Important Farmland associated with the new substation. Like the Proposed Project route, the Creston Route would have relatively minimal permanent impacts on agricultural lands due to the small footprint of individual transmission pole structures.

As described above under “Feasibility,” the Creston Route may increase potentially significant aesthetics impacts, as this route would pass through a more densely populated, residential area. Overall, the Creston Route would not substantially reduce or eliminate any potentially significant impacts of the Proposed Project.

Conclusion

The Creston Route would meet both project objectives; however, it is unclear if the alternative would be feasible and the alternative would not reduce or eliminate any potentially significant impacts of the Proposed Project. Therefore, Alternative PLR-2: Creston Route is **screened out** from full analysis in the EIR.

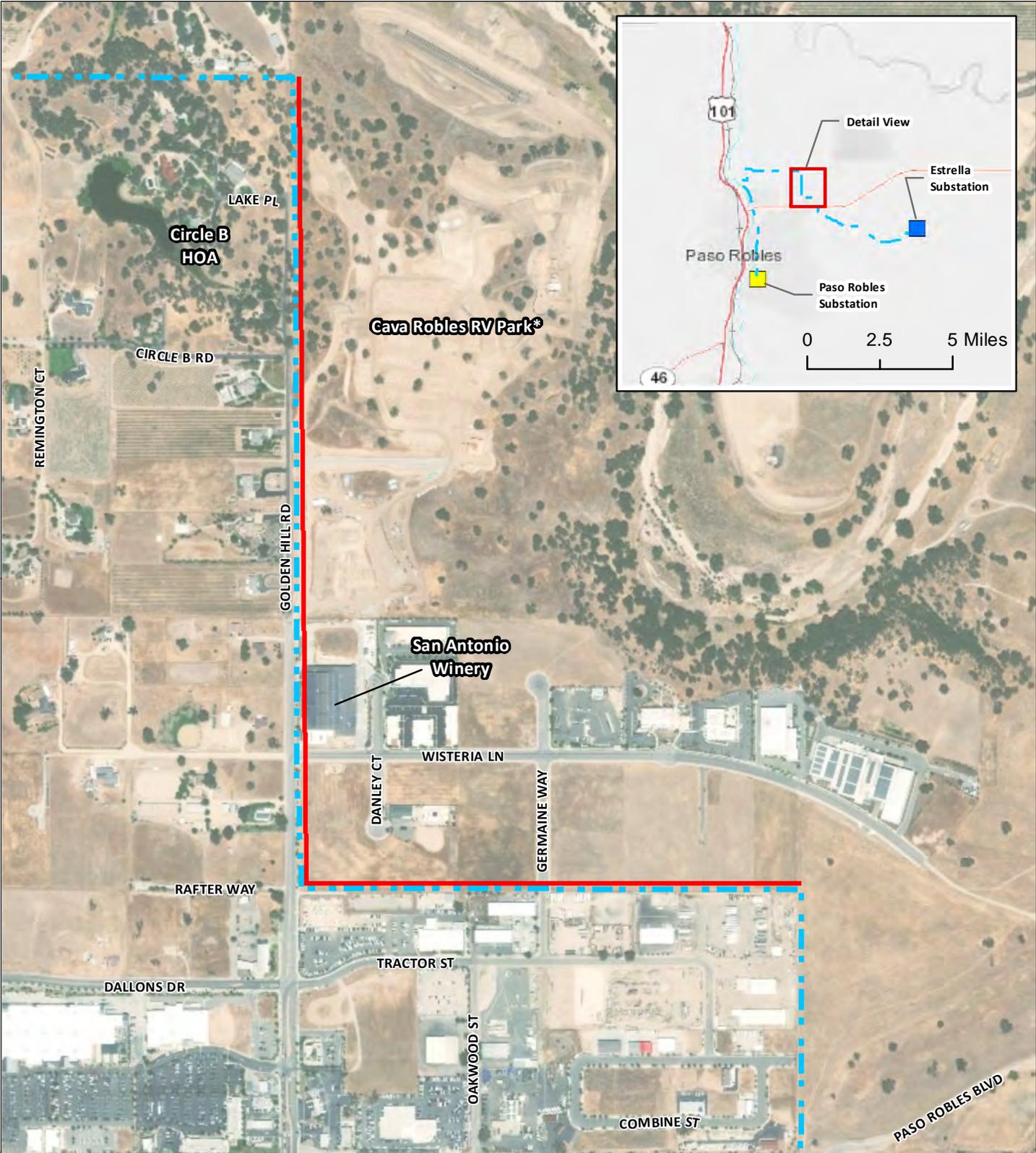
3.3.3 ALTERNATIVE PLR-3: STRATEGIC UNDERGROUNDING

Description

Alternative PLR-3: Strategic Undergrounding would involve undergrounding the portion of the Proposed Project’s new 70 kV power line which has the greatest potential for aesthetic and other environmental impacts. During scoping for the Proposed Project (see Section 2.1.2 for discussion), and based on CPUC staff and consultant’s preliminary analysis of the Proposed Project’s potential impacts, it was identified that the proposed new 70 kV power line has potential for significant impacts to aesthetics, as well as to other resource categories (e.g., biological resources, public services, etc.).

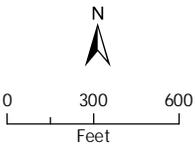
In particular, the portion of the line that passes through the Golden Hill Road area north of Highway 46 has the greatest potential for impacts because this area does not have existing above-ground transmission or distribution electrical infrastructure and is an up-and-coming area of new commercial and industrial development. This area also has existing single-family residential development and recreational uses, and is located near a known golden eagle nest and an area of relatively undeveloped blue oak woodland that could support other special-status and non-special status species. Land uses along other segments of the proposed new 70 kV power line could experience impacts, but these areas either already have transmission infrastructure (e.g., the existing San Miguel-Paso Robles 70 kV Power Line along the proposed reconductoring segment) or are more rural in nature and would not be subject to the same level of aesthetic impacts.

Figure 3-6 shows the portion of the new 70 kV power line that would be undergrounded for Alternative PLR-3. As shown in Figure 3-6, the undergrounded section would begin at roughly the point where the proposed power line alignment turns west to parallel Wisteria Lane. From this point, the undergrounded line would extend west following Wisteria Lane before turning north along Golden Hill Road. The undergrounded section would extend along Golden Hill Road until the point where the proposed 70 kV power line route turns abruptly west, approximately 0.1-mile north of the junction with Lake Place.



\\H2O-SERVER\GIS_Server\A_PROJECT\SAT7010_CPUC_Estrella\mxd\ER\Updated\ER\Fig_3-6_Alt_PLR-3_Strategic_Undergrounding.mxd 12/28/2018 P.C.

BaseMap Sources: Sources: Esri, DeLorme, USGS, NPS



-  Proposed Project 70-kV Route
-  Strategic Undergrounding Alternative
(Portion of overhead 70kV transmission line to be underground)

Source: Source: NEET West and PG&E 2017

Figure 3-6
Alternative PLR-3:
Strategic Undergrounding



* The aerial image does not reflect current conditions, the Cava Robles RV Park has completed construction.

Estrella Substation and Paso Robles Area Reinforcement Project

Construction methods for Alternative PLR-3: Strategic Undergrounding would include trenching for installation of the underground line. Vegetation clearing may be required for portions of the alignment along vegetated areas, and portions of the line within roads or sidewalks would require asphalt cutting to expose the underlying soil. Splice vaults also would likely need to be installed at appropriate intervals, which could require more substantial excavation to install. These activities would involve use of construction equipment such as excavators, dump trucks, asphalt cutting equipment, and related equipment.

Consideration of CEQA Criteria

Project Objectives

Alternative PLR-3: Strategic Undergrounding would meet both of the project objectives. The undergrounded line segment would perform the same functions as the proposed overhead line. When constructed in combination with the proposed Estrella Substation, the alternative would meet the Transmission Objective by providing an additional source of power to Paso Robles Substation. While the alternative would not itself meet the Distribution Objective, it would be constructed with the proposed Estrella Substation, which would meet the distribution needs of the Proposed Project.

Feasibility

While detailed engineering and design has not been performed for Alternative PLR-3: Strategic Undergrounding, at this screening level of analysis, there is no available information to suggest that the alternative is infeasible. Golden Hill Road is an existing road which may have underground utilities (e.g., water, sewer, natural gas, communications, etc.) within the roadway or sidewalk, but these existing utilities should be able to be negotiated. It is likely that Alternative PLR-3 would be more expensive than the proposed overhead approach, but at this point in time, CPUC does not have evidence to suggest that any increased cost from undergrounding the line would render the project economically infeasible.

With respect to environmental feasibility, Alternative PLR-3: Strategic Undergrounding could increase some environmental impacts associated with the trenching required for installation of the underground conductors and splice vaults. This trenching/excavation would involve additional ground disturbance compared to the proposed overhead power line's installation, and could increase potential for impacts to buried cultural resources; air pollutant and GHG emissions from increased operation of construction equipment, and impacts to special-status plants and animals in the area. The trenching/construction activities also could increase traffic impacts and noise, although these impacts would be temporary, lasting only for the duration of construction activities along this one power line segment.

None of the impacts described above are anticipated to be significant following implementation of mitigation measures, however, and therefore would not render the alternative environmentally infeasible. Overall, the alternative is considered potentially feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

Alternative PLR-3 would reduce aesthetic impacts caused by the proposed overhead power line. Undergrounding the power line would completely avoid the aesthetic impacts in the area

of Golden Hill Industrial Park and the area of Cava Robles RV Park and the Circle B HOA that could occur from the Proposed Project. Once installed, the underground conductors would not be visible by sensitive receptors in the area, and this area of Paso Robles would continue to have no above-ground transmission infrastructure.

Additionally, Alternative PLR-3: Strategic Undergrounding could reduce potential impacts on biological resources and public services. As noted above, the portion of the proposed overhead power line that follows Golden Hill Road is near (approximately 0.2 mile west) a known golden eagle nesting pair. Additionally, the northern portion of the Alternative PLR-3 undergrounding segment passes through relatively undeveloped oak woodland that could serve as habitat for special-status bird species. Such bird species could potentially be impacted by an overhead 70 kV power line, and U.S. Fish and Wildlife Service (USFWS) staff have requested that “bird diverters” be placed on any overhead lines as an avoidance and minimization measure. Alternative PLR-3 would avoid potential impacts to special-status bird species that could occur from overhead lines along the 1.2-mile segment of line that would be undergrounded.

During the scoping period, CPUC staff and consultants received a number of comments about the potential for overhead transmission lines in the area of the Circle B HOA to obstruct the flight path for CAL FIRE helicopters accessing the pond located within the Circle B HOA (see Figure 3-6). CPUC has not yet verified with CAL FIRE or the Federal Aviation Administration whether this would in fact pose a problem (this will be further evaluated in the EIR); however, to the extent that such an impact could occur, the effect would be avoided (at least for aircraft entering from or exiting to the east) through Alternative PLR-3.

Conclusion

Alternative PLR-3: Strategic Undergrounding would meet both of the project objectives and is potentially feasible. The alternative would reduce potentially significant aesthetics impacts, as well as potential impacts to biological resources and public services. Therefore, Alternative PLR-3 is **retained** for full analysis in the EIR.

3.4 EXISTING SUBSTATION EXPANSION (SE) ALTERNATIVES

3.4.1 ALTERNATIVE SE-1: TEMPLETON SUBSTATION EXPANSION

Description

Alternative SE-1: Templeton Substation Expansion would involve expansion of the existing Templeton Substation to include a new 230/70 kV substation adjacent to the existing facilities at the Templeton Substation (see **Figure 3-7**). This new substation would include essentially the same equipment as the proposed Estrella Substation (with room for future expansion), and would interconnect with the Morro Bay-Cal Flats #2 230 kV line and the existing Templeton Substation via a new 70 kV tie line. PG&E would modify and expand Templeton Substation to operate in the same manner as the proposed Estrella 70 kV yard (breaker-and-a-half [BAAH] 70 kV expansion at Templeton Substation). Likewise, NEET West would construct and operate the new 230 kV substation portion of Templeton Substation to be essentially identical to the proposed Estrella Substation.

To address the two Category B (i.e., P1) contingencies for thermal overloads and voltage concerns within the Paso Robles DPA that were identified by CAISO, the expanded Templeton Substation would need to be connected to the existing Paso Robles Substation via a new circuit. This is because an auxiliary source of power is needed at the Paso Robles Substation in the event that the existing Templeton-Paso Robles 70 kV Transmission Line fails. Possible routes for the new circuit are described and evaluated under Alternatives SE-PLR-1, SE-PLR-2, and SE-PLR-3. Figure 3-7 shows the footprint of the expanded/new substation adjacent to the existing Templeton Substation.

This figure is preliminary and subject to change based on CPUC requirements, final engineering, and other factors.



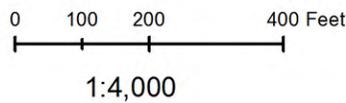
Base Map Source: ESRI World Imagery (2017)

Legend

- Templeton Substation (Existing)
- Potential 70 kV Substation Expansion Area
- Potential 230 kV Substation Area
- Parcel Boundaries
- 230 kV Interconnection
- 230 kV/70 kV Substation Interconnection

Existing PG&E Power & Transmission Lines

- 70 kV Power Line
- 230 kV Transmission Line
- 500 kV Transmission Line



Source: NEET West and PG&E 2018c

Figure 3-7.
Alternative SE-1: Templeton Substation Expansion

Consideration of CEQA Criteria

Project Objectives

The Templeton Expansion Alternative, when paired with one of the routing alternatives described in Section 3.5, would meet the Transmission Objective by addressing the Category B Contingency scenarios involving loss of either the Templeton Transformer Bank or the Templeton-Paso 70 kV Power Line. The Templeton Expansion Alternative would provide a new source of 230 kV power to the Paso Robles Substation, which would provide needed redundancy in the electrical grid system in this area.

While the Templeton Expansion Alternative would not directly address the Distribution Objective, it would add capacity to the Templeton Substation (and thereby the DPA as a whole) with the addition of the new transformer and 230 kV connection. As such, it could absorb some additional load that is currently served through distribution feeders connected to other area substations, or new load in the future associated with future development. Likewise, the expanded Templeton Substation would provide a location for expansion of future distribution facilities (e.g., feeders) that could serve areas within a reasonable distance from the substation. However, this location is not near the anticipated areas of most vigorous growth (e.g., near the Paso Robles Airport), which could be better served by the proposed substation site. Additionally, the Templeton Expansion Alternative would not have the benefit of potentially reducing the length of long feeders in the DPA. As a result, the Templeton Expansion Alternative would not fully meet the Distribution Objective identified for the project.

Feasibility

PG&E's preliminary analysis of Alternative SE-1: Templeton Substation Expansion (NEET West and PG&E 2018b) identified no fatal faults or conflicts that would suggest the alternative is not feasible. Physical space exists for the new substation adjacent to the existing Templeton Substation, as shown in Figure 3-7. Likewise, the alternative would use standard equipment and technologies (e.g., BAAH 70 kV arrangement) that have been used successfully in numerous other locations. The substation expansion area would not be located on or within any wilderness areas, wilderness study areas, restricted military bases, airports, or Indian reservations, which may preclude implementation of the alternative. As such, the alternative is considered to be potentially feasible from a technical and legal standpoint.

The specific costs of Alternative SE-1: Templeton Substation Expansion are confidential, but the Applicants have indicated that they believe the alternative may be more expensive than the Proposed Project. Costs will need to be further investigated, but, at this point in time, CPUC has no reason to believe that Alternative SE-1 would be so expensive as to be economically infeasible.

With respect to environmental feasibility, Alternative SE-1 could potentially increase biological resources impacts compared to the Proposed Project. The Applicants' preliminary desktop environmental analysis (NEET West and PG&E 2018b) determined that the following special-status species were likely to occur in the substation study area: California red-legged frog (*Rana draytonii*), golden eagle (*Aquila chrysaetos*), and Northern California legless lizard (*Anniella pulchra*). Additionally, Alternative SE-1: Templeton Substation Expansion could

necessitate removal of several oak trees. Nesting habitat for migratory passerine birds and raptors protected by the Migratory Bird Treaty Act and California Fish and Game Code, including trees, shrubs, and grasslands, is present throughout the substation expansion area and could be impacted by the alternative. By contrast, the proposed Estrella Substation site is entirely composed of vineyards under active cultivation, which the PEA determines provides low habitat value for sensitive plants and wildlife species.

The Applicants' preliminary desktop analysis also identified a manmade drainage feature in the Templeton Substation Expansion study area (along the southern side of the Templeton Substation) which drains to an unnamed ephemeral drainage feature and eventually into the Salinas River (NEET West and PG&E 2018b). While these features could be considered jurisdictional by applicable regulatory agencies, it does not appear that they would be directly impacted by the substation expansion facilities. In general, Alternative SE-1: Templeton Substation Expansion would have similar potential hydrology and water quality impacts as the Proposed Project, and those impacts could be similarly avoided or minimized through implementation of a Stormwater Pollution Prevention Plan.

It is anticipated that mitigation measures could effectively minimize the potential environmental impacts described; therefore, such constraints would not render the alternative environmentally infeasible. Overall, Alternative SE-1 is considered potentially feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

Compared to the Proposed Project, Alternative SE-1: Templeton Substation Expansion would have reduced aesthetics impacts. While there are a number of wineries located in proximity to the Templeton Substation area, including several stops along the "Wine Train," as indicated on the Paso Robles Visitor's Guide, the existing site is characterized by electrical infrastructure. This existing infrastructure includes the 230/500 kV corridor, which passes directly adjacent to the proposed expansion site and connects with the existing Templeton Substation, and the Templeton Substation itself. As such, the addition of the expanded Templeton Substation facilities would not dramatically change the area's existing visual character.

Additionally, the Templeton Substation vicinity is relatively sparsely populated, and there are few sensitive receptors in the area whose views could be impacted. The surrounding area includes a small-scale 1.5-MW distributed solar array (Vintner Solar) located north of El Pomar Drive; Hanging Heart Ranch and a few trailers located west of Templeton Substation, and a seasonal worker structure located east of Templeton Substation (NEET West and PG&E 2018b). More distant views of the substation site would be limited due to variations in topography and intervening vegetation. U.S. Highway 101 is an eligible state scenic highway in this area; however, the substation expansion site (located 1.2 miles east of the highway) likely would not be visible from this highway. The substation expansion area is not located within an area subject to scenic protection standards by the County of San Luis Obispo (NEET West and PG&E 2018b). Overall, the alternative would not be expected to have significant aesthetics impacts, and would reduce aesthetics impacts compared to the proposed Estrella Substation.

Alternative SE-1: Templeton Substation Expansion also may reduce agricultural resources impacts compared to the Proposed Project substation. The substation expansion site is

primarily designated as Farmland of Local Importance under the Farmland Mapping and Monitoring Program (CDOC 2016a); it is difficult to tell based on aerial photographs whether the site is currently being used for agricultural production. By contrast, the proposed Estrella Substation site is largely Unique Farmland and Farmland of Statewide Importance, both of which are superior classes of land than Farmland of Local Importance, and is under active vineyard cultivation. The alternative would impact small areas of Farmland of Statewide Importance due to the 230 kV interconnection, which would extend across El Pomar Drive to the north of the substation expansion site; however, these impacts would be substantially less severe than under the proposed Estrella Substation and 230 kV interconnection.

Conclusion

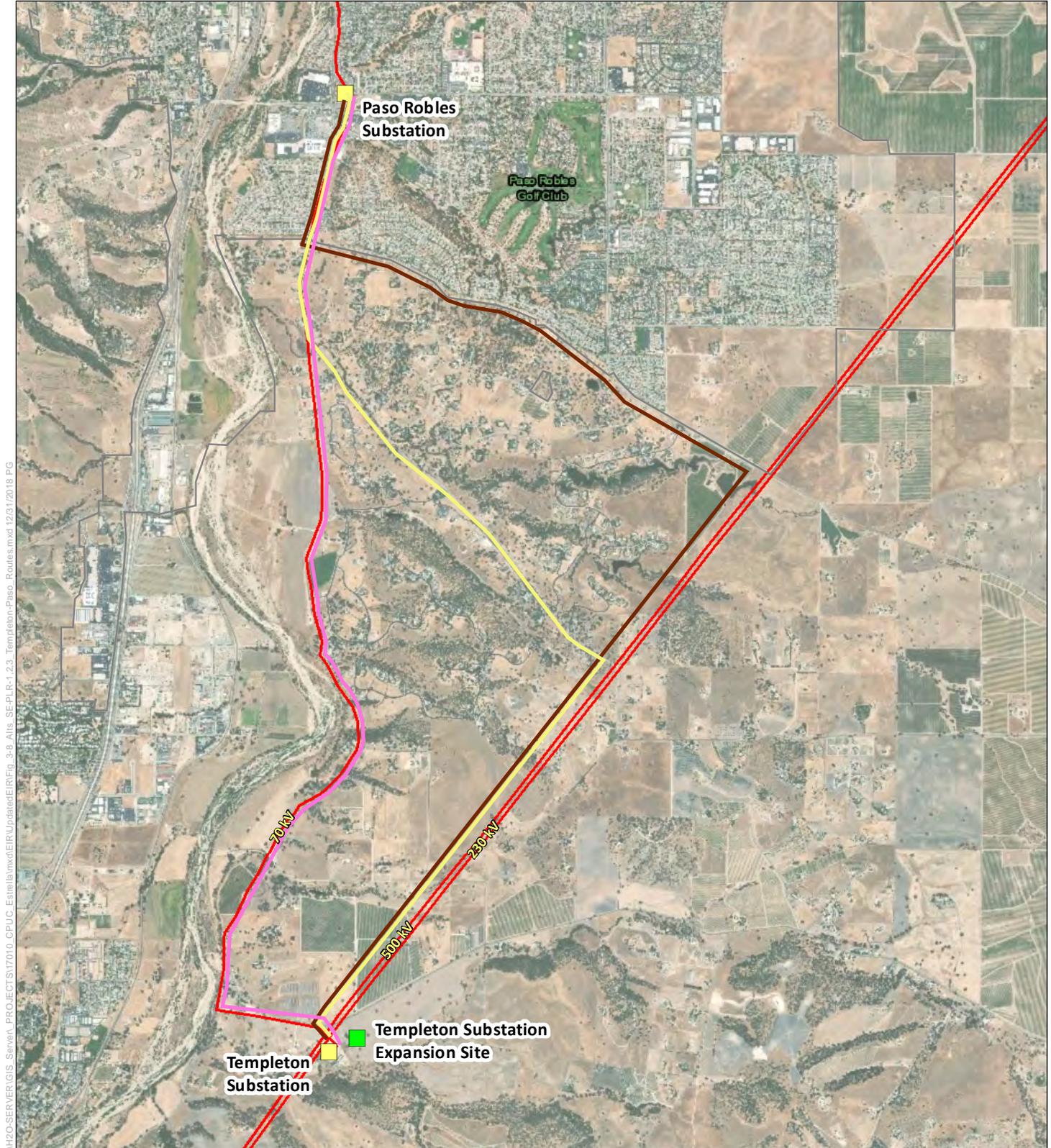
Alternative SE-1: Templeton Substation Expansion would meet the Transmission Objective, but would not, on its own, fully meet the Distribution Objective. However, it could potentially be paired with another alternative that meets the distribution needs of the project. The alternative is considered potentially feasible and would reduce potentially significant impacts of the Proposed Project (i.e., aesthetics and agricultural resources). Therefore, Alternative SE-1: Templeton Substation Expansion is **retained** for full analysis in the EIR.

3.5 EXISTING SUBSTATION EXPANSION (SE) – POWER LINE ROUTE (PLR) ALTERNATIVES

3.5.1 ALTERNATIVE SE-PLR-1: TEMPLETON-PASO 70 kV ROUTE (EXISTING)

Description

As described in Section 3.4.1, Alternative SE-1: Templeton Substation Expansion would require installation of a second circuit connecting the Templeton Substation to the Paso Robles Substation. The three possible routes for this new circuit are shown in **Figure 3-8**. One of the possible routes for the new circuit is the existing Templeton–Paso 70 kV Route (Alternative SE-PLR-1). This alternative would involve rebuilding the existing 70 kV single-circuit power line that runs from Templeton Substation to Paso Robles Substation and converting it into a double-circuit power line.



\\H2O-SERVER\GIS_Server\PROJECT\SAT7010_CPUC_Estrella\mxd\EIR\Updated\EIR\Fig_3-8_Alt3_SE-PLR-1,2,3_Templeton-Paso_Routes.mxd 12/31/2018 PG

Basebap Sources: Esri, HERE, DeLorme, Mapmy India, © OpenStreetMap

- | | | |
|--------------------|---|---|
| Alternative | Alternative SE-PLR-1:
Templeton-Paso 70 kV
Route (Existing) | Templeton Substation
Expansion Alternative
Site |
| | Alternative SE-PLR-2:
Templeton-Paso South
River Road Route | Paso Robles City
Limits |
| | Alternative SE-PLR-3:
Templeton-Paso
Creston Route | |

- Existing Infrastructure**
- Substation
 - Transmission Lines

Note: The route variations shown are offset in order to display the alignments of the alternative routes that may overlap in places.

Source: Source: NEET West and PG&E 2017

Figure 3-8
Alternative SE-
PLR-1, -2, and -3:
Templeton-Paso 70kV
Routes



Starting at the Paso Robles Substation (located at the northeast corner of Niblick Road and South River Road in the City of Paso Robles), the existing Templeton–Paso 70 kV Route extends southerly along the west side of South River Road for approximately 0.7 mile to the intersection of South River Road and Charolais Road. The route then continues southerly along South River Road for approximately 0.5 mile. The route then leaves South River Road and continues south generally following Santa Ysabel Avenue for approximately 0.5 mile at which point the route would continue south on private property approximately 3 miles to the Templeton tap point (i.e. point at which the line joins the Templeton–Atascadero 70 kV double-circuit line coming from Templeton Substation) (NEET West and PG&E 2018c).

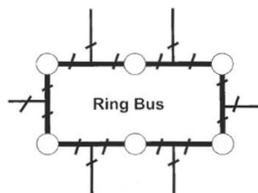
Due to the important role that the existing Templeton-Paso 70 kV Transmission Line plays in the regional transmission system (refer to Section 1.2.2; this existing line provides the main source of power to Paso Robles Substation), construction of Alternative SE-PLR-1 would require construction/utilization of a temporary power line (commonly known as a shoo-fly). This would allow for power flow to be maintained to Paso Robles Substation during the long outages that would be required for conversion of the existing single-circuit power line to a double-circuit line. The shoo-fly would be constructed near the existing line, and in some areas would require construction of the shoo-fly line by adding structures on the east side of the road while constructing the double-circuit on the west side.

Need to Expand Paso Robles Substation to Ring Bus Configuration

Utilization of the existing 70 kV power line route for the new circuit from Templeton Substation would add another element⁵ to the existing Paso Robles Substation, which already has five elements connecting to its single bus. According to PG&E Design Criteria #073131–Bus Configuration (PG&E 2017a), this addition of a sixth element would require expansion of the Paso Robles Substation to a ring bus⁶ or BAAH configuration. **Figure 3-9** shows a sketch of what would be required at the Paso Robles Substation to reconfigure the existing single bus to a ring bus to accommodate Alternative SE-PLR-1: Templeton–Paso 70 kV Route (Existing). As shown in Figure 3-9, a ring bus scheme at the Paso Robles Substation would require acquisition of the property across Cary Street to the east of the substation, and installation of new breaker and bus facilities, as well as construction of a control building to protect the new 70 kV ring bus.

⁵ An element is any power system device connected to a bus, including line, transformer, or reactive compensation device. Bus sectionalizing breakers, bus tie breaks and substitute breakers are not counted as elements.

⁶ The ring bus configuration consists of a sectionalized bus with its ends connected (creating a ring) through a power circuit breaker. The ring bus design will have up to six elements and bus sections, with each section sourcing one circuit. This configuration allows for any circuit breaker to be removed from service for maintenance without an outage on any circuit. In the event of a line or bus fault the power circuit breakers on each end of the bus section are opened (PG&E 2017a).



Page intentionally left blank.

Page intentionally left blank.

Consideration of CEQA Criteria

Project Objectives

Alternative SE-PLR-1: Templeton–Paso 70 kV Route (Existing), when paired with Alternative SE-1: Templeton Substation Expansion, would meet the Transmission Objective. However, while Alternative SE-PLR-1, in combination with Alternative SE-1, would address all of the Category B (N-1) contingency scenarios identified by the CAISO in its 2013-2014 Transmission Plan, it would not address, and would in fact itself create, the potential for a N-2 event, where two lines on the same pole could fail at one time (e.g., due to a vehicle pole strike or other human-made or natural causes). In many respects, such an N-2 event on a double-circuit line from Templeton Substation is similar to the current exposure of the system to a disturbance on the existing single-circuit line from Templeton Substation to Paso Robles Substation. The Applicants note that while NERC and CAISO planning standards allow for load to be dropped for this N-2 contingency, a double-circuit pole arrangement is not recommended in this situation as electric customers in this area would still be susceptible to poor reliability for any issues on the new double-circuit pole line and the limited transmission load serving capabilities from San Miguel Substation (NEET West and PG&E 2018c).

As described in Section 3.4.1, Alternative SE-1: Templeton Substation Expansion would not, on its own, fully meet the Distribution Objective, but the alternative could potentially be paired with another alternative that addresses distribution needs. By extension, Alternative SE-PLR-1, which would always be paired with Alternative SE-1, would not fully meet the Distribution Objective.

Feasibility

There are potential technical and legal challenges associated with Alternative SE-PLR-1: Templeton–Paso 70 kV Route (Existing), particularly with respect to the construction of a ring bus at Paso Robles Substation. The construction of the ring bus could be technically challenging, and would involve a substantial amount of work within an existing substation that provides electrical service to thousands of customers and has limited space available for expansion. Likewise, construction of the shoo-fly could be technically challenging, particularly through inhabited areas along South River Road.

Additionally, the Applicants do not currently own the land to the east of the substation across Cary Street, and it is unknown whether it could be reasonably acquired. Review of parcel data shows that the land to the east of the substation may be within the road right-of-way (it has no Assessor's Parcel Number [APN]), and thus under the control of the City of Paso Robles, although ownership is not definitively known at this time. The City provided comments during the scoping period for the Proposed Project that it believed that any expansion of the Paso Robles Substation could have significant adverse environmental effects. As such, if the City owns this piece of land, it might be averse to any transfer of the land to the Applicants or any proposal for the substation to be expanded onto City-owned land. While the Applicants could use eminent domain to acquire the land, such a process could take several years and substantially impact the project schedule. This could render the alternative infeasible.

Cost information for the Templeton Substation Expansion Alternatives is confidential, but the Applicants have indicated that Alternative SE-PLR-1 would be expensive, due in part to the need to expand the existing Paso Robles Substation to a ring bus configuration. Cost will be

investigated further, but at this time, no evidence has been presented to suggest that Alternative SE-PLR-1 is so expensive as to be economically infeasible.

With respect to environmental feasibility, the existing Templeton-Paso 70 kV route's location near the Salinas River lends potential for biological resources impacts, as there are numerous special-status species likely to be present in this area. The Applicants' preliminary desktop analysis (NEET West and PG&E 2018b) found that the following special-status animal species are likely to occur in the alternative study area: American badger, California red-legged frog, golden eagle, Northern California legless lizard, Least Bell's vireo, purple martin, vernal pool fairy shrimp, western pond turtle, western spadefoot, and white-tailed kite. These potential impacts would not be substantially different from those associated with the Proposed Project's reconductoring segment, and it is anticipated that mitigation measures could reduce them to less than significant.

Potential to Avoid or Reduce Significant Environmental Impacts

Alternative SE-PLR-1: Templeton-Paso 70 kV Route (Existing) could have some adverse effects on aesthetics, as taller poles would likely be required to accommodate the additional circuit along the existing power line alignment. These taller (and most likely steel) poles would adversely affect views from residences in the area, as well as from several trails that pass through the power line corridor, and generally decrease the visual quality of the area. However, compared to the Proposed Project, these effects would be less pronounced due to the fact that there is already a transmission line along the proposed alignment. The Proposed Project would add a new power line to areas of San Luis Obispo County and the City of Paso Robles that do not currently have electrical transmission infrastructure; as a result, the contrast between the pre- and post-Project visual landscape would be starker and impacts would be more substantial.

Alternative SE-PLR-1 could decrease agriculture resources impacts somewhat compared to the Proposed Project power line alignment. It would pass through primarily undeveloped and residential (rather than agricultural) areas, whereas the Proposed Project alignment passes through many agricultural areas, including vineyards and areas designated as Farmland of Statewide Importance. However, the agricultural resources impacts of the Proposed Project are primarily the result of the substation rather than the power line, which would have relatively minimal areas of permanent disturbance to agricultural lands.

Due to the shorter length of Alternative SE-PLR-1 compared to the Proposed Project's new power line and reconductoring segment, it would likely have reduced air emissions, GHG emissions, traffic impacts, and noise impacts.

Conclusion

Alternative SE-PLR-1, when paired with Alternative SE-1: Templeton Substation Expansion, would meet the Transmission Objective in the strictest sense; however, it would create the potential for an N-2 event, which could result in the same adverse effects on the local system as the current condition, and PG&E advises against this alternative as a solution. Additionally, there are feasibility questions surrounding use of the parcel to the east of the existing substation for expansion to a ring bus. While the alternative would reduce some environmental effects of the Proposed Project, it would not completely avoid any potentially significant effects. On balance, Alternative SE-PLR-1: Templeton-Paso 70 kV Route (Existing)

does not offer sufficient advantages compared to other possible power line routes and is **screened out** from full analysis in the EIR.

3.5.2 ALTERNATIVE SE-PLR-2: TEMPLETON–PASO SOUTH RIVER ROAD ROUTE

Description

Alternative SE-PLR-2: Templeton–Paso South River Road Route is one of the possible routes for the new 70 kV circuit from Templeton Substation to Paso Robles Substation that would be installed for Alternative SE-1: Templeton Substation Expansion. As shown in Figure 3-8, the route would follow the existing 230/500 kV transmission line corridor northeasterly out of Templeton Substation for approximately 2 miles to where it intersects with South River Road. At this point, the route would veer to the northwest and follow South River Road (on the southwest side), continuing northwesterly through three HOAs until it reaches the intersection of Santa Ysabel Avenue and South River Road. The route would then continue northerly along the easterly side of South River Road paralleling the existing Templeton–Paso single-circuit 70 kV power line (on the other side of the road) until it reaches the city limits of Paso Robles at the intersection of Charolais Road and South River Road. At this point, the route would continue northerly on the eastern side of South River Road for approximately 0.7 mile, terminating just north of Paso Robles Substation (NEET West and PG&E 2018c).

To avoid the need to expand Paso Robles Substation (see discussion of the ring bus in Section 3.5.1 under Alternative SE-PLR-1), a double-circuit line would be required. With a double-circuit, the power line could tie into the San Miguel–Paso Robles 70 kV power line immediately adjacent to the north side of Paso Robles Substation, with one circuit creating a San Miguel–Templeton 70 kV connection and the other circuit creating a second Templeton–Paso Robles 70 kV connection. Under this scenario, no new elements would be added to the Paso Robles Substation bus; therefore, a ring bus would not be required per PG&E’s design standards.

A minor relocation of the existing Templeton–Paso Robles 70 kV Transmission Line would be required under this alternative. The total length of the South River Road Route from Templeton Substation to Paso Robles Substation is approximately 5.2 miles, and the 3-mile-long reconductoring segment would not be required.

Consideration of CEQA Criteria

Project Objectives

Alternative SE-PLR-2: Templeton–Paso South River Road Route, when paired with Alternative SE-1: Templeton Substation Expansion, would meet the Transmission Objective. As described in Section 3.4.1, expansion of the existing Templeton Substation would not, on its own, fully meet the Distribution Objective; however, it could potentially be deployed alongside another alternative that would meet distribution system needs.

Feasibility

No legal, regulatory, or technical constraints have been identified for Alternative SE-PLR-2: Templeton–Paso South River Road Route. Construction of the new power line and interconnections with the expanded Templeton Substation and the existing San Miguel–Paso

Robles 70 kV Transmission Line would be relatively standard operations for PG&E and NEET West, and there is no reason to believe that the facilities could not be installed in accordance with applicable regulations and that adequate land entitlements could not be acquired for the power line route.

Specific cost information for the Templeton Substation Expansion Alternatives is confidential. At this point, CPUC has not been presented with evidence to suggest that Alternative SE-PLR-2 would be so costly as to be economically infeasible.

With respect to environmental feasibility, the Applicants' preliminary desktop environmental analysis (NEET West and PG&E 2018b) found that the Templeton–Paso South River Road Route is sensitive for biological resources. Specifically, there is a high concentration of heritage oak trees along South River Road in the northern portion of the alignment. There are also several riparian corridors that bisect the study area; wetlands generally occur from the eastern portion of South River Road to the intersection of Santa Ysabel Avenue. There are no federally designated critical habitat areas for special-status plants or animals, but the following special-status animals were identified as being likely to occur: American badger, California red-legged frog, golden eagle, Northern California legless lizard, purple martin, vernal pool fairy shrimp, western pond turtle, western spadefoot, and white-tailed kite. These impacts would not be substantially different from the Proposed Project's potential biological resources effects and could likely be mitigated to a level that is less than significant.

While the Templeton–Paso South River Road Route has not been comprehensively surveyed for cultural or paleontological resources, the northern portion of the route was surveyed for the proposed Santa Ysabel Ranch Project (NEET West and PG&E 2018b). As a result of this survey, numerous resources were identified in the vicinity of Alternative SE-PLR-2: Templeton–Paso South River Road Route, although none of these resources are directly within the proposed alternative alignment. Due to the proximity of the alternative route to perennial or annual waterways, it is considered sensitive for cultural resources; however, impacts to such resources could likely be avoided or substantially reduced through implementation of mitigation measures.

Potential to Avoid or Reduce Significant Environmental Impacts

Alternative SE-PLR-2: Templeton–Paso South River Road Route would have similar, or slightly reduced, aesthetics impacts compared to the Proposed Project 70 kV power line alignment. The new power line along South River Road would adversely affect the existing visual character and quality of the largely rural-residential area; however, due to the shorter length of this alternative power line in comparison to the Proposed Project power line, these impacts may be somewhat reduced overall. Additionally, the Templeton–Paso South River Road Route does not pass through new commercial/industrial areas comparable to the Golden Hill Industrial Park, which would be impacted by the Proposed Project. The portion of Alternative SE-PLR-2: Templeton–Paso South River Road Route that would pass through more densely developed areas within the City of Paso Robles is already impacted by existing electric transmission infrastructure (i.e., the existing Templeton–Paso 70 kV Transmission Line); therefore, the difference between the pre- and post-Project visual landscape would be less pronounced in these areas.

Alternative SE-PLR-2 also may marginally reduce agricultural resources impacts compared to the Proposed Project power line. In general this area of San Luis Obispo County is less

sensitive for agriculture than the area that includes the Proposed Project alignment. While there are several pockets of land designated by CDOC as Farmland of Statewide Importance, the majority of lands in the area of Alternative SE-PLR-2: Templeton–Paso South River Road Route are considered Grazing Land or Farmland of Local Importance (CDOC 2016a). Additionally, due to the reduced length of the Templeton–Paso South River Road Route compared to the Proposed Project power line route, it would have fewer permanent impacts on lands due to the new power line pole footprints. In general, by following the existing 230/500 kV corridor and existing roads, it would not directly impact any agricultural operations.

Due to the shorter length of Alternative SE-PLR-2: Templeton–Paso South River Road Route compared to the Proposed Project power line, and avoidance of the need for the 3-mile-long reconductoring segment, the alternative would have fewer construction-related impacts, such as air emissions, GHG emissions, noise, and traffic impacts. Alternative SE-PLR-2 also would always be deployed in tandem with Alternative SE-1, which, as described in Section 3.4.1, would reduce potentially significant impacts associated with the proposed substation.

Conclusion

Alternative SE-PLR-2: Templeton–Paso South River Road Route, when combined with Alternative SE-1: Templeton Substation Expansion, would meet the Transmission Objective. It would not meet the Distribution Objective, but could be paired with another alternative that meets the distribution needs of the project. Alternative SE-PLR-2 is assumed to be potentially feasible and would reduce at least one potentially significant environmental impact of the Proposed Project. Therefore, Alternative SE-PLR-2: Templeton–Paso South River Road Route is **retained** for full analysis in the EIR.

3.5.3 ALTERNATIVE SE-PLR-3: TEMPLETON-PASO CRESTON ROUTE

Description

Alternative SE-PLR-3: Templeton–Paso Creston Route is the final possible power line route alternative for the 70 kV power line connection between Templeton Substation and Paso Robles Substation, which would be required for Alternative SE-1: Templeton Substation Expansion. As shown in Figure 3-8, the route would follow the existing 230/500 kV transmission line corridor northeasterly out of Templeton Substation for approximately 3 miles to where it intersects with Creston Road. At this point, the route veers to the northwest and follows Creston Road, then Charolais Road, and then turns north and continues along South River Road until it reaches Paso Robles Substation.

Similar to Alternative SE-PLR-2: Templeton–Paso South River Road Route (see Section 3.5.2), to avoid the need to construct a ring bus at the Paso Robles Substation, a double-circuit 70 kV line is required for Alternative SE-PLR-3. This would allow the new power line to tie into the existing San Miguel–Paso Robles 70 kV Transmission Line immediately adjacent to the north side of Paso Robles Substation, with one circuit creating a San Miguel–Templeton 70 kV connection and the other circuit creating a second Templeton–Paso Robles 70 kV connection.

The total length of Alternative SE-PLR-3: Templeton–Paso Creston Route is approximately 6.2 miles. This alternative would not require the 3-mile-long reconductoring segment that would be required under the Proposed Project.

Consideration of CEQA Criteria

Project Objectives

Alternative SE-PLR-3: Templeton–Paso Creston Route, when paired with Alternative SE-1: Templeton Substation Expansion, would meet the Transmission Objective. As described in Section 3.4.1, expansion of the existing Templeton Substation would not fully meet the Distribution Objective because it would not provide an optimal location to expand future distribution facilities to meet future anticipated distribution needs. However, it could potentially be deployed alongside another alternative (e.g., battery storage) which meets the distribution needs of the project.

Feasibility

The Applicants note that there could be engineering feasibility conflicts with existing utilities associated with the Creston Route alternatives (see NEET West and PG&E 2017, page 4-15). Additionally, as described in Section 3.3.2 for Alternative PLR-2, the Creston Route could increase aesthetics impacts compared to the Proposed Project, as well as result in impacts on sensitive biological resources (e.g., heritage oaks). Taken together, these facts suggest that Alternative SE-PLR-3, like Alternative PLR-2, may not be feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

Refer to the discussion of environmental impacts in Section 3.3.2.

Conclusion

Alternative SE-PLR-3: Templeton–Paso Creston Route, when combined with Alternative SE-1: Templeton Substation Expansion, would meet the Transmission Objective. While expansion of Templeton Substation would not fully meet the Distribution Objective, Alternatives SE-PLR-3 and SE-1 could be paired with another alternative that meets the distribution needs of the project. Alternative SE-PLR-3 may be infeasible due to engineering and environmental constraints, and it would not reduce or eliminate any of the potentially significant effects of the Proposed Project. Therefore, Alternative SE-PLR-3 is **screened out** from full analysis in the EIR.

3.6 BATTERY STORAGE (BS) ALTERNATIVES

3.6.1 ALTERNATIVE BS-1: BATTERY STORAGE TO ADDRESS THE TRANSMISSION OBJECTIVE

Description

Alternative BS-1 would include one or more battery energy storage systems (BESSs) to address the CAISO-identified deficiencies at transmission voltages (i.e., above 50 kV). As described in Section 1.2.2, the CAISO identified the possibility for extremely low voltages and system failures to occur in the Los Padres 70 kV system with the loss of any of the following facilities/components: (1) Paso Robles-Templeton 70 kV Power Line (P1 contingency), or (2) Templeton 230/70 kV #1 Transformer Bank (P1 contingency); (3) both the Morro Bay-

Templeton and Templeton-Gates 230 kV transmission lines (P6 contingency). The P1 contingencies identified by CAISO are presumed to be the drivers of the Proposed Project because load could not be shed following their occurrence pursuant to the applicable NERC and CAISO transmission planning standards. Solutions for the P6 contingency involving loss of both 230 kV transmission lines are assumed to be beneficial effects of the Proposed Project rather than a primary driver.

Preliminary modeling by ZGlobal, Inc. determined that these failures could be avoided with installation of one or more BESSs (ZGlobal, Inc. 2018). The storage size and duration of the BESSs depend on whether the alternative seeks to solve only the P1 contingencies described above or both the P1 and P6 contingencies, as well as the assumptions made regarding outage duration/restoration time. ZGlobal, Inc. modeled a range of scenarios to determine the corresponding requirements for BESS storage size and duration, as shown in **Table 3-4**.

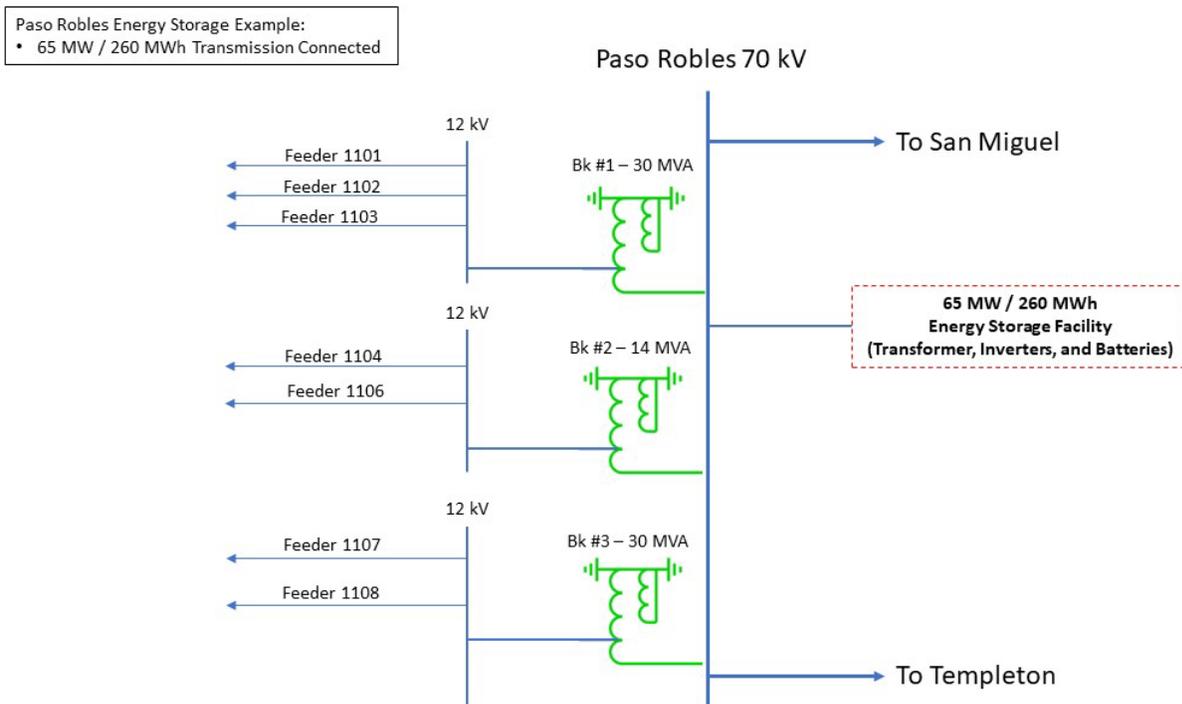
Table 3-4. Alternative BS-1 Storage Sizing Scenarios to Address Transmission Objective

Scenario / Alternative		Paso Robles DPA Peak Load (MW) ¹	Battery Storage Size (MW)	Battery Storage Duration (hours)	Battery Storage Energy Amount (MWh) ²	No. of 50 kW/210 kWh Battery Packs Required	Space Required for Battery Packs (sq ft) ³	Total Space Required with 25% Extra Space for Road, Buildings and Parking (sq ft)	Estimated Footprint (Acres)
No.	Outage Duration Assumptions								
Battery Energy Storage System (BESS) Sized to Resolve P1 Contingency Involving Outage of Templeton-Paso 70 kV Transmission Line <u>OR</u> Templeton Transformer Bank No. 1									
BS-1A	Short-Term / Peak Shaving (≤4 hrs)	214	65 ⁴	4	260	1,238	88,623	110,778	2.5
BS-1B	Long Term Outage (10 hrs; 1 pm to 10 pm, Worst Case)	214	65 ⁴	8	520 Min.: 480	2,476	177,245	221,557	5.1
BS-1C	Long Term Outage (24 hrs)	214	65 ⁴	11	715 Min.: 710	3,405	243,712	304,640	7.0
BESS Sized to Resolve <u>Either</u> P1 Contingency (see above) or a P6 Contingency Involving Outage of Both Gates-Templeton & Morro Bay-Templeton 230 kV Transmission Lines									
BS-1D	Short-Term / Peak Shaving (≤4 hrs)	214	120 ⁵	4	480	2,286	163,611	204,514	4.7
BS-1E	Long Term Outage (24 hrs)	214	120 ⁵	12	1440 Min.: 1425	6,857	490,833	613,542	14.1
<p>Notes: MW = megawatt; MWh = megawatt-hour; kW = kilowatt; kWh = kilowatt-hour; P1 = the loss of a single Bulk Electric System (BES) element, also referred to as a N-1 outage; P6 = the consecutive loss of two BES elements, also referred to as an N-1-1 outage</p> <ol style="list-style-type: none"> All scenarios use the 2023 CAISO Base Case load forecast. Battery storage energy amount (megawatt-hour [MWh]) is dictated by the battery storage size/power output (megawatt [MW]) times the duration (hours [hrs]), the latter of which is expressed in whole numbers for purposes of this analysis. In some cases, the minimum MWh needed was lower than this calculation, as indicated in italics. Assumes approximately 72 square feet (sq ft) is required per pack, based on 2017 product specifications. Tesla PowerPacks were used for the purposes of this analysis, but other providers could have been selected. For Alternatives BS-1A, BS-1B, and BS-1C, all of the 65 MW of storage would need to be connected to Paso Robles Substation. This storage could be one or multiple facilities and could be connected to the transmission (i.e., 70 kilovolt [kV]) and/or distribution (12 and 21 kV) systems. For Alternatives BS-1D and BS-1E, the 120 MW of total storage needed could all be connected to Paso Robles Substation. Alternatively, up to 55 MW of that total could be sited at/connected to Templeton Substation. 									

Source: ZGlobal, Inc. 2019

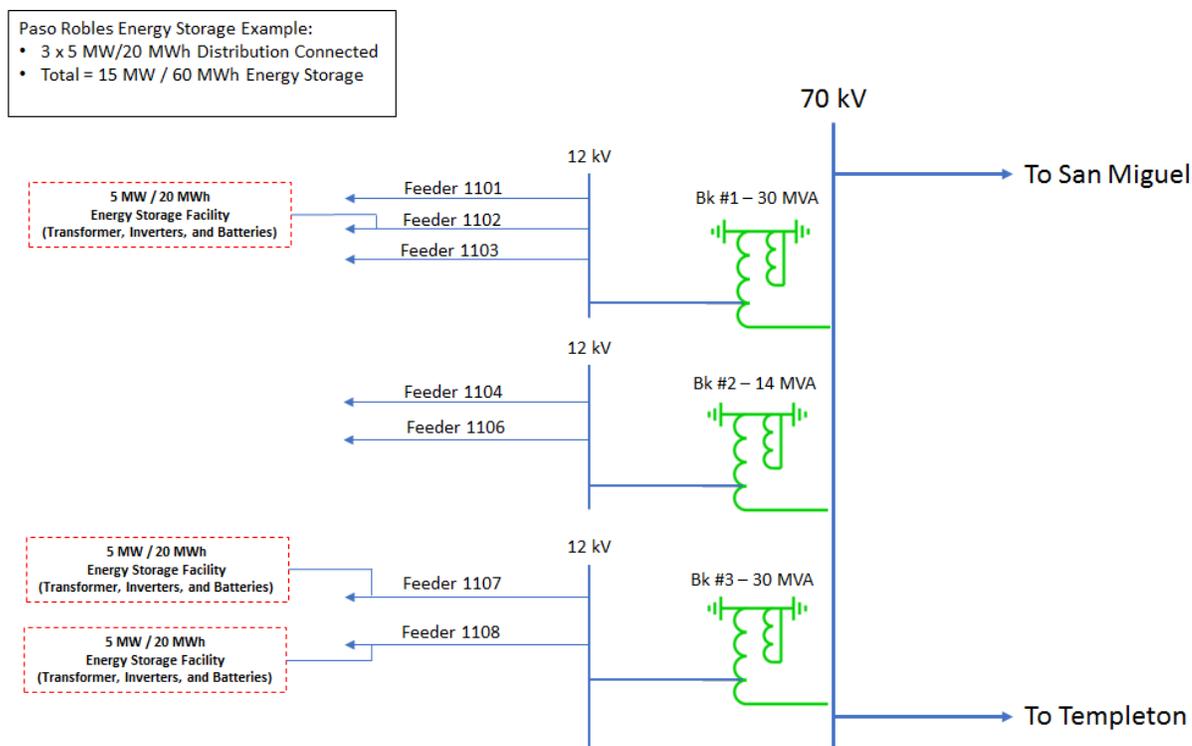
As shown in Table 3-4, 65 MW of storage is needed to mitigate the P1 contingencies identified for the Proposed Project. All of this would need to be connected to the Paso Robles Substation. Assuming a short-term outage or peak shaving scenario, a 4-hour battery could be installed, equating to a 65 MW/260 megawatt-hour (MWh) BESS. If a longer-term outage were to occur, a longer duration battery would be needed (up to 715 MWh for a 24-hour outage), which would correspondingly increase the footprint area of the BESS facility (see Alternative BS-1C in Table 3-4). Alternatives BS-1D and BS-1E considered BESS sizing required to solve the P6 contingency associated with loss of both 230 kV transmission lines. These scenarios required almost double the amount of storage (120 MW), although 55 MW of the total storage needed could be located at Templeton Substation. If a long-term outage (e.g., 24 hours) were to occur, a longer duration battery (up to 12 hours, or 1440 MWh) would be required to mitigate the contingency (see Alternative BS-1E in Table 3-4).

The storage requirements described for the alternatives in Table 3-4 could be met in a single BESS facility or by multiple BESS facilities. The BESS facilities could be connected directly to a substation (e.g., via a dedicated tie-line), connected to transmission circuits near the substation, or connected to distribution circuits near the substation. **Figure 3-10** shows an example of how a single BESS could be connected to the transmission system at Paso Robles Substation. **Figure 3-11** shows an example of how multiple BESSs could be interconnected with the Paso Robles Substation distribution system. A combination of these two approaches could be possible.



Notes: MW = megawatt; MWh = megawatt-hour; kV = kilovolt; Bk = Transformer Bank; MVA = mega volt ampere

Figure 3-10. Example of Energy Storage Deployment to Transmission – Paso Robles Substation



Notes: MW = megawatt; MWh = megawatt-hour; kV = kilovolt; Bk = Transformer Bank; MVA = mega volt ampere

Figure 3-11. Example of Energy Storage Deployment to Distribution – Paso Robles Substation

Siting Criteria and Considerations for BESSs

The CPUC team conducted a preliminary search for sites that could be suitable for BESS facilities in the Proposed Project vicinity. The search was guided by the following siting criteria:

- 1. Proximity to Substation.** BESS facilities ideally should be within 2,500 feet (about 0.5 miles) of the distribution substation. In general, the farther from the substation BESSs are located, the greater the chance that the feeder will require some level of upgrades. Where possible, siting adjacent to the existing distribution substation is preferable, as this allows for the possibility of connecting directly to the distribution voltage level bus via a dedicated circuit breaker. The CPUC's search considered sites up to 0.75 miles from Paso Robles Substation to allow for a larger number of candidate sites to be considered.
- 2. Proximity to Existing Distribution Feeders or Transmission Lines.** For BESSs not sited directly adjacent to the substation or directly connected to the substation via a dedicated tie-line, proximity to existing distribution feeders or transmission lines is preferable in that it could allow for an easier interconnection. In particular, proximity to an existing feeder that has available hosting capacity would minimize the potential for needed reconductoring/upgrades to the distribution system.
- 3. Site Size.** Sites should be at least 0.25 acres to provide enough space for all BESS facility components, including a driveway.

4. **Site Topography.** Sites should be relatively flat. Sites with substantial slopes or uneven terrain were rejected.
5. **Existing Land Use.** Sites should be vacant, as determined by aerial photographs. While the Applicants could potentially acquire already-developed parcels through eminent domain and existing structures could be demolished, parcel acquisition in this way would likely cause substantial project implementation delay. The impact on project schedule could make the alternative infeasible. Sites currently vacant but planned for development as part of a Specific Plan were also rejected.
6. **Potential Environmental Constraints.** Sites should avoid potential environmental constraints, such as the following:
 - a. Location within 100-year floodplains. Sites should not be located within a 100-year Flood Hazard Zone, as identified by the Federal Emergency Management Agency. Sites within this zone could be subject to hazards in the event of a large flood event.
 - b. Riparian vegetation and biological resources permitting requirements. Sites should not include riparian vegetation and trees, which could provide habitat for sensitive species, such as nesting birds. The presence of habitat on the site may require permitting from biological resources agencies (e.g., CDFW and USFWS). Preferably, sites would be free of documented occurrences or potential habitat for special-status species.

Potential Sites for BESSs

The results of the preliminary site search are shown in **Figure 3-12** and **Table 3-5**. For Templeton Substation, the parcel immediately adjacent (east) of the existing substation, within which the Applicants proposed Alternative SE-1: Templeton Substation Expansion, was considered for siting a BESS facility. For Atascadero Substation, where storage may be needed under Alternative BS-2, aerial imagery indicates that space is available on the PG&E parcel where the existing substation is located. The sites identified in the search are also potentially suitable for BESSs to address both the transmission and distribution objectives of the Proposed Project (i.e., Alternative BS-1 and BS-2).

Table 3-5. Preliminary Site Screening Results for Potentially Suitable Battery Storage Locations

Assessor's Parcel No. (APN)	Ownership	Land Use Designation	Vacancy	Parcel Size (Acres)	Documented Special-Status Species or Habitat	Distance to Paso Robles Substation (Miles)
<i>Paso Robles Substation Vicinity</i>						
0 ¹	Unknown ¹	None	Yes	0.56	No	0.1
009-814-050	Woodland Plaza II	Regional Commercial	Yes	0.87	No	0.2
009-769-042	Land Shak Holdings, LLC	Residential	Yes	1.82	No	0.4
009-611-045	Paso Robles Joint Unified School District	Residential	Yes	0.85	No	0.5
009-770-004	City of Paso Robles	Residential	Yes	2.59	No	0.6
Subtotal:				6.69		
<i>Templeton Substation</i>						
034-012-006	Terra Linda Ranchos South	County Other	Maybe ²	51.89	No ³	N/A
<i>Atascadero Substation</i>						
054-151-029	Pacific Gas & Electric Company	Public Facilities	Partial ⁴	1.56 ⁵	No ⁶	N/A
Notes:						
<ol style="list-style-type: none"> 1. This piece of land, which is located immediately adjacent to Paso Robles Substation to the east, does not have an APN. Ownership of the land is unknown, although if the land is within the road right-of-way, it could be under the control of the City of Paso Robles. 2. There is possibly agricultural use on this parcel, as indicated by aerial photographs. However, the Applicants proposed locating an expanded substation on this parcel (see Alternative SE-1); therefore, this site is considered potentially suitable for BESS facilities. 3. While this site screening exercise did not identify documented occurrences of special-status species or habitat within this parcel, the Applicant's preliminary desktop environmental analysis (NEET West and PG&E 2018b) for the Templeton Substation Expansion Alternatives found that several special-status species were likely to occur in this general area, including California red-legged frog, golden eagle, and Northern California legless lizard. Additionally, the site does have several oak trees present on-site, which could support habitat for nesting birds. 4. The existing Atascadero Substation occupies a portion of the parcel (on the northern corner). The remainder of the parcel is vacant. 5. The total size of the parcel is 1.56 acres. However, approximately 0.74 acre is occupied by the existing Atascadero Substation, leaving approximately 0.82 acre available for storage facilities. 6. No documented special-status plant or animal species occur on the site, based on a review of the California Natural Diversity Database. However, several trees are present on the site. 						

The preliminary site screening exercise identified 5 parcels within 0.75-mile of the Paso Robles Substation, totaling 6.69 acres. These sites meet the screening criteria described above and are potentially suitable from an engineering and environmental perspective. However, the site screening did not consider whether the parcels are available for sale or whether the Applicants could reasonably obtain site control within an acceptable timeline for development of the alternative. The CPUC team will be coordinating with the Applicants, as

well as the City of Paso Robles, regarding the feasibility of these (or other) sites for installing BESS facilities to meet Alternative BS-1. This coordination will also include development of feasible BESS designs for parcels considered to be potentially feasible.

Typical BESS facilities would include battery power packs, a control building, step up transformer, switchgear, heating, ventilation, and air conditioning units, and site development features, such as a driveway, stormwater management features, and fencing. BESSs will be enclosed in buildings as shown in Figure 3-13. A BESS interconnecting to an existing transmission line (e.g., 70 kV) is assumed to require a 3-breaker, ring-bus switchyard facility that measures approximately 200 x 350 feet.

Consideration of CEQA Criteria

Project Objectives

As shown in Table 3-4, BESS(s) could solve the P1 and P6 contingencies identified for the Paso Robles DPA by the CAISO. The necessary size/duration of the BESS(s) is based on several factors, including, foremost, the assumed duration of the potential outage. BESSs can only provide power for a limited period of time until they need to be recharged. This means that a BESS could only solve the P1 or P6 outage for a given duration. In addition to the MWh energy amount of the BESS, duration is determined by the load curve and timing of the outage; for example, if the outage occurred at night or in the winter when load is typically lower, a battery could last longer. ZGlobal, Inc.'s modeling for the results shown in Table 3-4 assumed that the outages occurred at peak load.

At this time, we are not aware of adopted standards that address outage duration to provide guidance on BESS sizing. NERC and Western Electricity Coordinating Council (WECC) Reliability Standards, such as TLP-001, are generally focused on validation of acceptable system parameters (i.e. voltage, line loading, frequency) during various system conditions including single and multiple outages of lines and/or generators. These studies are performed with detailed models of the bulk power system and the connected loads and generators which focus on a single snapshot in time of the electrical system, such as summer (peak load). This has been the historical approach to ensuring system reliability as it is generally assumed that less stressed conditions will be covered by considering the worst-case condition at peak loads.

Resource Adequacy (RA)⁷ requires that resources have a duration of 4 hours (CPUC 2014a, 2014b). This requirement reflects the need to support morning and evening ramping periods as well as typical daily peak demand periods. Four hours is the standard in California for supply resources designated to meet peak system demand and is applied to both System and Local reliability areas. Local RA requirements are established based on contingency analyses (i.e. loss of critical transmission system elements) and are designed to ensure that transmission system elements do not violate reliability requirements in the event of

⁷ Resource Adequacy (RA) is CPUC program/policy framework with two goals: (1) provide sufficient resources to the CAISO to ensure the safe and reliable operation of the grid in real time, and (2) provide appropriate incentives for the siting and construction of new resources needed for reliability in the future (CPUC 2019b). Developed in response to the 2001 California energy crisis, the RA Program requires CPUC jurisdictional Load Serving Entities (LSEs) to report their procurement of resources/capacity necessary to meet upcoming load demands. There are three distinct RA requirements: "System," "Local," and "Flexible" requirements, each of which looks at a different aspect of the energy market and load demand (CPUC 2019b).

outages. Given that the RA requirement is 4 hours, one could assume that the expected restoration time associated with one of the critical transmission line outages would also be 4 hours.

However, restoration times vary depending on outage circumstances and system conditions at the time of outage. For example, it is conceivable that a major transmission line feeding a Local Capacity Area could be lost for more than 4 hours and result in risk of loss of load during peak conditions. Restoration time is an important factor when considering use of energy storage in lieu of physical system upgrades. In the case of Aliso Canyon, the request for energy storage only required 4-hour batteries to replace the lost supply from local generation previously designated as Local RA. Under typical planning criteria and RA provisions, it appears that 4 hours is an acceptable restoration time for planning purposes, and, consequently, a 4-hour BESS would be an acceptable means of alleviating adverse system conditions during P1 contingencies.

CAISO has previously expressed a desire to go with a traditional, “wired” approach (e.g., new transmission lines) for the Proposed Project. As of this writing, CAISO is still in the process of developing its Storage as a Transmission Asset initiative, which would lay out a framework for cost-recovery and market participation of storage assets (CAISO 2018b). In this respect, some of the details/logistics for exactly how a BESS would be integrated into the transmission grid, particularly with respect to maximizing the economic potential of storage to provide multiple services and grid value, have not been fully fleshed out. Nevertheless, CPUC recently approved PG&E’s proposal for four new energy storage projects (two of which will connect to the transmission grid), totaling 567.5 MW/2,270 MWhs (4 hour duration), at Moss Landing. Currently, PG&E has procured 692 MW of transmission-connected storage, which exceeds the storage procurement mandate established by AB 2514 (CPUC 2018a).

Additionally, BESSs have been proposed/selected to address deficiencies identified in CAISO transmission planning processes. For example, as described in the 2017-2018 Transmission Plan (CAISO 2018a), NextEra Energy Resources (NEER) proposed the Alto 45 MW/183 MWh (4 hours) BESS Project and the Las Gallinas 22 MW/91 MWh (4 hours) BESS Project to mitigate reliability issues in the system. During the same transmission planning process, NEER also proposed a 41.80 MW/167.20 MWh (4 hours) BESS project in Lodi to address thermal overloads on the 60 kV system. Other proposals documented in the adopted 2017-2018 Transmission Plan and Draft 2018-2019 Transmission Plan included BESSs with durations from 1 to 4 hours. In several cases, a duration was not specified for BESSs proposed in the Draft 2018-2019 Transmission Plan.

In the 2017-2018 Transmission Plan, CAISO approved a proposal submitted by PG&E to address reliability concerns in the East Bay Area caused by the retirement of the Oakland Power Plant (CAISO 2018a). PG&E’s proposal would include substation upgrades, transmission switching, and competitively sourced energy storage and preferred resources (both behind the meter [BTM] and in front of the meter [FTM]) (PG&E 2018). The project would be a collaboration between PG&E and East Bay Community Energy (EBCE), with PG&E focusing on addressing the P2 contingency issues and commissioning a FTM 10 MW/40 MWh-plus BESS. EBCE will assist with procuring market-participating renewable generation or energy storage, including BTM. An analysis of peak summer day load in the Oakland area found that 10 hours of storage would be needed to address the P2 contingency for an outage during this period, while 15 hours of storage would be needed to address the P6 contingency (PG&E 2018).

Overall, a BESS appears capable of meeting the Transmission Objective for the Proposed Project. Currently adopted standards (e.g., NERC, WECC) are unclear regarding the duration for which P1 and P6 outages must be alleviated and what is an acceptable restoration time. Due to this uncertainty, multiple scenarios were modeled (see Table 3-4) and CPUC will be coordinating with CAISO and PG&E to further develop the BESS alternatives. For the purposes of this ASR, Alternative BS-1 is considered potentially capable of meeting the Transmission Objective.

Alternative BS-1 would not address the Distribution Objective, but could be paired with another alternative that meets the distribution needs of the project.

Feasibility

A range of potentially feasible sites for BESS facilities have been identified (see Figure 3-12 and Table 3-5). The CPUC team expects to further assess site suitability and to develop specific designs for BESSs for consideration in the EIR. Nevertheless, the information currently available suggests that Alternative BS-1 is potentially feasible from a technical perspective.

With respect to environmental feasibility, fire risk is a concern with BESS installations and several high-profile fires involving electric vehicles have shown the potential for lithium-ion batteries to spontaneously ignite. Additionally, should BESS facilities catch fire, they could potentially pose a hazard to fire fighters and other first responders due to their chemical components. These issues will need to be fully evaluated in the EIR, but successful (so far) implementation of transmission-scale batteries in other parts of the world (e.g., Australia) suggest that any fire risk of BESS facilities can be adequately mitigated. UL 9540 is a safety standard that has been specifically developed for energy storage systems and equipment. Requiring UL 9540 certification, as well as implementation of measures to provide fire fighter training for how to respond to battery fires and/or measures to obtain review and approval of fire protection drawings and specifications for the proposed facilities by the local fire department, could minimize hazards associated with BESSs.

Other potential impacts of BESSs include hazards associated with recycling and disposal of batteries and materials at the end of their usable life. BESSs contain hazardous materials, which could expose workers, the public, or the environment to risks if not disposed of properly. This is another area that will need to be evaluated in the EIR, but, at this screening level of analysis, there is no reason to believe that this potential impact would necessarily be significant and/or could not be adequately addressed with mitigation.

Potential to Avoid or Reduce Significant Environmental Impacts

Information is not sufficiently available regarding Alternative BS-1 to fully evaluate its potential environmental impacts in comparison to the Proposed Project; nevertheless, some general assumptions can be made. First, given that Alternative BS-1 would require construction/installation of (up to) 14.1 acres of BESS facilities (i.e., for Alternative BS-1E) (or as little as 2.5 acres for Alternative BS-1A), compared to the roughly 15-acre-substation, 7-mile-long new 70 kV power line, and 3-mile-long reconductoring segment needed for the Proposed Project, it can be assumed that the alternative could reduce a number of construction-related impacts (e.g., air pollutant and GHG emissions, potential impacts to biological and cultural resources, etc.) and involve less overall ground disturbance.

While Alternative BS-1 would only address the Transmission Objective, and thus it is not an equal comparison with the Proposed Project, even considering Alternative BS-1 in combination with another alternative that meets the Distribution Objective (e.g., Alternative BS-2; see Section 3.6.2) would likely reduce overall ground disturbance/permanent impact area compared to the Proposed Project. Assuming Alternative BS-1 and BS-2 were implemented in tandem, for example, this combination would completely avoid the need for the new 7-mile-long 70 kV power line. Therefore, such an approach would avoid the potential aesthetics, biological resources (e.g., special-status birds), and possible public services (i.e., obstruction of CAL FIRE helicopter flight path) impacts that could result from the new 70 kV power line.

Although BESS facilities themselves could result in aesthetics impacts (depending on their location and design), they also could potentially reduce aesthetics impacts, particularly in comparison to the proposed substation and power line. The City of Paso Robles specifically noted in its scoping comments that it was concerned about potential aesthetics (and other) impacts from battery facilities at or near Paso Robles Substation. However, the CPUC believes that BESSs can be tastefully incorporated into new or existing buildings. **Figure 3-13** shows a hypothetical example of such a BESS facility that is enclosed in a building and integrated into the surrounding landscape.



Figure 3-13. Example Energy Storage Facility Enclosed in Building

When compared to the proposed Estrella Substation, a BESS facility, such as the hypothetical example shown in Figure 3-13, could be more compatible with its surrounding landscape and have less adverse visual effects.

Conclusion

Alternative BS-1 could potentially meet the Transmission Objective, and could be paired with another alternative that meets the Distribution Objective. The potential availability of suitable sites near Paso Robles Substation suggests that the alternative is potentially feasible. As the alternative could obviate the need for the new 15-acre substation, new 7-mile-long power line, and 3-mile-long reconductoring segment required for the Proposed Project, it could reduce potentially significant environmental impacts. Therefore, Alternative BS-1 is **retained** for full analysis in the EIR.

3.6.2 ALTERNATIVE BS-2: BATTERY STORAGE TO ADDRESS THE DISTRIBUTION OBJECTIVE

Description

Alternative BS-2 would involve installation of smaller BESSs connected to the distribution system to defer the need for additional distribution capacity in the Paso Robles DPA, in accordance with the Distribution Objective of the Proposed Project. As described in Section 1.2.2, PG&E estimates that load growth in the Paso Robles DPA could exceed the capacity of local area substations by 2024; the Proposed Project would address this need by providing an additional substation. The substation would be used to provide additional distribution service (i.e., new feeders) to meet increased future demand.

Kevala Analytics, Inc. (Kevala) evaluated the potential for BESSs to address the distribution need (Kevala Analytics, Inc. 2018). Kevala’s analysis considered the hosting capacity of specific feeders within the DPA forecasted to be overloaded by 2024 or expected to handle new block load growth, as well as storage modeling, to identify potential sizes for BESSs. The effects of such BESSs on substation capacity were then calculated to determine the capability of the BESSs to defer the distribution capacity need. **Table 3-6** shows the amount of storage that Kevala determined could be deployed on target feeders in the DPA with minimal upgrades to existing distribution facilities.

Table 3-6. Energy Storage Potential by Existing Distribution Circuit

Feeder	Voltage (kV)	Peak Load, 2024¹ (MW)	Storage Capacity Estimate— Minimal Grid Improvement Required (MW)²
Atascadero 1103 ³	12	11.9	2.4
Paso Robles 1102 ³	12	8.8	1.8
Paso Robles 1107	12	11.5	1.8
Paso Robles 1108	12	14.3	2.9
San Miguel 1104	12	9.3	1.9

Feeder	Voltage (kV)	Peak Load, 2024 ¹ (MW)	Storage Capacity Estimate— Minimal Grid Improvement Required (MW) ²
Templeton 2109	12	15.5	3.1
Templeton 2113	21	20.6	2.9
Total:			16.8
Notes:			
KV = kilovolt; MW = megawatt			
1. Updated peak load forecasts for 2028 will be available from PG&E in May 2019. They are based on the recorded peak loads from 2018.			
2. With conductor upgrades and other improvements to the distribution grid, the storage capacities of each feeder could be increased above the capacities listed in this table.			
3. PG&E's Distribution Deferral Opportunity Report listed Paso Robles 1103 as one of the feeders forecast to overload but omitted Paso Robles 1102 and Atascadero 1103 (PG&E 2019).			

Source: Kevala Analytics, Inc. 2018

The precise deployment of BESSs would depend on site availability (see Table 3-5) and, when considering that either a single BESS or multiple BESSs could be deployed (and BTM storage could also be employed to reduce loading; see Section 3.6.3), many combinations/scenarios are possible. The amount of storage shown in Table 3-6 (i.e., a total of 16.8 MW dispersed across 7 feeders) is offered as an Example Storage Solution for the purposes of this discussion. **Table 3-7** shows the aggregated impact of the Example Storage Solution on area substation capacity.

Table 3-7. Example Storage Solution and Aggregated Substation Impact

Substation	Substation Available Capacity (MW)	PG&E 2026 Load Forecast (MW)	Aggregated Impact of Example Storage Solution, ^{1, 2} 2026 ³ (MW)
Atascadero	28.2	29.76 (-1.56)	2.44 (+0.88)
Paso Robles	84.65	85.48 (-0.83)	6.50 (+5.67)
Templeton	84.65	86.93 (-2.28)	5.95 (+3.67)
San Miguel	15.05	14.68 (+0.37)	1.86 (+2.23)
Totals	212.55	216.85 (-4.3)	16.75 (+12.45)
Key: Red text = overload forecast amount; Green text = no overload forecast or overload alleviated by battery energy storage system above substation capacity; MW = megawatt			
Notes:			
1. The example storage solution is the amount of storage that can be installed on target feeders in the Distribution Planning Area without incurring significant interconnection and distribution grid upgrade costs (see Table 3-6).			
2. Both front of the meter (FTM) and behind the meter (BTM) battery energy storage systems may be sited to address loads at the substations. The BTM analysis has not yet been completed; refer to Section 3.6.3 for discussion.			
3. Updated peak load forecasts for 2028 will be available from PG&E in May 2019. They are based on the recorded peak loads from 2018.			

Source: Kevala Analytics, Inc. 2018

As shown in Table 3-7, the Example Storage Solution would alleviate forecasted overloading at substations within the Paso Robles DPA and provide excess capacity to accommodate future growth. Implementation of the storage solution would provide 12.45 MW of excess capacity. **Table 3-8** shows how the Example Storage Solution sizes could translate into BESS facilities and the approximate space requirements for such facilities.

Table 3-8. Example Storage Solution Facilities and Space Requirements

Feeder / Battery Energy Storage System Deployment Site	Example Storage Solution ¹ Sizes (MW)	4-Hour Duration (MWh)	No. of 50 kW / 210 kWh Battery Packs Required	Footprint ² (Acres)
Atascadero 1103 ³	2.4	9.6	45.7	0.09
Paso Robles 1102 ³	1.8	7.2	34.3	0.07
Paso Robles 1107	1.8	7.2	34.3	0.07
Paso Robles 1108	2.9	11.6	55.2	0.11
San Miguel 1104	1.9	7.6	36.2	0.07
Templeton 2109	3.1	12.4	59.0	0.12
Templeton 2113	2.9	11.6	55.2	0.11
Totals	16.8	67.2	320	0.66
Notes: MW = megawatt; MWh = megawatt-hour; kW = kilowatt; kWh = kilowatt-hour; 1. Behind-the-meter storage may be sited to further address loads at the respective substations. This analysis has not yet been completed; refer to Section 3.6.3 for discussion. 2. Footprint calculations are based on Tesla 2017 product specifications and assume that approximately 72 sq ft is needed per 50 kW/210 kWh power pack. An additional 25 percent extra space is then assumed to be needed for roads, buildings, and parking on the Battery Energy Storage System site. Tesla PowerPacks were used for the purposes of this analysis, but other providers could have been selected. 3. PG&E's Distribution Deferral Opportunity Report listed Paso Robles 1103 as one of the feeders forecast to overload but omitted Paso Robles 1102 and Atascadero 1103 (PG&E 2019).				

Source: Kevala Analytics, Inc. 2018

As shown in Table 3-8, assuming a 4-hour duration for BESSs, implementation of the Example Storage Solution would involve the installation of 320 battery packs (each providing 50 kW/210 kWh), which would occupy 0.66 acres. This assumes that 25 percent extra space would be needed at the BESS site for site development (e.g., road, parking, etc.).

Practically, BESSs could be deployed at the substation (preferable) or on sites along the feeders. The siting criteria described in Section 3.6.1 for Alternative BS-1 also generally apply to FTM BESSs targeting the distribution need under Alternative BS-2. As shown in Table 3-5, space appears to be available in immediate proximity to the existing Templeton and Atascadero substations. A portion of the needed storage could be deployed at these locations to meet projected load increases on target feeders emanating from these substations. The preliminary site screening identified 5 sites within 0.75-mile of Paso Robles Substation that could be suitable for BESS facilities.

In a practical sense, BESS facilities under Alternative BS-2 would function to “shave” peak loads during periods when energy use along these feeders is high (i.e., reduce peak loads during the summer) to relieve pressure on the area substations and feeders. Although designs have not yet been developed, BESSs may be sited outdoors on concrete slabs or integrated into buildings, as shown on Figure 3-13.

In many ways, Alternatives BS-2 and BS-1 are related. The more storage that is installed under Alternative BS-2, the less storage may be needed under Alternative BS-1 to address the Transmission Objective. However, the BESS facilities under the two alternatives may function differently (e.g., BESS capacity under Alternative BS-1 may be reserved for substantial output in the event of N-1 or N-1-1 outages, while BESSs under Alternative BS-2 may serve to shave peak load). Additionally, BTM storage considered under Alternative BS-3 could help to reduce peak load on feeders and thereby help to meet the distribution need of the Proposed Project. The interrelationship between Alternatives BS-1, BS-2, and BS-3 will be further fleshed out during the development/refinement of these alternatives and in the EIR.

The analysis in this ASR was based on data provided by PG&E in response to CPUC data requests made in 2018, as well as information presented in the Applicants’ PEA. CPUC will be coordinating with PG&E to understand the methodology for the results presented in their 2018 Distribution Deferral Opportunity Report (DDOR) and resolve the discrepancies between the DDOR and this ASR (see discussion under “Feasibility” section below).

Consideration of CEQA Criteria

Project Objectives

Preliminary modeling suggests that Alternative BS-2 could meet the Distribution Objective. The alternative would not meet the Transmission Objective, but could potentially be paired with another alternative that meets the Transmission Objective.

Feasibility

As noted above, potentially suitable sites have been identified; however, further coordination and research will be needed to determine the feasibility of acquiring parcels and locating BESSs on these sites. Additionally, PG&E would need to comment on the interconnection of the BESS to the distribution system. A PG&E Interconnection Study is expected to be required.

Similar projects have been successfully implemented in California; for example, PG&E’s Brown’s Valley 500 kW/2 MWh facility was implemented in part to demonstrate the feasibility of using a utility-operated energy storage asset to address capacity overloads on the distribution system and improve reliability, as well as evaluate energy storage controls systems and integrate energy storage functionality with existing Distribution Operations protocols (PG&E 2017b). Ultimately, this project was a success and the BESS was able to effectively provide autonomous peak-shaving capacity relief for a substation transformer bank. The project report states that “the facility was tested in a variety of control modes as part of system commissioning and proved its ability to reliably follow real-time control signals as well as to deliver and consume real and reactive power as instructed” (PG&E 2017b).

In addition, numerous BESSs have been successfully implemented on SCE's electric grid. The following passage from the CPUC 2018 Final EIR (CPUC 2018b) for a proposed SCE substation and power line project (CPUC Application A.15-12-007) provides insight into the expected feasibility of implementing BESS solutions within the Paso Robles area to address the Distribution Objective of the Proposed Project:

...hundreds of additional energy storage facilities [currently operate] within SCE's service territory, which amount to more than 350 MWs and a much larger total energy capacity (megawatt hours), although total energy capacity was not provided by SCE in response to CPUC Energy Division data requests. SCE does not own many of these additional facilities, but they have been operating within SCE's electric system and are connected both in-front-of-the-meter and behind-the-meter at the customer, distribution, and transmission domains (grid domains).¹ Facilities that SCE does not own still provide SCE with important operational experience. Among the additional 350 MWs of energy storage facilities in operation are those connected pursuant to SCE's Rule 21² obligations. According to SCE's public data, the first energy storage facility for which an interconnection agreement was executed with SCE was a 2 MW facility in Orange County. This occurred in 2008 (SCE Rule 21/WDAT interconnection que as of 10/2/2018). By approximately 2022, SCE's public data indicates that about 3.2 gigawatts³ of energy storage will be operating within their service territory, and more than 3.0 gigawatts of the total will be lithium-ion technology. The majority of the storage facilities through 2022 will be behind-the-meter, but about 135 MWs of the behind-the-meter storage will be under SCE operational control, and SCE uses behind-the-meter resources to meet its obligations for Resource Adequacy—adequate generation resources available to reliably meet forecast load (see <http://www.cpuc.ca.gov/RA>). SCE will own or contract for about 500 MWs of the 3.2 gigawatt total, and about 220 MWs of the 500 MWs is expected to be under SCE operational control [SCE 2018 of this report].⁴

¹ The term, “grid domains,” refers to the three levels of the electric system at which an energy storage device may be interconnected—behind the customer meter, on the utility distribution system, or on the transmission system (Decision D.18-01-003).

² Electric Rule 21 describes the interconnection, operating, and metering requirements for generation facilities to be connected to a utility's distribution system over which the CPUC has jurisdiction. Interconnected generation may be classified as non-export under the CPUC/SCE Electric Rule 21 tariff or export under the Federal Energy Regulatory Commission WDAT—Wholesale Distribution Access Tariff (www.sce.com/wps/portal/home/business/generating-your-own-power/Grid-Interconnections/Interconnecting-Generation-under-Rule-21).

³ SCE stated that “projects which have not proceeded beyond an interconnection request are considered speculative, so they are not included” with the data describing the 3.2 gigawatts of storage to be operational through approximately 2022 within SCE's service territory [SCE 2018 of this report]. Hence, the total amount of storage that may be operational in the timeframe may be greater than 3.2 gigawatts.

⁴ At this time, SCE defines “operational control” as applicable to projects for which SCE is either bidding into the CAISO market and/or performing distribution deferral dispatches or testing [SCE 2018 of this report].

Significantly, during the course of preparing this draft ASR, staff noticed that PG&E identified the Proposed Project as a Candidate Deferral (i.e., through DER implementations, such as battery storage) in its 2018 DDOR prepared pursuant to the Distribution Resource Planning Proceeding, R.14-08-013 (PG&E 2019). Within the DDOR, PG&E identifies grid need for specific distribution feeders/transformer banks in the Los Padres Division that would be addressed by the Proposed Project. Generally, the data in the DDOR are consistent with Kevala's analysis and the information presented in this section; however, there appear to be several discrepancies. For example, the DDOR identified an overall deficiency of 4.87 MW for the area (PG&E 2019), while Kevala calculated a deficiency of 4.3 MW (see Table 3-7). Also, the DDOR listed Paso Robles 1103 as one of the feeders forecasted to be overloaded, but omitted Paso Robles 1102 as well as Atascadero 1103, which differs from Kevala's conclusions (PG&E 2019).

See the discussion in Section 3.6.1 on the potential environmental constraints associated with BESS facilities. In summary, none of the potential environmental impacts/risks (e.g., fire risk, hazardous materials disposal impacts, etc.) are anticipated to be so severe as to render a BESS alternative environmentally infeasible. Overall, while feasibility of Alternative BS-2 may depend on site availability for sale/acquisition, among other factors, at this screening level of analysis, the alternative is considered potentially feasible.

Potential to Avoid or Reduce Significant Environmental Impacts

See the discussion in Section 3.6.1 on the potential for a BESS alternative to avoid or reduce significant environmental impacts of the Proposed Project. Assuming implementation of the Example Storage Solution (16.8 MW on approximately 0.66 acre), Alternative BS-2 could decrease the amount of permanent disturbance and construction activities that would be required for the Proposed Project (e.g., new 15-acre substation, 7-mile-long power line, and 3-mile-long reconductoring segment, as well as future new 21 kV distribution feeders emanating from the proposed substation). Even if Alternative BS-2 was paired with another alternative that addresses the Transmission Objective (e.g., BS-1 or SE-1/SE-PLR-2), the combined effects of the alternatives would likely be less than the effects of the Proposed Project.

Like Alternative BS-1, BESS facilities under Alternative BS-2 could have aesthetic impacts depending on their specific location, but tasteful design of facilities could potentially alleviate these impacts (see Figure 3-13).

Conclusion

Alternative BS-2: Battery Storage to Address the Distribution Need could potentially meet the Distribution Objective and could be paired with another alternative that meets the Transmission Objective. If paired, the total energy storage amount would need to be large enough to meet both objectives. For example, if a 65 MW/260 MWh BESS were selected to address the Transmission Objective, we assume that the amount of storage may need to be increased by about 4.3 MW/17.2 MWh to also address the Distribution Objective. This assumes that 4 hours is the optimal duration to address both objectives. The power and duration of battery storage needed for these objectives will be further explored in the DEIR and continually updated based on each, annual load forecast provided by PG&E throughout the duration of the CPUC Proceeding. The potential availability of suitable sites near Paso Robles Substation and at other area substations suggests that the alternative is potentially

feasible. As the alternative could obviate the need for the new distribution facilities envisioned under the Proposed Project (e.g., substation, future feeders, etc.), it could reduce potentially significant environmental impacts. Therefore, Alternative BS-2 is **retained** for full analysis in the EIR.

3.6.3 ALTERNATIVE BS-3: BEHIND-THE-METER BATTERY STORAGE

Discussion

BTM storage may be another way to reduce loading on circuits within the Paso Robles DPA, and thereby avoid potential future forecasted substation overloads. BTM storage would be metered at the building-level, and could be owned and/or operated by either the building owner or a third party provider. In particular, because (1) the projected DPA overload in 2026 is relatively minor (roughly 4 MW); (2) there are numerous potential developers bidding into PG&E requests for offers of energy storage and preferred resources, (3) there are numerous commercial and industrial parcels in target storage areas, and (4) PG&E has the flexibility to either own BTM resources or procure them with third-party contracts, BTM storage is a potentially viable option to address the Distribution Objective of the Proposed Project. In addition, to the extent BTM storage is sited by customers on customer-owned parcels, this would reduce or eliminate the need for the utility to obtain rights to a particular parcel of land. **Table 3-9** provides a summary of Kevala’s preliminary analysis of BTM storage potential on Paso Robles distribution circuits.

Table 3-9. Aggregated Peak Loading Information for Paso Robles Distribution Circuits

Feeder Name / No.	Aggregated Peak Load from Commercial and Industrial Customers (Non-Coincident) (MW) ^{1, 2}	No. of Customers (Range ³) with Peak Load of 50 kW or Higher ¹
Paso Robles 1101	6.7	20-30
Paso Robles 1102	3.6	10-20
Paso Robles 1103	9.1	10-20
Paso Robles 1104	5.3	20-30
Paso Robles 1106	3.3	10-20
Paso Robles 1107	2.1	10-20
Paso Robles 1108	6.2	20-30
<p>Notes: MW = megawatt; kW = kilowatt</p> <ol style="list-style-type: none"> 1. Peak load from commercial and industrial customers on the identified feeders is <i>at least</i> as high as reported in this table. Some Advanced Metering Infrastructure data points are missing, either from customers choosing to opt out, or because PG&E’s dataset is missing some service IDs. 2. This number represents total peak load from individual commercial and industrial customers, and not coincident circuit-level peak load, to estimate total potential of BTM storage. 3. A range is provided (e.g., 20-30) rather than an exact number, to avoid any potential customer confidentiality issues. 		

As shown Table 3-9, commercial and industrial customers account for a significant portion of the peak load on circuits in the Paso Robles area. A number of these customers individually

contribute at least 50 kW to the peak loading. Generally, these findings show that there is potential for BTM storage to be deployed and positively affect loading, as commercial and industrial customers with larger electrical demands logically make the most sense for BTM storage. However, more analysis is needed to determine whether aggregate BTM participation can reduce sufficient demand on the circuit to avoid forecasted substation overloads.

From a practical perspective, CPUC staff and consultants also will need to determine how to frame Alternative BS-3 such that it could be feasibly implemented and properly evaluated under CEQA. Using BTM storage as an option to provide distribution services could require the utility to issue a Request for Offer to source storage resources if the utility does not own the BTM resource. Innovative public-private partnerships may also be an option with interested participants, such as local wineries or at the Paso Robles Municipal Airport (Kevala Analytics, Inc. 2018). At this time, the potential for Alternative BS-3 to adequately address the Distribution Objective, be feasibly implemented, and reduce one or more potentially significant environmental impacts of the Proposed Project is **to be determined**.

Page intentionally left blank.

Chapter 4 REFERENCES

California Department of Conservation. 2016a. San Luis Obispo County Important Farmland Map 2016. Accessed October 16, 2018, Available: <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2016/slo16.pdf>.

_____. 2016b. Farmland of Local Importance. Accessed October 16, 2018, Available: www.conservation.ca.gov/dlrp/fmmp/Documents/Farmland_of_Local_Importance_2016.pdf.

California Department of Transportation. 2018. California Scenic Highway Mapping System: San Luis Obispo County. Accessed October 16, 2018, Available www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.

California Independent System Operator. 2014a. 2013-2014 Transmission Plan. Accessed November 5, 2018, Available: www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan_July162014.pdf.

_____. 2014b. Estrella Substation Project Description and Functional Specifications for Competitive Solicitation. Accessed November 5, 2018, Available: www.caiso.com/Documents/Description-FunctionalSpecificationsEstrellaSubstation.pdf.

_____. 2018a. 2017-2018 Transmission Plan. Accessed February 21, 2019, Available: www.caiso.com/Documents/BoardApproved-2017-2018_Transmission_Plan.pdf.

_____. 2018b. Storage as a transmission asset. Accessed December 21, 2018, Available: www.caiso.com/informed/Pages/StakeholderProcesses/StorageAsATransmissionAsset.aspx.

California Public Utilities Commission. 2014a. Storage, Flexibility, and Resource Adequacy.

_____. 2014b. Decision Adopting Local Procurement and Flexible Capacity Obligations for 2015, and Further Refining the Resource Adequacy Program. Decision 14-06-050.

_____. 2017. Decision of Track 2 Energy Storage Issues. Decision 17-04-039 April 27, 2017. Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap.

_____. 2018a. Energy Storage Market Survey and Recommendations: Commissioner Briefing, October 24, 2018.

_____. 2018b. Southern California Edison Circle City Substation and Mira Loma-Jefferson 66 kV Subtransmission Line Project: Final Environmental Impact Report. Application A.15-

12-007. pp. 3.2-165 to 3.2-169. Available: www.cpuc.ca.gov/environment/info/esa/Circle_City/index.html

_____. 2019a. Current Status Towards Meeting AB 2514 Procurement Targets. PG&E chart. Available: www.cpuc.ca.gov/general.aspx?id=3462. Accessed March 5, 2019.

_____. 2019b. Resource Adequacy. Accessed February 7, 2019, Available: www.cpuc.ca.gov/ra/.

CAISO. *See* California Independent System Operator.

Caltrans. *See* California Department of Transportation.

CDOC. *See* California Department of Conservation.

CPUC. *See* California Public Utilities Commission.

Integral Analytics. No Date. LoadSEER – Spatial Electric Expansion & Risk. Accessed November 5, 2018, Available: www.integralanalytics.com/files/documents/related-documents/LoadSEER.pdf.

Kevala Analytics, Inc. 2018. Estrella Initial Results for Alternatives Screening Report. Draft 2.0. November 2018.

National Electric Reliability Council. No Date. Standard TPL-001-4 – Transmission System Planning Performance Requirements. Accessed February 21, 2019, Available: www.nerc.com/layouts/15/PrintStandard.aspx?standardnumber=TPL-001-4&title=Transmission%20System%20Planning%20Performance%20Requirements&jurisdiction=United%20States.

NEET West. *See* NextEra Energy Transmission West.

NERC. *See* National Electric Reliability Council.

NextEra Energy Transmission West and Pacific Gas & Electric Company. 2017. Proponent’s Environmental Assessment – Estrella Substation and Paso Robles Area Reinforcement Project. Prepared by SWCA Environmental Consultants. Available: www.cpuc.ca.gov/environment/info/horizonh2o/estrella/docs/Revised_PEAOnly_May2017.pdf.

_____. 2018a. Proponent’s Environmental Assessment – Estrella Substation and Paso Robles Area Reinforcement Project. Updated Appendix G, Distribution Need Analysis. Available: www.cpuc.ca.gov/environment/info/horizonh2o/estrella/docs/App%20G%20-%20Update%204.pdf.

_____. 2018b. Estrella Substation and Paso Robles Area Reinforcement Project – Preliminary Desktop Environmental Study for Templeton Alternatives – San Luis Obispo County, California; Attachment 4-3.2b to Proponent’s Environmental Assessment – Deficiency Letter No. 4 Response. Available: www.cpuc.ca.gov/environment/info/horizonh2o/estrella/docs/Attachment%204-3.2b_Preliminary%20Desktop%20Environmental%20Study.pdf.

_____. 2018c. Estrella Substation and Paso Robles Reinforcement Project – Proponent’s Environmental Assessment – Response to Deficiency List No. 4. Available: www.cpuc.ca.gov/environment/info/horizonh2o/estrella/docs/Estrella%20Def%204%20Response.pdf.

Pacific Gas & Electric Company. 2017a. Design Criteria #073131 – Bus Configuration. Available: www.cpuc.ca.gov/environment/info/horizonh2o/estrella/docs/Attachment%204-3.1b_PG&E%20Design%20Criteria%20073131%20-%20Bus%20Configuration.pdf.

_____. 2017b. Electric Program Investment Charge (EPIC) Final Report: EPIC Project 1.02 – Demonstrate Use of Distributed Energy Storage for Transmission and Distribution Cost Reduction. Accessed December 28, 2018, Available: www.pge.com/pge_global/common/pdfs/about-pge/environment/what-we-are-doing/electric-program-investment-charge/PGE-EPIC-Project-1.02.pdf.

_____. 2018. Oakland Clean Energy Initiative – Update 7/18/2018.

_____. 2019. Distribution Deferral Opportunity Report – Appendix B, Planned Investment Table [CONFIDENTIAL] and Appendix C, Candidate Deferral Tables [CONFIDENTIAL]. Available from the PG&E Grid Needs Assessment (GNA) map, which can be accessed with a PG&E customer login at: www.pge.com/en_US/for-our-business-partners/distribution-resource-planning/distribution-resource-planning-data-portal.page

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

SCE. *See* Southern California Edison.

Southern California Edison. 2018. Southern California Edison CONFIDENTIAL Response to California Public Utilities Commission (CPUC) Data Request No. 18, Question 3 for the Circle City Substation and Mira Loma-Jefferson Subtransmission Line Project, November 2018

ZGlobal, Inc. 2018. Estrella Substation BESS Alternative Analysis. October 22, 2018.

_____. 2019. Calculations for ASR Table.

Personal Communications

Itani, Omar, Transmission Planning Engineer, ZGlobal, Inc. December 2018. Personal communication with Horizon Water and Environment and CPUC via email providing a 3D simulation of an example battery storage facility contained in a building.

Page intentionally left blank.