

APPENDIX C

Alternative Screening Report



California Public Utilities Commission Collinsville 500/230 kV Substation Project Alternatives Screening Report

October 2025

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California Public Utilities Commission

Collinsville 500/230 kV Substation Project

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TABLE OF CONTENTS

Table of Contents

1	Introduction.....	1
1.1	Purpose.....	1
1.2	Alternatives Consideration in EIR Scoping	2
1.3	Summary of Proposed Project.....	2
1.4	Alternatives Screening Methodology	3
1.5	Alternatives Overview.....	3
2	Background.....	4
3	CEQA Requirements for Alternatives	5
3.1	Overview.....	5
3.2	Consistency with Project Objectives	5
3.3	Feasibility	7
3.4	Potential to Avoid or Reduce Significant Environmental Effects	8
4	Description of Alternatives Considered and Screening Analysis	10
4.1	Summary of Alternatives Screening Analysis.....	10
4.2	Alternatives Retained.....	32
4.3	Alternatives Eliminated	39

List of Tables

Table 4-1	Alternatives Considered in Screening Analysis.....	11
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List of Figures

Figure 1	Alternative 1: Collinsville Substation North of Talbert Lane (Retained)	20
Figure 2	Alternative 2: Collinsville Substation East of Wind Energy Substations (Retained).....	21
Figure 3	Alternative 3: 500 kV Interconnection Lines on Entirely TSPs (Retained).....	22
Figure 4	Alternative 4: 230 kV Overhead Segment Alternative Route (Retained).....	23
Figure 5	Alternative 5: 230 kV Submarine Segment Alternative Route (Retained).....	24
Figure 5	Alternative 6a: Underground Portions of the 230 kV Transmission Line within Suisun Marsh Protection Plan Management Areas (Retained).....	25

TABLE OF CONTENTS

Figure 5 Alternative 6a: Underground Portions of the 230 kV Transmission Line within Suisun Marsh
Protection Plan Management Areas (Retained) 26

Figure 6 Collinsville Substation Northeast of Proposed Location (Eliminated) 27

Figure 7 Collinsville Substation East of Talbert Lane (Eliminated) 28

Figure 8 Collinsville Substation on Industrial Zoned Land (Eliminated) 29

Figure 9 Collinsville Substation North of Pittsburg Substation (Eliminated) 30

Figure 10 Collinsville Substation South of Pittsburg Substation (Eliminated) 31

TABLE OF CONTENTS

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1 Introduction

1.1 Purpose

LS Power Grid California, LLC's (LSPGC) submitted an application (Application No. A2407018) for a certificate of Public Convenience and Necessity (CPCN) for the Collinsville 500/230 kilovolt (kV) Substation Project (Proposed Project) on July 29, 2024. The CPUC deemed the application complete on December 11, 2024. The Proposed Project is described in detail in Chapter 2 of the Draft Environmental Impact Report (EIR). This document describes the alternatives screening analysis that has been conducted for the Proposed Project, supplementing the alternatives analysis information presented in Chapter 3 of the EIR. Alternatives to the Proposed Project that are considered in this document include the following:

- Alternatives identified by LSPGC in the application for a CPCN
- Alternatives identified during the public scoping process
- Alternatives suggested by agencies
- Alternatives identified by the CPUC as a result of the independent review of the Proposed Project impacts

The alternatives screening analysis was completed in order to identify potentially feasible alternatives that would be carried forward in the EIR.

This report documents: (1) the alternatives that have been suggested and evaluated; (2) the approach and methods used by the CPUC in screening the potential feasibility of these alternatives according to guidelines established under the California Environmental Quality Act (CEQA); and (3) the results of the alternatives screening process (i.e., which alternatives are analyzed in the EIR).

The Alternatives Screening Report provides the basis and rationale for whether an alternative has been carried forward to full evaluation in the EIR. For each alternative that was eliminated from further consideration, this document explains in detail the rationale for elimination. Since full consideration of the No Project Alternative is required by CEQA, this report does not address the No Project Alternative. The No Project Alternative is addressed in the EIR consistent with CEQA requirements.

1.2 Alternatives Consideration in EIR Scoping

The process for identifying alternatives to the Proposed Project involved several steps, including opportunities for public comment. The alternative evaluation process is described in this section.

On January 7, 2025, a Notice of Preparation (NOP) announcing a 30-day scoping period (January 7, 2025, to February 6, 2025) was sent to interested agencies and members of the public to inform recipients that the CPUC was beginning preparation of the Collinsville 500/230 kV Substation Project EIR and to solicit information that would be helpful in the environmental review process. Following the release of the NOP, one public scoping meeting was held on January 21, 2025, and a Scoping Report was prepared to document comments received.

1.3 Summary of Proposed Project

The Proposed Project is described in detail in Chapter 2 Project Description of this EIR. The Proposed Project is located within Solano, Sacramento, Alameda, and Contra Costa counties in California and would include the following main components:

- Constructing a new 500/230 kV substation, herein referred to as the proposed LSPGC Collinsville Substation. The proposed Collinsville Substation would be located to the south and west of Stratton Lane and approximately 0.8-mile northeast of the unincorporated community of Collinsville.
- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to Pacific Gas and Electric Company's (PG&E's) existing Pittsburg Substation; approximately 1.0 mile would be installed overhead, approximately 4.5 miles would be installed beneath the Sacramento-San Joaquin River Delta (Delta) waterways (6 to 15 feet below the sediment surface); and approximately 0.6 mile would be installed underground.
- Constructing new telecommunications lines collocated with the new 230 kV transmission line and extending into the City of Pittsburg (approximately 1.2 miles) and constructing a new microwave tower immediately adjacent to the proposed substation.
- Constructing two self-supporting segments of new 500 kV conductor and structures roughly parallel between the proposed LSPGC Collinsville Substation and Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line. This would result in the addition of approximately 2.4 miles of new 500 kV conductor along the approximately 1.2-mile interconnection route.
- Extending and connecting an existing PG&E 12 kV distribution line to the proposed LSPGC Collinsville Substation (approximately 0.9 mile along and parallel to Stratton Lane).

- Modifying PG&E's existing Pittsburg, Vaca Dixon, and Tesla substations, including line relays and microwave towers to support the new Collinsville Substation interconnection.

1.4 Alternatives Screening Methodology

The alternatives were evaluated using a screening process that consisted of three steps:

- **Step 1:** Define each alternative to allow comparative evaluation.
- **Step 2:** Evaluate each alternative in comparison with the Proposed Project using CEQA criteria (defined below).
- **Step 3:** Based on the results of Step 2, determine the suitability of each alternative for full analysis in the EIR by looking at whether the alternative: (1) achieves all or most of the project's basic objectives, (2) is potentially feasible, and (3) avoids or substantially lessens an environmental impact of the project as proposed. If the alternative is unsuitable, it is eliminated from further consideration.

1.5 Alternatives Overview

In total, the process for screening alternatives has culminated in the identification and evaluation of fourteen potential alternatives or combinations of alternatives. Alternative types include alternative substation locations, alternative structure types, alternative transmission route alignments, and alternative construction methods. Five alternatives were retained for analysis in the EIR and nine alternatives were eliminated from further analysis. The rationale for retaining or eliminating these alternatives is presented in detail in Section 4.

2 Background

The California Independent System Operators (CAISO) conducts a Transmission Planning Process each year, which builds upon the previous year's plan and studies the reliability of the electric system over a 10-year window. The 2021-2022 Transmission Plan identified the Proposed Project as a needed upgrade to the California electric grid.¹

The 2021-2022 Transmission Plan was based on the requirement to add approximately 1,000 megawatts of new resources per year in the state over the 10-year planning period. CAISO's Policy-Driven Need Assessment identified the Proposed Project as necessary to ensure deliverability of resources to meet policy goals and resource adequacy needs of the state. The Policy-Driven Need Assessment is an iterative process, encompassing three studies: a reliability assessment, an on-peak deliverability assessment, and an off-peak deliverability assessment. The key objectives of the Policy-Driven Need Assessment are to assess the transmission impacts of portfolio resources, identify necessary upgrades to ensure reliability and minimize excessive curtailment, and inform future portfolio development. The Proposed Project would address transmission constraints in the base portfolio (i.e., Cayetano-North Dublin 230 kV Transmission Line, Lone Tree-USWP-JRW-Cayetano 230 kV Transmission Line, and Las Positas-Newark 230 kV Transmission Line) identified by the assessment. The CAISO Transmission Plan evaluated mitigation options for overloads on the Cayetano-North Dublin 230 kV, Lone Tree-USWP-JRW-Cayetano 230 kV, and Las Positas-Newark 230 kV lines. Alternatives included reconductoring the lines and relocation of battery storage. The proposed Collinsville Substation was selected as the preferred alternative to address State policy objectives for renewable energy integration. Alternatives considered in the CAISO Transmission Plan are not further evaluated in this document as the documentation on consideration of those alternatives is included in the Transmission Plan.

¹ The Pittsburg 115 kV Bus Reactor identified in CAISO's 2022–2023 Transmission Plan is not part of the Proposed Project. The 115 kV Bus Reactor would be permitted and built separately by PG&E.

3 CEQA Requirements for Alternatives

3.1 Overview

CEQA provides guidance on selecting a reasonable range of alternatives for evaluation in an EIR. This alternatives screening and evaluation process satisfies CEQA requirements. The CEQA requirements for selection of alternatives are described below.

An important aspect of EIR preparation is the identification and assessment of alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. The CEQA Guidelines require consideration of the No Project Alternative (section 15126.6(e)) and selection of a range of reasonable alternatives (section 15126.6(d)). The EIR must adequately assess these alternatives to allow for a comparative analysis for consideration by decision makers. The CEQA Guidelines (section 15126.6(a)) state:

An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.

To comply with CEQA requirements, each alternative that has been suggested or developed for this project has been evaluated according to three criteria:

1. Does the alternative accomplish all or most of the basic project objectives?
2. Is the alternative potentially feasible (from economic, environmental, legal, social, and technological standpoints)?
3. Does the alternative avoid or substantially lessen any significant effects of the Proposed Project (including consideration of whether the alternative itself could create significant environmental effects potentially greater than those of the Proposed Project)?

Each of these criteria is described in more detail in the following sections.

3.2 Consistency with Project Objectives

3.2.1 LSPGC Project Objectives

LSPGC identified the following objectives for the Proposed Project in its Application for a CPCN:

ALTERNATIVES SCREENING REPORT

- Meet the CAISO's policy-driven need for the Proposed Project to address a number of identified transmission constraints on the Cayetano-North Dublin 230 kV Line, Lone Tree-USWP-JRW-Cayetano 230 kV Line, and Las Positas-Newark 230 kV Line and provide an additional supply from the 500 kV system into the northern Greater Bay Area.
- Meet the functional specifications set forth by CAISO for the LSPGC Collinsville 500/230 kV Substation and 230 kV transmission lines located near or adjacent to PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. Close proximity to the existing PG&E 500 kV transmission line corridor would reduce the length of the 500 kV transmission interconnection lines, thereby reducing the right-of-way (ROW) requirements and the potential for significant environmental impacts.
- Achieve commercial operation by June 2028 in order to address critical reliability issues within the transmission system, such as high voltage under non-peak conditions and voltage that varies significantly on a daily basis.
- Improve and maintain the reliability of the transmission grid by addressing overloads on the Cayetano-North Dublin 230 kV Line, Lone Tree-USWP-JRW-Cayetano 230 kV Line, and Las Positas-Newark 230 kV Line and increase deliverability of renewable power by building and operating a facility that would help keep transmission voltages within specified parameters, reduce transmission losses, increase reactive margin for the system bus, increase transmission capacity, provide a higher transient stability limit, increase damping of minor disturbances, and provide greater voltage control and stability.
- Facilitate deliverability of load from existing and proposed renewable generation projects in the northern Greater Bay Area and corresponding progress toward achieving California's Renewables Portfolio Standard (RPS) goals in a timely and cost-effective manner by California utilities.
- To the extent practicable, locate the Proposed Project on land that is or has previously been disturbed, is in an existing ROW or adjacent to existing utility uses, or would otherwise minimize environmental impacts in a manner consistent with prudent transmission planning.
- Construct and operate the facility with safety as a top priority.
- Meet the Proposed Project need in a safe, cost-effective manner and consistent with LSPGC's cost containment agreement in the Approved Project Sponsor Agreement.
- Comply with and assist CAISO in meeting applicable Reliability Standards and Criteria developed by the North American Electric Reliability Corporation, Western Electricity Coordinating Council, and CAISO.
- Design and construct the Proposed Project in conformance with LSPGC's standards, the National Electric Safety Code, and other applicable national and state codes and regulations.

3.2.2 Basic Project Objectives

Project objectives under CEQA are defined in order to allow proper consideration of alternatives to the Proposed Project. Having taken into consideration the detailed objectives set forth by LSPGC above, the CPUC developed basic project objectives in coordination with LSPGC. These objectives are used by the CPUC to define and evaluate a range of reasonable alternatives to the Proposed Project. The evaluation of alternatives in the EIR provides information on whether each alternative could feasibly accomplish most or all of these project objectives. The basic project objectives are as follows:

- Meet the CAISO policy-driven need established for the project in its Transmission Plans by:
 - Relieving stress on the 230 kV line in the Contra Costa region and providing grid support for East Bay area.
 - Reliably and economically supporting increased energy demand in the greater Bay Area
 - Facilitating deliverability of generation and energy storage resources in the Solano area, progressing California’s renewable energy goals.
 - Achieving commercial operation by June 2028 consistent with the timeline and policy goals included in the 2021-2022 Transmission Plan and reinforced by the 2024-2025 Transmission Plan².

The determination of whether to eliminate or retain alternatives in the EIR considered the alternative’s ability to meet the basic project objectives as defined by CPUC.

3.3 Feasibility

The State CEQA Guidelines (section 15364) define 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.”

The alternatives screening analysis is largely governed by what CEQA terms the “rule of reason,” meaning that the analysis should remain focused, not on every possible eventuality, but rather on the alternatives necessary to permit a reasoned choice. Those alternatives that are potentially feasible, while still meeting most of the project objectives, will be fully analyzed in the EIR.

According to the State CEQA Guidelines (section 15126.6(f)(1)), among 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 whether the project proponent(s) can reasonably acquire, control, or otherwise have access to the alternative site. For the screening

² Alternatives that would result in delays, but would otherwise meet project objectives, are determined to meet most project objectives.

ALTERNATIVES SCREENING REPORT

analysis, the potential feasibility of alternatives was assessed taking the following factors into consideration:

- **Legal feasibility:** Does the alternative have the potential to avoid lands that have legal protection that may prohibit or substantially limit the feasibility of permitting a high-voltage transmission line? Lands that are afforded legal protections that would prohibit the construction of the project, or require an act of Congress for permitting, are considered less feasible locations for the project. These land use designations include wilderness areas, wilderness study areas, restricted military bases, airports, and Indian reservations. Information on potential legal constraints of each alternative has been compiled from laws, regulations, and local jurisdictions, as well as a review of federal, state, and local agency land management plans and policies.
- **Regulatory feasibility:** Do regulatory restrictions substantially limit the likelihood of successful permitting of a high-voltage transmission line? Is the alternative consistent with regulatory standards for transmission system design, operation, and maintenance?
- **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?
- **Economic feasibility:** Is the alternative so costly that implementation would be prohibitive? The State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may. 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? This issue is primarily addressed in terms of the alternative’s potential to eliminate significant effects of the Proposed Project.

3.4 Potential to Avoid or Reduce Significant Environmental Effects

A key CEQA requirement for an alternative is that it must have the potential to “avoid or substantially lessen any of the significant effects of the project” (CEQA Guidelines section 15126.6(a)). At the screening stage, it is not possible to evaluate all of the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. It is possible to identify elements of an alternative that are likely to be the

ALTERNATIVES SCREENING REPORT

sources of impacts and to relate them, to the extent possible, to general conditions in the subject area.

4 Description of Alternatives Considered and Screening Analysis

Fourteen alternatives are described in detail in this section. Each alternative was evaluated using considerations described in Section 3, above.

If a potential alternative would be unable to meet the basic project objectives; would be infeasible; or would not reduce or avoid significant impacts of the Proposed Project, then it was eliminated from full evaluation. Alternatives that were determined to meet the CEQA alternatives screening criteria were retained for full analysis in the EIR.

Sections 4.2 and 4.3 describe each alternative, the consideration of CEQA criteria, and the conclusions for alternative elimination or retention. Retained alternatives are addressed in Section 4.2. Eliminated alternatives are addressed in Section 4.3. The No Project Alternative is required to be considered in an EIR by CEQA, so it is described throughout each environmental impact discussion in Chapter 3 of the EIR and is not discussed in this Alternatives Screening Report.

4.1 Summary of Alternatives Screening Analysis

Five of the fourteen alternatives are recommended for further analysis in the EIR. Table 4-1 summarizes the results of the screening analysis presented in Sections 4.2 and 4.3.

ALTERNATIVES SCREENING REPORT

Table 4-1 Alternatives Considered in Screening Analysis

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
Alternatives retained				
Alternative 1: Collinsville Substation North of Talbert Lane Alternative 1 involves a different location for the Collinsville Substation approximately 1.2 miles north of the proposed substation site that is closer to PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line (approximately 900 feet west) (Figure 1). The Alternative 1 substation site is located approximately 500 feet north of Talbert Lane and approximately 1 mile east of Collinsville Road. The 500 kV interconnection lines would be approximately 0.4 mile long in total. The 230 kV overhead segment would extend from the alternative substation site south for approximately 1.8 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 700 feet long. Alternative 1 was identified by LSPGC in their PEA and CPCN Application. It was originally identified immediately south of Talbert Lane but was later moved to the north side of Talbert Lane. Source: LSPGC	Meets most project objectives	Meets feasibility criteria	Reduces potentially significant environmental effects	Substation Location
Alternative 2: Collinsville Substation East of Wind Energy Substations Alternative 2 involves a different location for the Collinsville Substation approximately 3.0 miles north of the proposed substation site that is closer to PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line (approximately 200 to 300 feet east) and adjacent to existing wind energy substations (Figure 2). The Alternative 2 substation site would be approximately 1.0	Meets most project objectives	Meets feasibility criteria	Reduces potentially significant environmental effects	Substation Location

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
mile southeast of the intersection of Birds Landing Road and Montezuma Hills Road. The 500 kV interconnection lines would be approximately 1,200 feet long. The 230 kV overhead transmission line would extend from the alternative substation site south for approximately 4.0 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 0.3 mile long. This alternative was developed by the CPUC. Source: CPUC				
Alternative 3: 500 kV Interconnection Lines on Entirely TSPs Alternative 3 involves the use entirely tubular steel poles (TSPs) for the 500 kV interconnection lines instead of the proposed combination of lattice steel towers (LSTs) and three-pole TSPs (Figure 3). The TSPs may be monopoles (single pole structures) or multipole structures (i.e., three-pole structures or H-frame structures) depending on engineering requirements. The 500 kV interconnection lines would be in the same general alignment as the Proposed Project. This alternative was developed based on scoping comments and coordination with SMUD. Source: Scoping Comment (SMUD)	Meets most project objectives	Potentially technically feasible; meets legal and regulatory feasibility criteria	Reduces potentially significant environmental effects	Transmission Structures
Alternative 4: 230 kV Overhead Segment Alternative Route Alternative 4 involves a different route for the 230 kV overhead segment between the proposed Collinsville Substation and the Delta west of the proposed route located on PG&E-owned property (Figure 4). The alternative 230 kV overhead segment route would extend approximately 0.4 mile directly south of the proposed	Meets all project objectives	Meets feasibility criteria	Avoids a potentially significant environmental effect from a hazard throw zone	Transmission Route

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
substation site to the northern shore of the Delta. Alternative 4 was identified by LSPGC as a way of avoiding the blade throw hazard zones of wind turbines in the vicinity of the proposed 230 kV overhead segment route. Source: LSPGC				
Alternative 5: 230 kV Submarine Segment Alternative Route Alternative 4 involves changes to portions of the proposed 230 kV submarine segment route to reduce the total area where the submarine cables would be within an existing sand and gravel mining lease (Figure 5). Alternative 4 was developed by LSPGC based on their coordination with the State Lands Commission and the mining lease holder to minimize impacts on mining activities. Source: Scoping Comments (State Lands Commission) and LSPGC	Meets all project objectives	Meets feasibility criteria	Reduces potentially significant environmental effects	Transmission Route
Alternative 6a/6b: Underground Portions of the 230 kV Transmission Line within Suisun Marsh Protection Plan Management Area Alternative 6a/6b would locate the 230 kV transmission line on primarily PG&E-owned property south of the proposed Collinsville Substation site (similar to Alternative 4). In addition, Alternative 6a/6b would involve installing portions of the 230 kV transmission line in an underground position on land within the within Suisun Marsh Protection Plan Management Areas. Alternative 6a and Alternative 6b are the same, except for the northern portion of this alternative route (approximately 200 to 350 feet) which reflect slightly different connection	Meets all project objectives	Meets feasibility criteria	Reduces potentially significant environmental effects	Transmission Route

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
points that would apply to the project scenarios under consideration. Alternative 6a would apply if the Collinsville Substation was constructed at the proposed location and a new underground route (approximately 0.5 mile long) would replace the proposed 230 kV overhead segment entirely (Figure 6). Alternative 6b would apply if the Collinsville Substation was constructed at the locations identified for Alternatives 1 and 2, which would include an adjusted route for the 230 kV overhead segment (Figure 7). With Alternative 6b, approximately 0.7 mile of the 230 kV overhead segment, where identified on the northern shore of the Delta for Alternatives 1 and 2, would be replaced with a new underground route (approximately 0.5 mile long). Source: LSPGC				
Alternatives Eliminated				
Collinsville Substation South of Talbert Lane (Superseded by Adjacent Alternative 1) The alternative substation site B1 involves a different location for the Collinsville Substation approximately 0.7 mile northeast of the proposed substation site that is closer to PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line (approximately 0.3 mile south) (Figure 8). The alternative substation site B1 would be approximately 0.7 mile south of Talbert Lane. The 500 kV interconnection lines would be approximately 0.6 mile long in total. The 230 kV overhead transmission line would extend from the alternative substation site south for approximately 1.4 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 0.4 mile long. This alternative was developed by LSPGC as a variant to	Meets most project objectives	Meets feasibility criteria	Potentially reduces environmental effects	Substation Location

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
alternative substation sites identified by the CPUC (i.e., Site B2). Source: LSPGC				
Collinsville Substation East of Talbert Lane (Site B2) The alternative substation site B2 involves a different location for the Collinsville Substation approximately 1.4 miles northeast of the proposed substation site that is closer to PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line (approximately 0.3 mile south) (Figure 9). The alternative substation site B2 would be approximately 200 feet east of Talbert Lane. The 500 kV interconnection lines would be approximately 1.0 mile long in total. The 230 kV overhead transmission line would extend from the alternative substation site southeast for approximately 1.9 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 200 feet long. This alternative was developed by the CPUC. Source: CPUC	Meets most project objectives	Meets feasibility criteria	Potentially reduces environmental effects, but in a similar location and less preferable to Alternative 1	Substation Location
Collinsville Substation on Industrial Zoned Land (Site C) The alternative substation site C involves a different location for the Collinsville Substation, approximately 2.3 miles southeast of the proposed substation site, that is on land zoned for industrial use immediately adjacent to the north shore of the Delta (Figure 10). The alternative substation site C would be approximately 200 feet south of Stratton Lane and 400 feet northwest of the Delta. The 500 kV interconnection lines would be approximately 4.5 miles long in total. The 230 kV overhead segment would extend from the alternative substation site east for approximately 2.2 miles to the proposed transition	Meets most project objectives	Meets feasibility criteria	Does not reduce environmental effects	Substation Location

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 0.5 mile long. This alternative was developed by the CPUC. Source: CPUC				
Collinsville Substation North of Pittsburg Substation (Site D) The alternative substation site D involves a different location for the Collinsville Substation approximately 4.1 miles southwest of the proposed substation site on the south side of the Delta (Figure 11). The alternative substation site D would at an abandoned PG&E power plant immediately north of the existing Pittsburg Substation. The 500 kV interconnection lines would extend from PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line for a total corridor distance of roughly 6.5 miles, with approximately 1.6 miles in the overhead position and 5.9 in the submarine position.³ The 230 kV underground segment would extend from the alternative substation site to the southwest side of Pittsburg Substation for approximately 0.8 mile. This alternative was developed based on scoping comments from California Forever. Source: Scoping Comment (California Forever)	Meets most project objectives	Does not meet technical feasibility criteria	Does not reduce environmental effects	Substation Location
Collinsville Substation South of Pittsburg Substation (Site E) The alternative substation site E involves a different location for the Collinsville Substation, approximately	Meets most project objectives	Does not meet technical feasibility criteria	Does not reduce environmental effects	Substation Location

³ Under the alternative substation site D scenario, the total length of the 500 kV overhead lines would be at least two times greater than the corridor length. Each circuit of the 500 kV submarine lines would include 6 cables; therefore, the total length of the 500 kV submarine cables would be approximately 12 times greater than the corridor length.

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
4.5 miles southwest of the proposed substation site on the south side of the Delta (Figure 12). The alternative substation site E would at an abandoned material storage area where large aboveground storage tanks are currently present immediately south of the existing Pittsburg Substation. The 500 kV interconnection lines would extend from PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line for a total corridor distance of roughly 7.5 miles, with approximately 1.6 mile in the overhead position, 5.9 miles in the submarine position, and 1.0 mile in the underground position.⁴ The 230 kV underground segment would extend from the alternative substation site to the southwest side of Pittsburg Substation for approximately 0.7 mile. This alternative was developed based on scoping comments from California Forever. Source: Scoping Comment (California Forever)				
Route Relocation Outside of BCDC Jurisdiction This alternative would relocate the portion of the submarine segment within BCDC jurisdiction to areas east to avoid BCDC jurisdiction. Source: CPUC	Meets most project objectives	Potentially meetings feasibility criteria	Does not reduce environmental effects	Route Relocation
In-river Transition Structure This alternative involves an in-river transition structure and a six-pole guyed dead-end structure just south of the northern shore of the Delta instead of the two onshore riser structures where the 230 kV overhead and	Meets all project objectives	Meets feasibility criteria	Does not avoid or reduce a significant environmental effect	Transmission Structure

⁴ Under the alternative substation site E scenario, the total length of the 500 kV overhead lines would be at least two times greater than the corridor length. Each circuit of the 500 kV submarine lines would include 6 cables; therefore, the total length of the 500 kV submarine cables would be approximately 12 times greater than the corridor length.

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
submarine segments meet on the northern shore of the Delta. This alternative is otherwise identical to the Proposed Project. This alternative was part of the original project defined by LSPGC and was later changed to the proposed on-shore riser structures. Source: LSPGC				
500 kV Interconnection Lines on a Single Set of Structures This alternative involves collocating the two 500 kV interconnection lines on a single set of transmission structures reducing the total ROW and number of structures by approximately half. This alternative was developed based on scoping comments and coordination with SMUD. Source: Scoping Comment (SMUD)	Does not meet project objectives	Does not meet regulatory feasibility criteria	Reduces potentially significant environmental effects	Transmission Structure
230 kV Submarine Segment – Complete Horizontal Directional Drilling (HDD) Installation This alternative involves the installation of the 230 kV submarine segment cables using HDD methods for the entire 4.5-mile Delta crossing. This alternative was developed based on scoping comments and coordination with State Lands Commission. Source: Scoping Comment (State Lands Commission)	Meets most project objectives	Does not meet technical feasibility criteria	Reduces potentially significant environmental effects	Construction Method
230 kV Submarine Segment – Partial HDD Installation The alternative would install the submarine cable using horizontal directional drilling for the entire crossing of the Delta. This alternative involves the installation of the 230 kV submarine segment cables using HDD methods for portions of the Delta crossing, including near the northern and southern shores of the Delta. This	Meets most project objectives	Meets feasibility criteria	Does not avoid or reduce a significant environmental effect	Construction Method

ALTERNATIVES SCREENING REPORT

Description of alternative	Project objectives	Feasibility	Avoid or reduce environmental effects	Alternative category
alternative was developed based on scoping comments and coordination with State Lands Commission. Source: Scoping Comment (State Lands Commission)				
Reduced Intensity Level for In-Water Work The alternative would involve reduced the construction intensity of marine vessel activity for the submarine segment installation to avoid exceedance of an air quality threshold.	Meets some project objectives	Does not meet logistical feasibility criteria	May avoid the significant air quality impact, but would increase biological and hydrologic resource impacts by extending the duration of water construction by multiple years.	Construction method

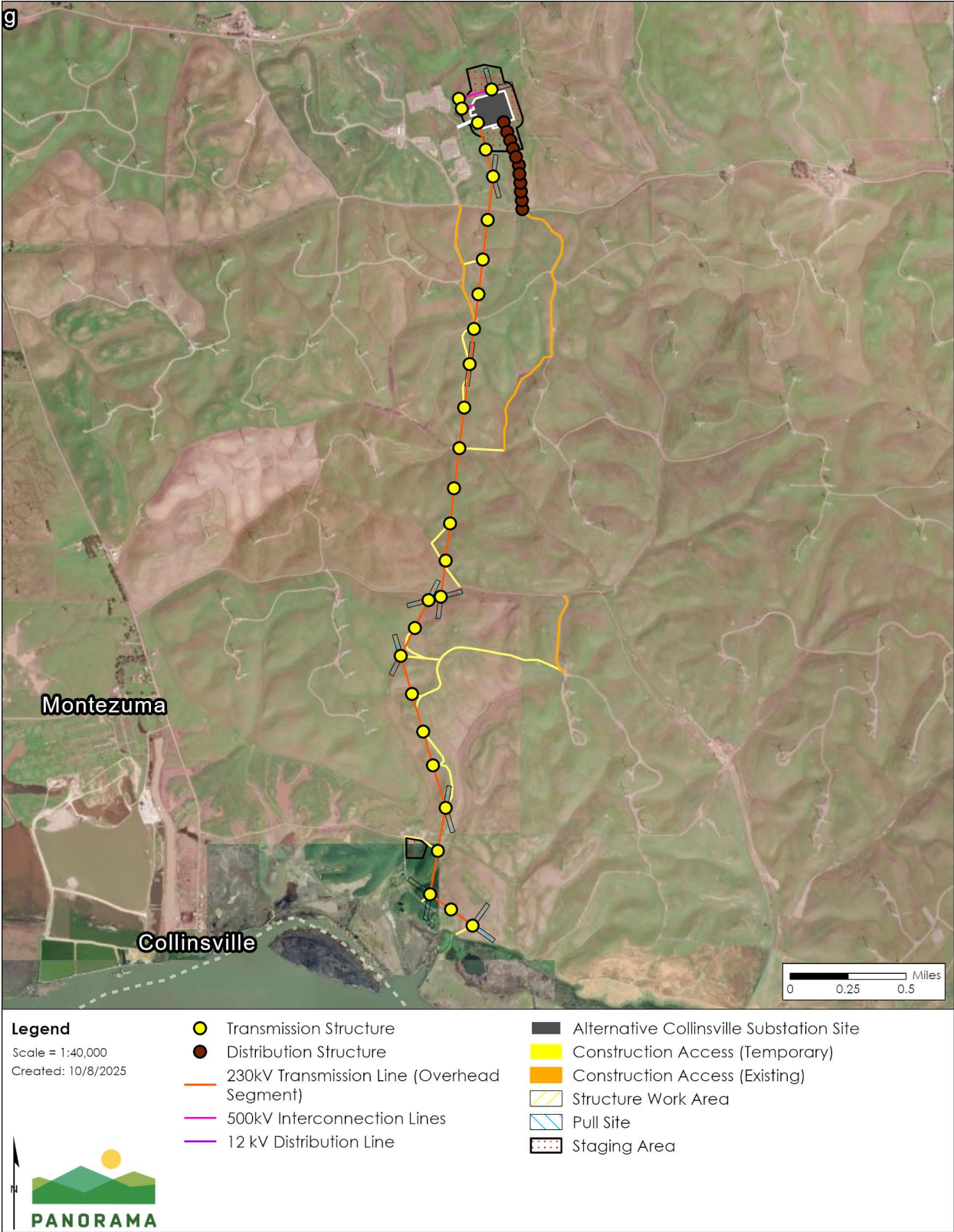
ALTERNATIVES SCREENING REPORT

Figure 1 Alternative 1: Collinsville Substation North of Talbert Lane (Retained)



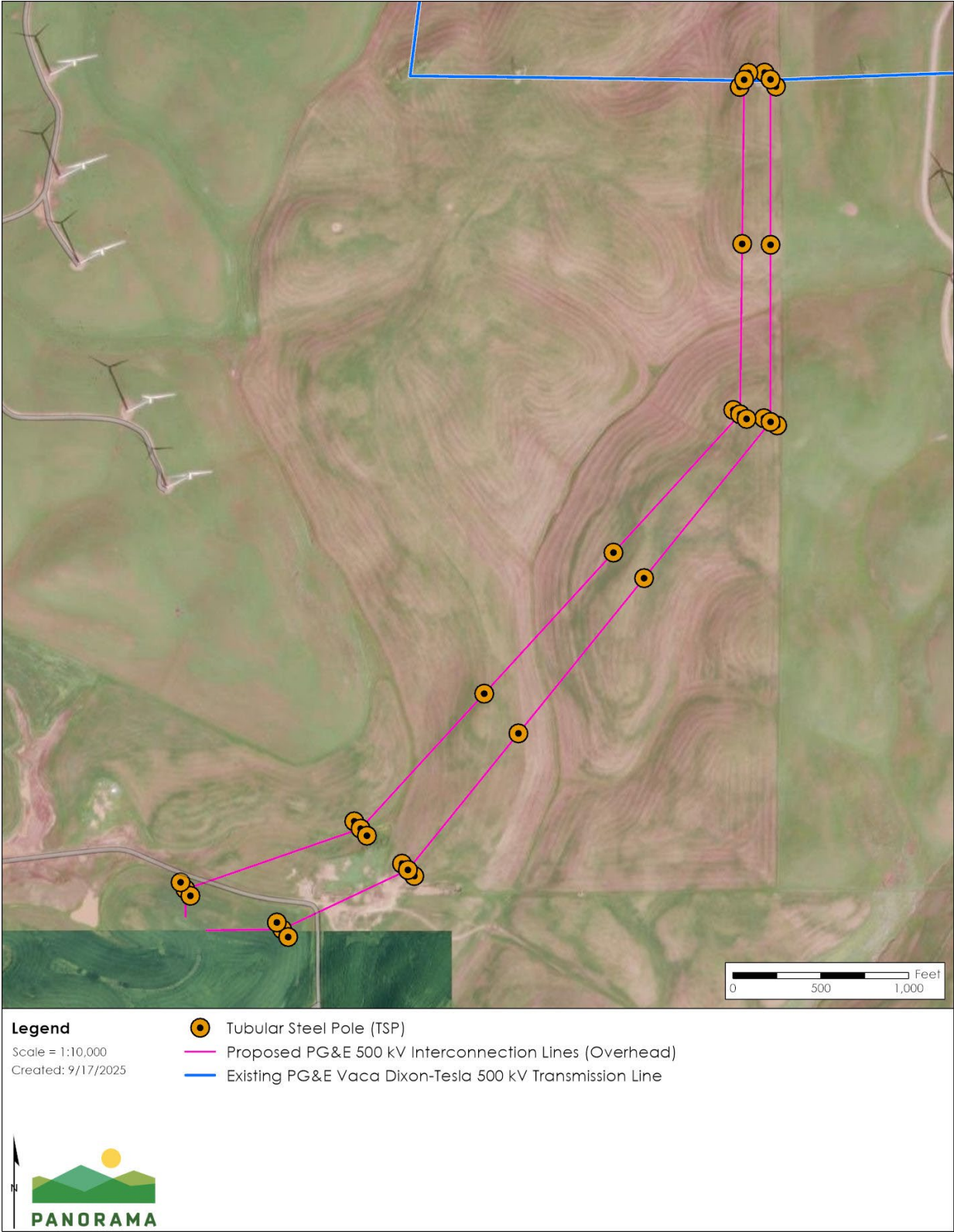
ALTERNATIVES SCREENING REPORT

Figure 2 Alternative 2: Collinsville Substation East of Wind Energy Substations (Retained)



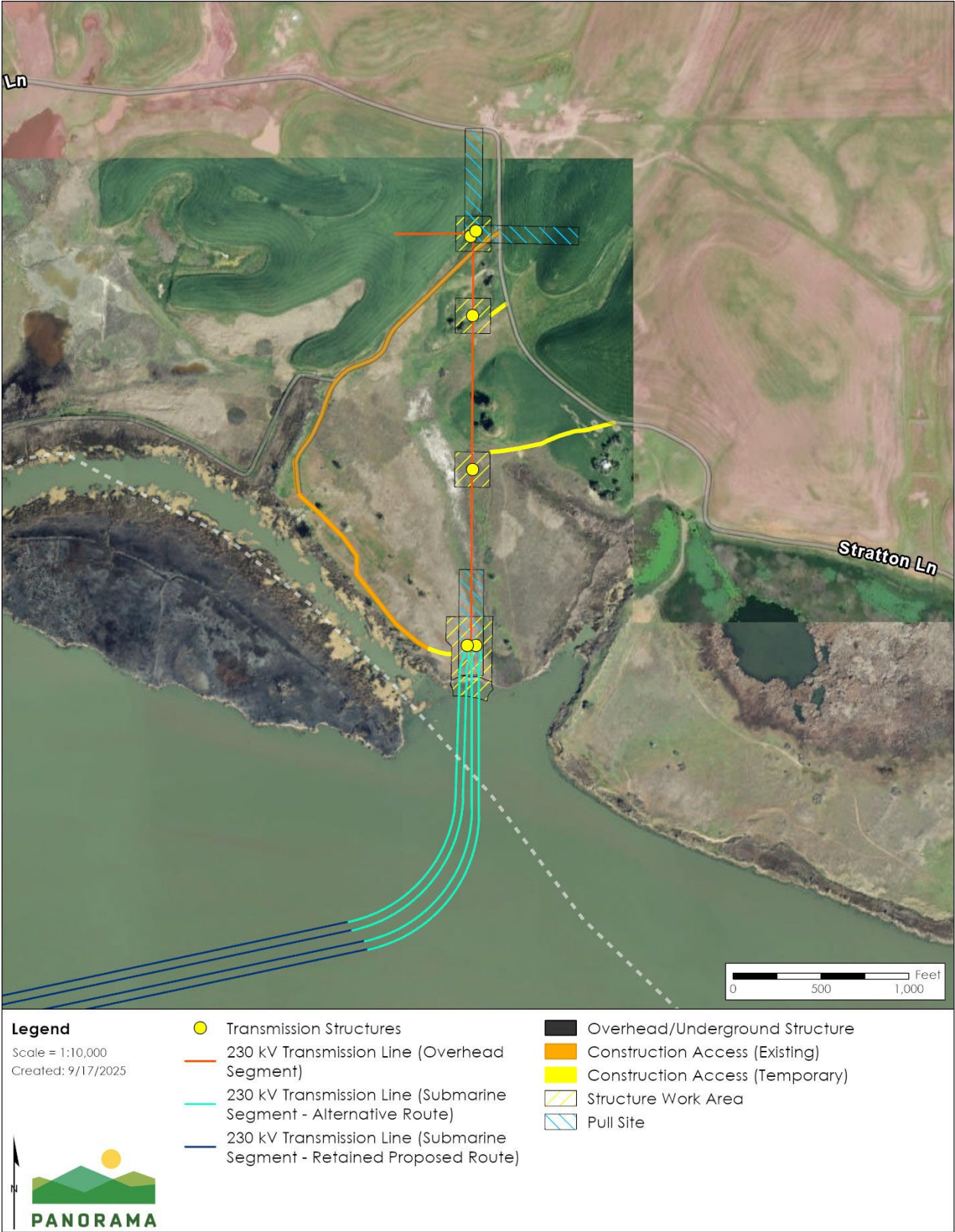
ALTERNATIVES SCREENING REPORT

Figure 3 Alternative 3: 500 kV Interconnection Lines on Entirely TSPs (Retained)



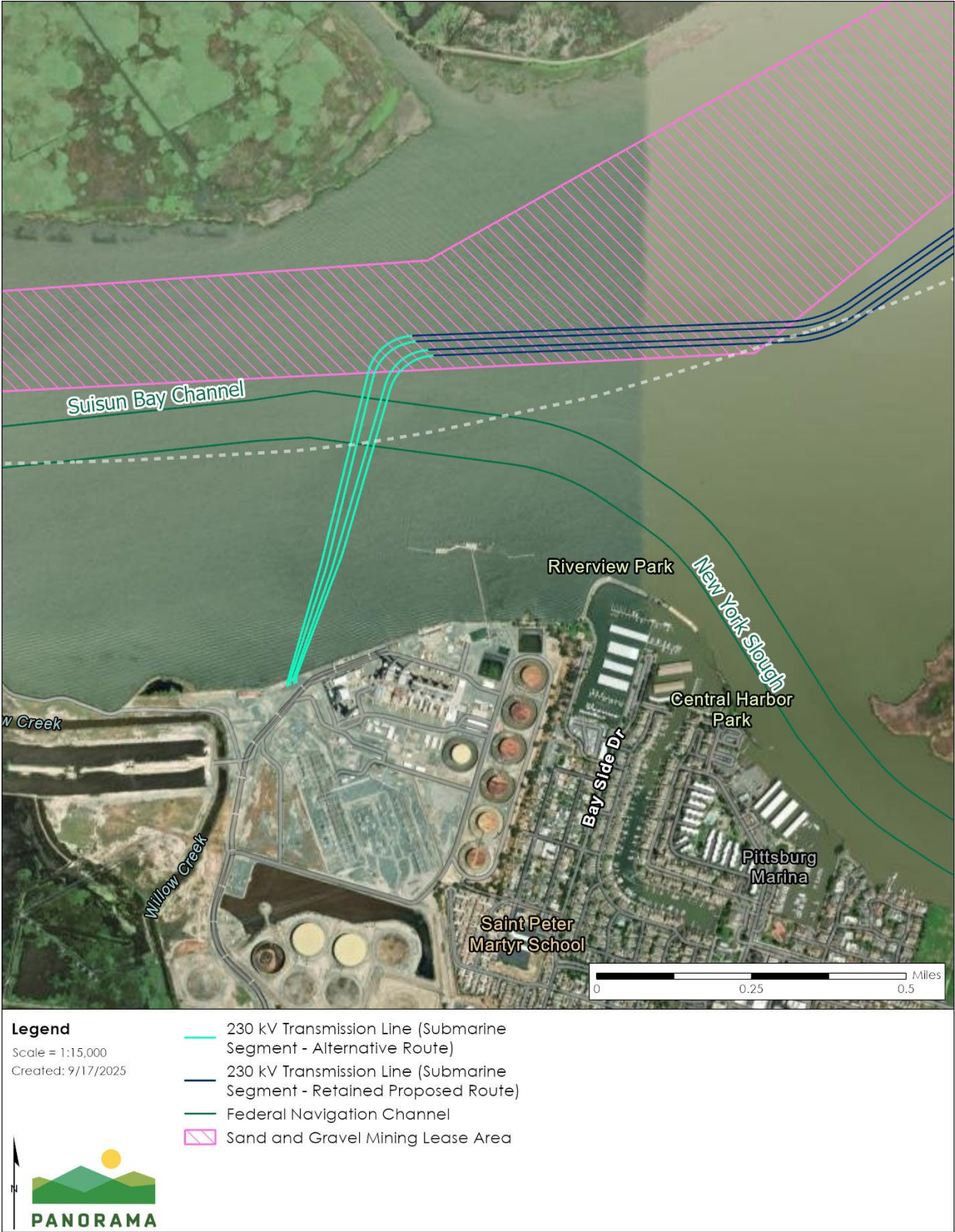
ALTERNATIVES SCREENING REPORT

Figure 4 Alternative 4: 230 kV Overhead Segment Alternative Route (Retained)



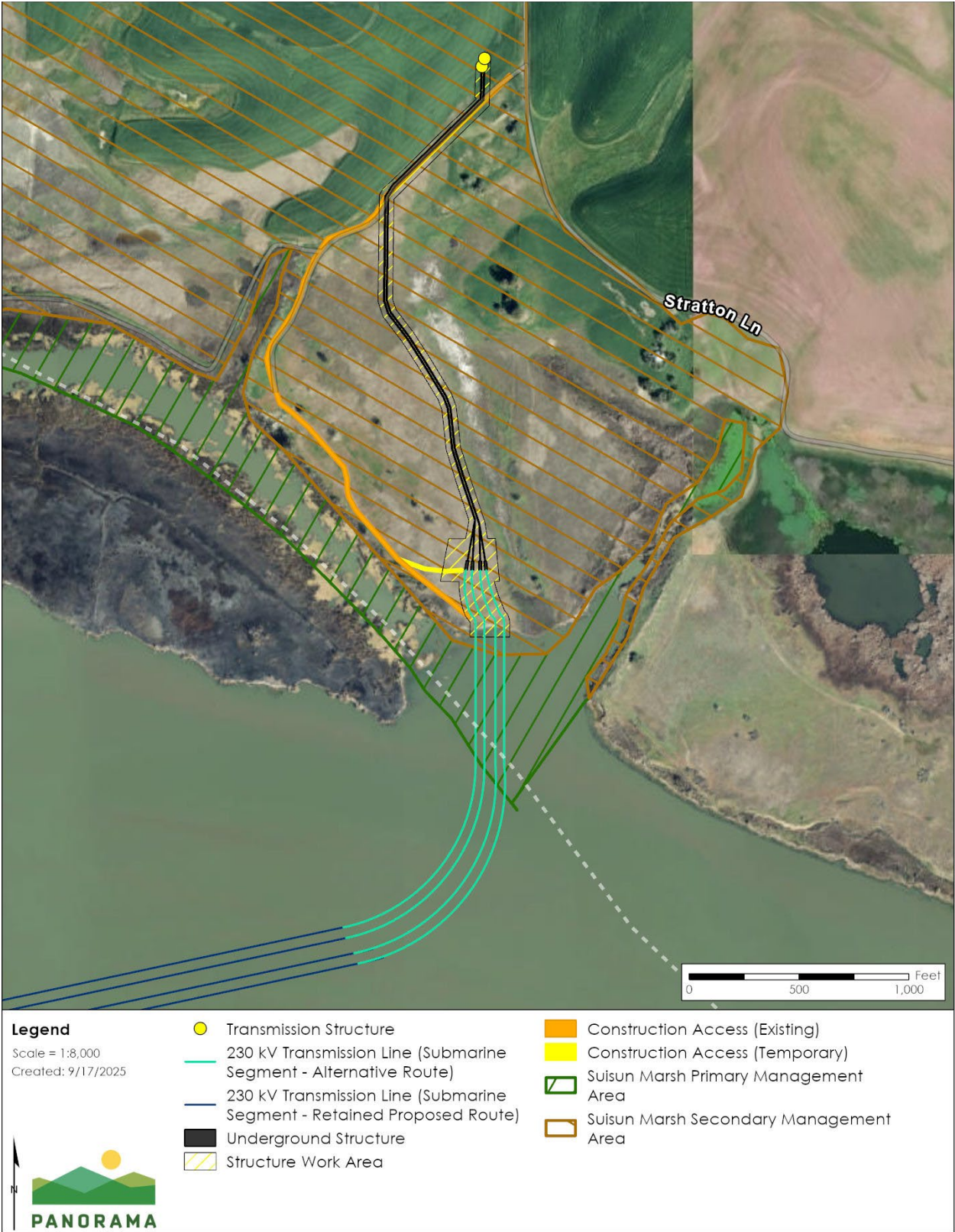
ALTERNATIVES SCREENING REPORT

Figure 5 Alternative 5: 230 kV Submarine Segment Alternative Route (Retained)



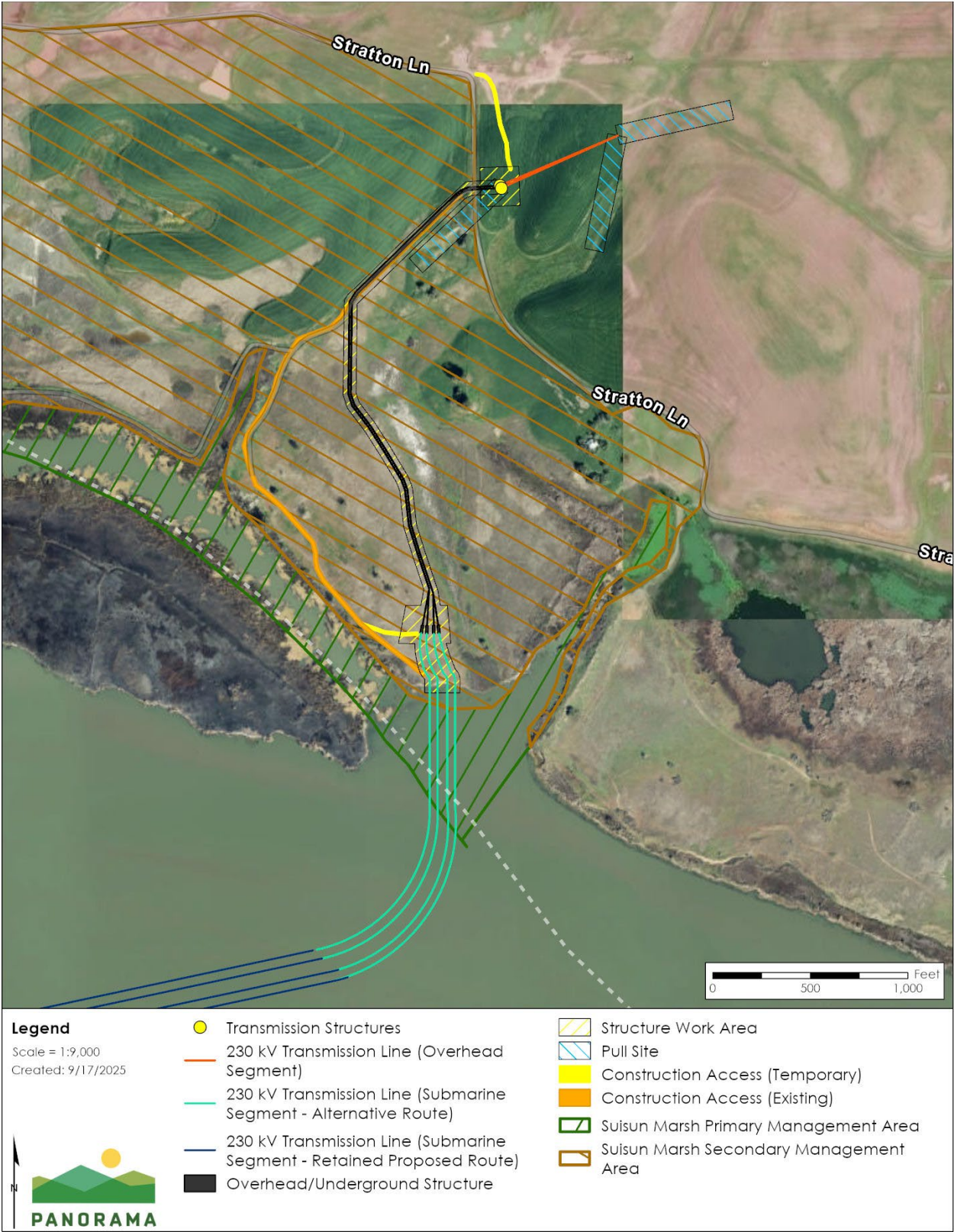
ALTERNATIVES SCREENING REPORT

Figure 6 **Alternative 6a: Underground Portions of the 230 kV Transmission Line within Suisun Marsh Protection Plan Management Areas (Retained)**



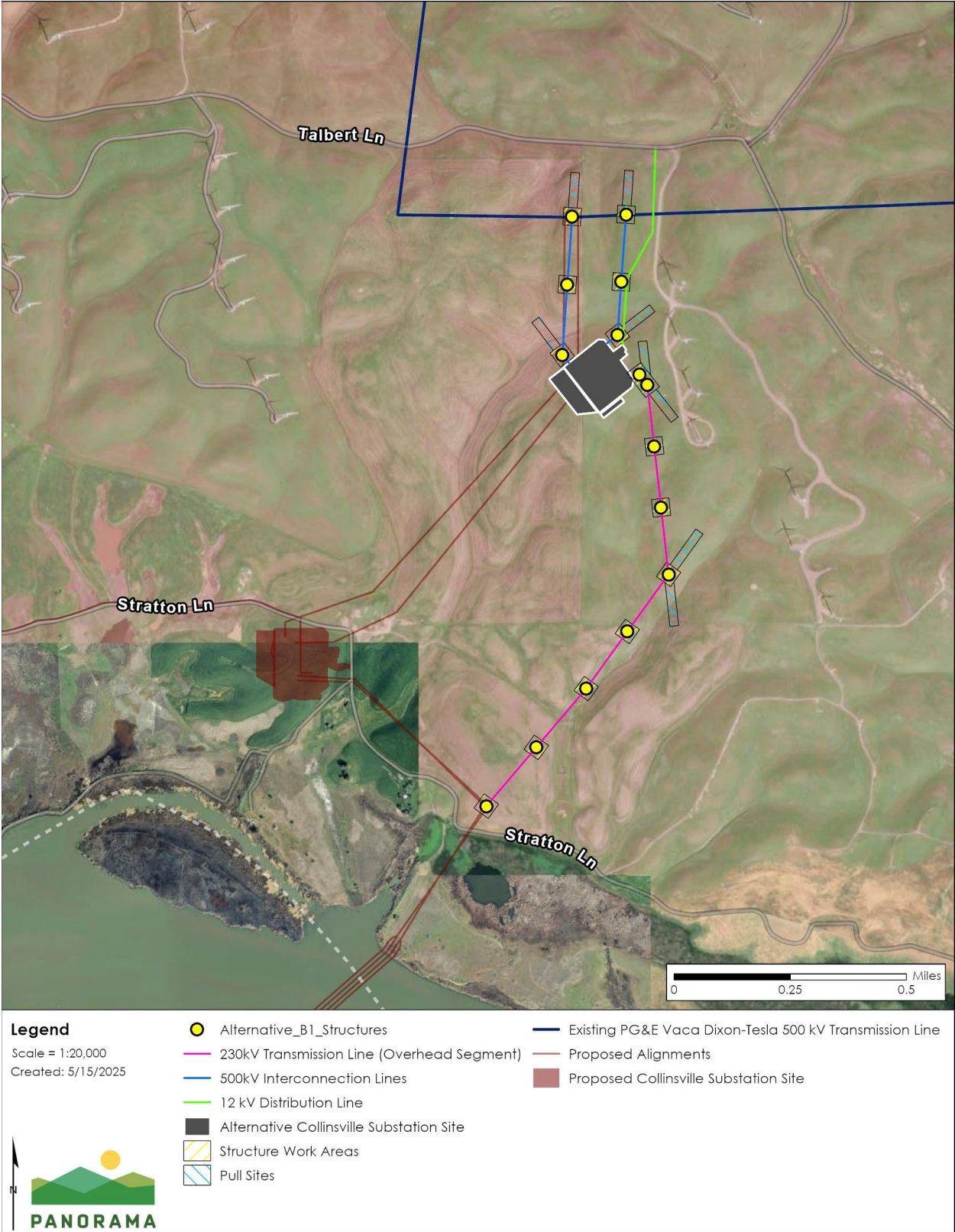
ALTERNATIVES SCREENING REPORT

Figure 7 Alternative 6a: Underground Portions of the 230 kV Transmission Line within Suisun Marsh Protection Plan Management Areas (Retained)



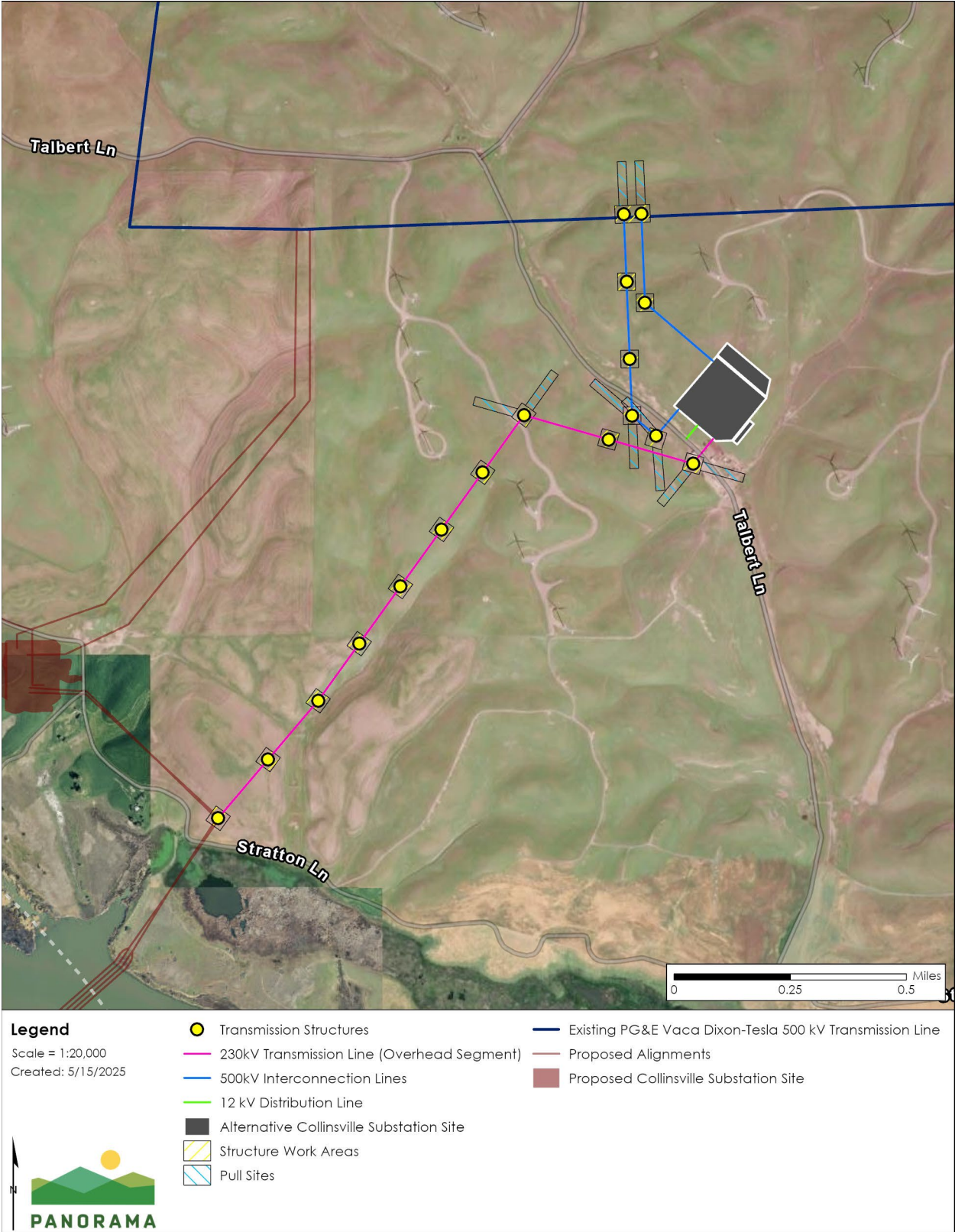
ALTERNATIVES SCREENING REPORT

Figure 8 Collinsville Substation Northeast of Proposed Location (Eliminated)



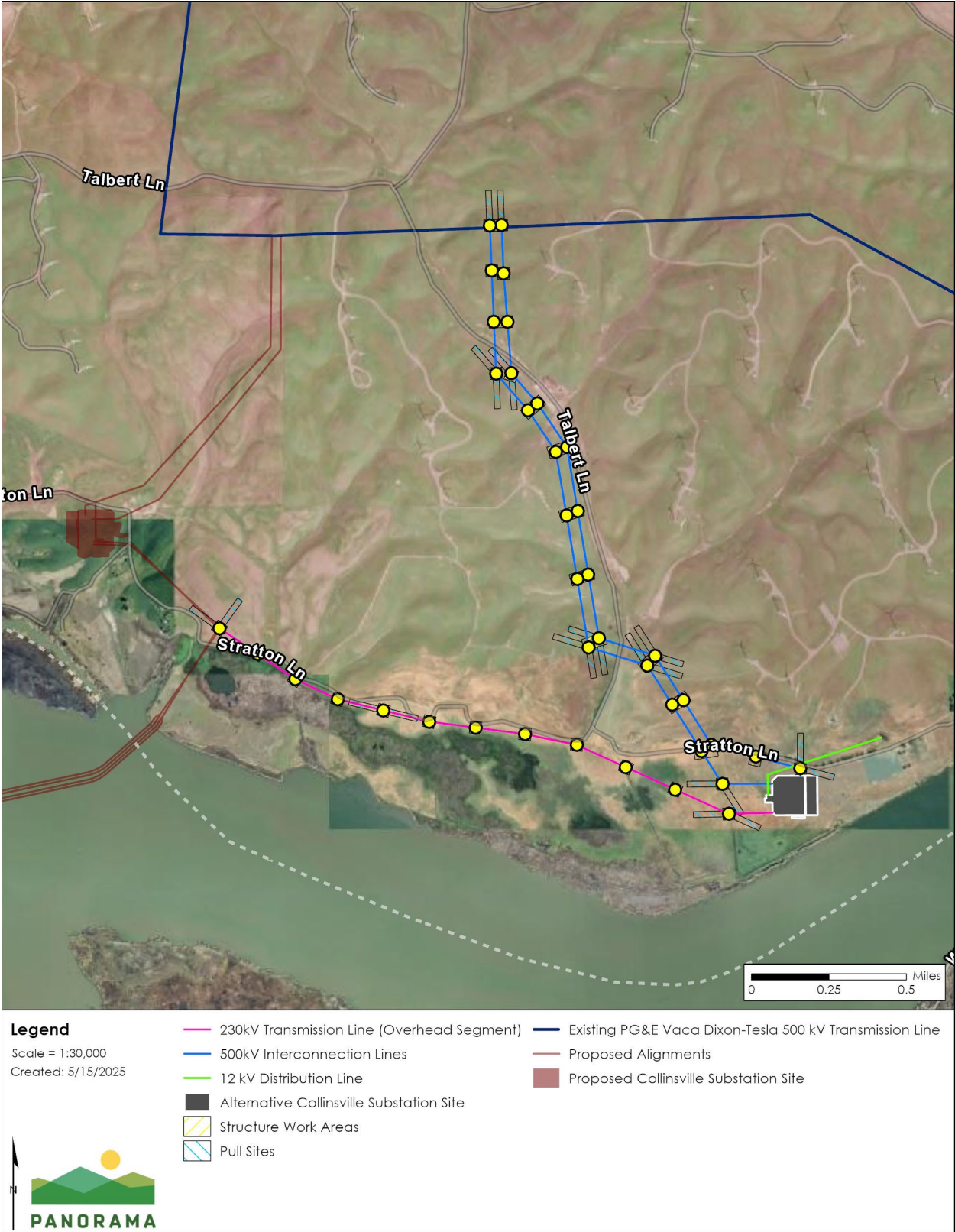
ALTERNATIVES SCREENING REPORT

Figure 9 Collinsville Substation East of Talbert Lane (Eliminated)



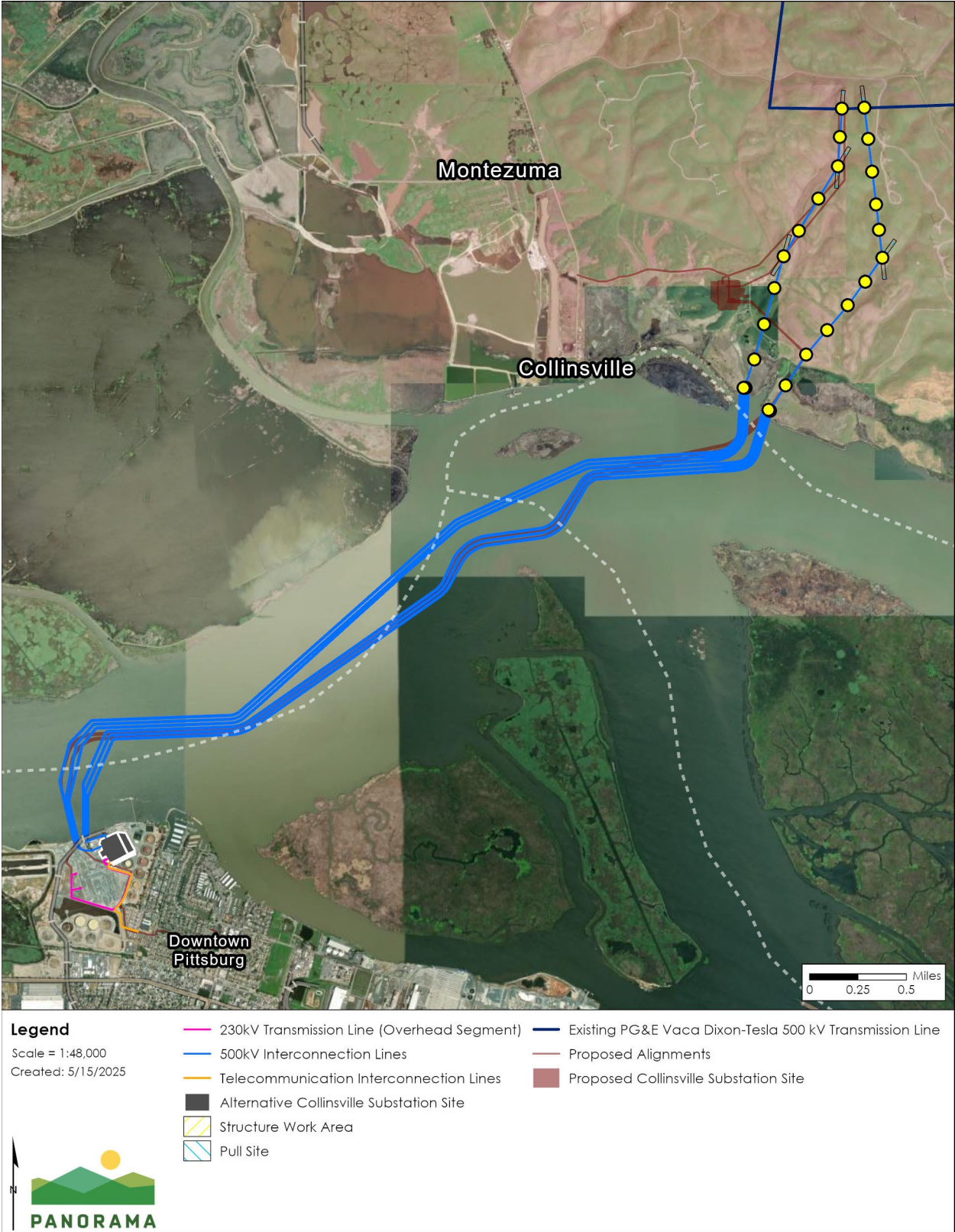
ALTERNATIVES SCREENING REPORT

Figure 10 Collinsville Substation on Industrial Zoned Land (Eliminated)



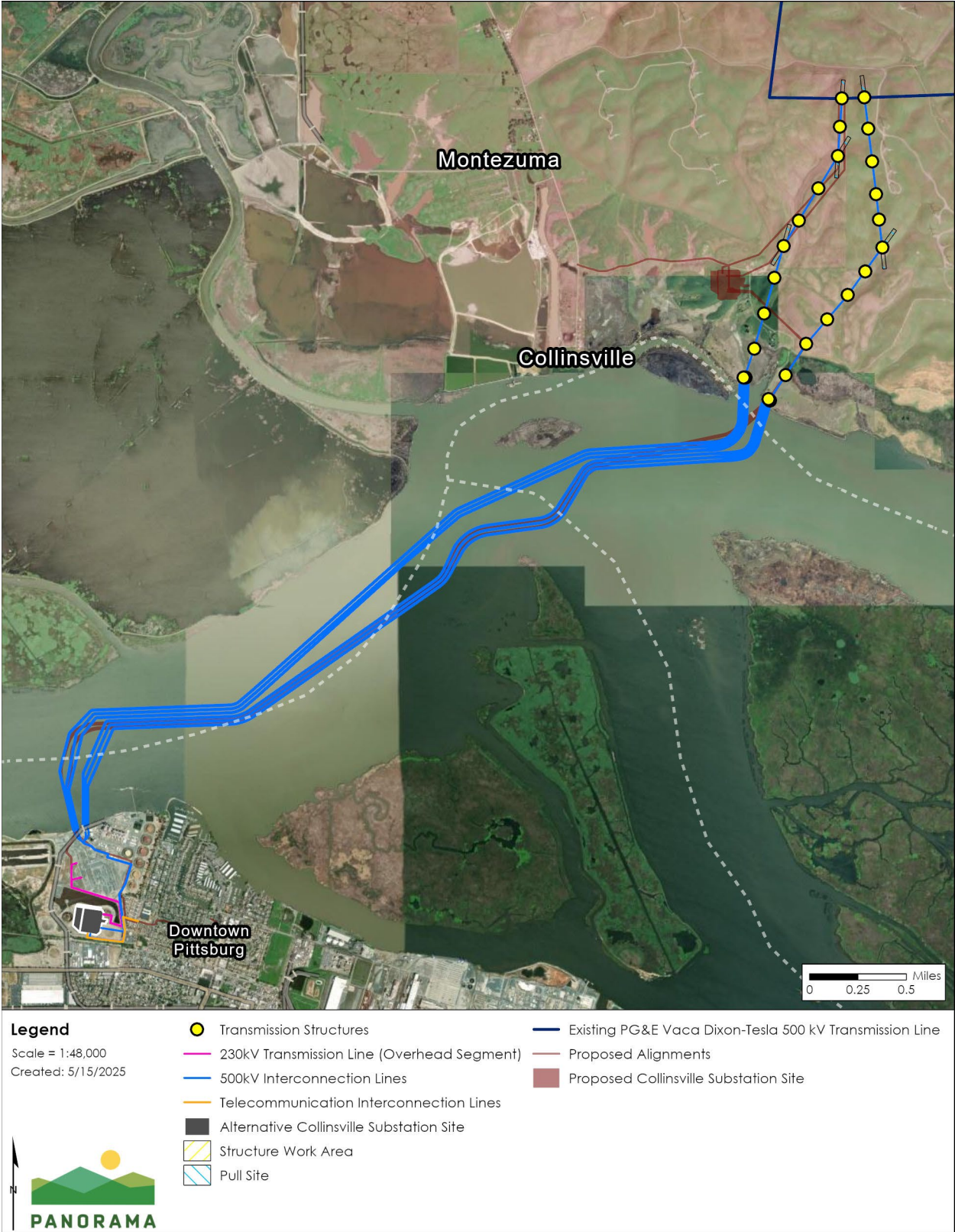
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Figure 11 Collinsville Substation North of Pittsburg Substation (Eliminated)



ALTERNATIVES SCREENING REPORT

Figure 12 Collinsville Substation South of Pittsburg Substation (Eliminated)



4.2 Alternatives Retained

4.2.1 Alternative 1: Collinsville Substation Site North of Talbert Lane

Description

Alternative 1 involves a different location for the Collinsville Substation, approximately 1.2 miles north of the proposed substation site, that is closer to PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line (approximately 900 feet west) (Figure 1). The Alternative 1 substation site is located approximately 500 feet north of Talbert Lane and approximately 1 mile east of Collinsville Road. The 500 kV interconnection lines would be approximately 0.4 mile long in total. The 230 kV overhead segment would extend from the alternative substation site south for approximately 1.8 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 700 feet long. Alternative 1 was identified by LSPGC in their PEA and CPCN Application. It was originally identified immediately south of Talbert Lane but was later moved to the north side of Talbert Lane.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation in proximity to the Vaca-Dixon Tesla 500 kV Transmission Line and an interconnection to the PG&E Pittsburg Substation that is functionally equivalent to the Proposed Project. The alternative may require additional time for engineering, which could make it challenging to achieve commercial operation by May 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

There are no known technical constraints to constructing the Alternative 1 substation. The Alternative 1 site avoids the hazard throw zone⁵ from the wind turbines in proximity to the site. The alternative also is under the same land ownership as the proposed Collinsville Substation site. The alternative thus meets legal feasibility and has no known regulatory feasibility challenges.

Environmental Feasibility

Environmental Advantages

Potential environmental advantages by resource area topic are as follows:

- **Land Use:** The alternative would relocate the substation outside of the Delta Plan and Suisun Marsh Projection Plan areas.
- **Biological Resources:** The alternative's reduction of the 500 kV transmission line length would avoid or reduce the need for new 500 kV LSTs within the wind farm and associated risks to avian species.

⁵ The hazard throw zone is the area that is at risk of a turbine blade throw during equipment failure. The hazard throw zone for each turbine includes areas within a linear distance of 1.1x the height of each turbine.

ALTERNATIVES SCREENING REPORT

- **Energy:** The alternative's reduction of the 500 kV transmission line length would avoid or reduce the need for new 500 kV LSTs within the wind farm and associated risk of curtailment of wind energy production.
- **Utilities and Service Systems:** The alternative would avoid 500 kV transmission structures in areas that could contain buried electrical lines.

Environmental Disadvantages

The disadvantages of this alternative are associated with the alternative LSPGC Collinsville Substation location being located on steeper terrain, which would require more grading. Potential environmental disadvantages by resources topic area are as follows:

- **Air Quality/Greenhouse Gases/Energy:** This alternative would require additional grading which would result in greater air quality and greenhouse gas emissions and more energy use for construction.
- **Geology and Soils:** The alternative would require more ground disturbance and could require more measures to provide a stable substation site such as retaining walls or other structures. The additional grading would result in increased potential for topsoil loss and erosion.
- **Hydrology:** The alternative could require more complex drainage management due to construction within a hill slope. The additional grading would result in increased potential for soil erosion and associated water quality impacts.

Conclusion

RETAINED FOR ANALYSIS. Alternative 1 meets the project objectives and is potentially feasible. The alternative would reduce significant environmental impacts on land use, biological resources, energy, and utilities and service systems without resulting in substantially greater environmental impacts. This alternative has, therefore, been retained for full analysis in the EIR.

4.2.2 Alternative 2: Collinsville Substation East of Wind Energy Substations

Description

Alternative 2 involves a different location for the Collinsville Substation, approximately 3.0 miles north of the proposed substation site, that is closer to PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line (approximately 200 to 300 feet east) and adjacent to existing wind energy substations (Figure 2). The Alternative 2 substation site would be approximately 1.0 mile southeast of the intersection of Birds Landing Road and Montezuma Hills Road. The 500 kV interconnection lines would be approximately 1,200 feet long. The 230 kV overhead transmission line would extend from the alternative substation site south for approximately 4.0 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 0.3 mile long. This alternative was developed by the CPUC.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation in proximity to the Vaca–Dixon Tesla 500 kV Transmission Line and an interconnection to the PG&E Pittsburg Substation that is functionally equivalent to the Proposed Project. The alternative may require additional time for engineering, which could make it challenging to achieve commercial operation by May 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

The proposed location for the LSPGC Collinsville Substation under this alternative would not require specialized construction methods, equipment and/or parts. The existing infrastructure north of Birds Landing Road would make interconnection difficult under this alternative due to complicated crossing of existing electrical lines with the 500 kV interconnection lines and 230 kV overhead segment. The alternative may require an underground line to avoid utility constraints; however, the alternative would be technically feasible and meets the technical feasibility criteria. The Alternative 2 site avoids the hazard throw zone from the wind turbines in proximity to the site. The alternative also is under the same land ownership as the proposed Collinsville Substation site. The alternative thus meets legal feasibility and has no known regulatory feasibility challenges.

Environmental Feasibility

Environmental Advantages

Potential advantages of this alternative by resource area topic are as follows:

- **Land Use:** The alternative would relocate the substation outside of the Delta Plan and Suisun Marsh Projection Plan areas.
- **Biological Resources:** The alternative's reduction of the 500 kV transmission line length would avoid or reduce the need for new 500 kV LSTs within the wind farm and associated risks to avian species.
- **Energy:** The alternative's reduction of the 500 kV transmission line length would avoid or reduce the need for new 500 kV LSTs within the wind farm and associated risk of curtailment of wind energy production.

Environmental Disadvantages

The potential disadvantages of this alternative by resource area topic are as follows:

- **Biological Resources:** The location of the substation under this alternative would be in an area of moderate potential for California tiger salamander compared to the low potential at the proposed Collinsville Substation.
- **Geology and Soil:** There is approximately 70 feet of elevation change east to west and another 50 feet of elevation change north to south as compared to the approximately 10 feet of elevation change east to west and south to north at the current proposed LSPGC Collinsville Substation location. These conditions would require significantly higher grading demands and slope stabilization measures.

ALTERNATIVES SCREENING REPORT

The additional grading would result in increased potential for topsoil loss and erosion.

- **Hydrology:** The alternative could require more complex drainage management due to construction within a hill slope. The additional grading would result in increased potential for soil erosion and associated water quality impacts.
- **Utilities:** The alternative has the potential for increased utility conflicts due to increased electrical infrastructure in the area of the Alternative 2 substation site.

Conclusion

RETAINED FOR ANALYSIS. Alternative 2 meets the project objectives and is potentially feasible. The alternative would reduce significant environmental impacts on land use, biological resources, and energy without resulting in substantially greater environmental impacts. This alternative has, therefore, been retained for full analysis in the EIR.

4.2.3 Alternative 3: 500 kV Interconnection Lines on Entirely TSPs

Description

Alternative 3 involves the use entirely of tubular steel poles (TSPs) for the 500 kV interconnection lines instead of the proposed combination of lattice steel towers (LSTs) and three-pole TSPs (Figure 3). The TSPs may be monopoles (single pole structures) or multipole structures (i.e., three-pole structures or H-frame structures) depending on engineering requirements. The 500 kV interconnection lines would be in the same general alignment as the Proposed Project. This alternative was developed based on scoping comments and coordination with SMUD.

Consideration of CEQA Criteria

Project Objectives

The 500 kV line on entirely TSPs instead of a primarily on LSTs with some TSPs would be functionally equivalent to the Proposed Project. The alternative could require additional time for engineering and may not be in operation by May 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

The alternative is potentially technically feasible. 500 kV lines have been located on TSPs for other projects; however, PG&E does not have 500 kV lines located on single TSP monopoles for the length of the proposed 500 kV interconnection line. Use of TSPs may require multi-pole structures to provide the required stability for the line. The alternative is under the same land ownership as the proposed Collinsville Substation site. The alternative thus meets legal feasibility and has no known regulatory feasibility challenges.

ALTERNATIVES SCREENING REPORT

Environmental Feasibility

Environmental Advantages

Potential environmental advantages by resources area topic are as follows:

- **Biological Resources:** The alternative's use of TSPs in lieu of LSTs would reduce the potential for raptor nesting and perching and associated risks of interactions with the adjacent wind facilities.
- **Energy:** The alternative's use of TSPs in lieu of LSTs would reduce the potential for raptor nesting and perching and associated risks of interactions with the adjacent wind facilities.

Environmental Disadvantages

Potential environmental disadvantages by resource area topic are as follows:

- **Geology:** The large monopole structures may require more complex geotechnical engineering and construction methods and could require more foundation work.

Conclusion

RETAINED FOR ANALYSIS. Alternative 3 meets the project objectives and is potentially feasible. The alternative could reduce significant environmental impacts on biological resources and energy resources without resulting in substantially greater environmental impacts. This alternative has, therefore, been retained for full analysis in the EIR.

4.2.4 Alternative 4: 230 kV Overhead Segment Alternative Route

Description

Alternative 4 involves a different route for the 230 kV overhead segment between the proposed Collinsville Substation and the Delta west of the proposed route located on PG&E-owned property (Figure 4). The alternative 230 kV overhead segment route would extend approximately 0.4 mile directly south of the proposed substation site to the northern shore of the Delta. Alternative 4 was identified by LSPGC as a way of avoiding the blade throw hazard zones of wind turbines in the vicinity of the proposed 230 kV overhead segment route.

Consideration of CEQA Criteria

Project Objectives

Alternative 4 would be functionally equivalent to the Proposed Project. The alternative could require additional time for engineering and may not be in operation by May 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

There are no known technical constraints to Alternative 4. The Alternative 4 alignment avoids the hazard throw zone from the wind turbines along the Proposed Project overhead segment. The alternative would be located within land owned by PG&E, who is a party to the project, and would have similar regulator permitting requirements as the proposed overhead segment. The alternative thus meets legal feasibility and has no known regulatory feasibility challenges.

ALTERNATIVES SCREENING REPORT

Environmental Feasibility

Environmental Advantages

Environmental advantages by resource area topic are as follows:

- **Hazards:** The alternative avoids the hazard throw zone for wind turbines.
- **Biological and Cultural Resources:** The alternative has a shorter segment of 230 kV transmission line and may reduce impacts due to the requirement for fewer 230 kV structures.

Environmental Disadvantages

Potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Biological Resources:** There may be additional wetlands and sensitive biological resources within the area of the 230 kV overhead segment.

Conclusion

RETAINED FOR ANALYSIS. Alternative 4 meets project objectives and is potentially feasible. The alternative would avoid significant impacts from location within the hazard throw zone from the wind farm without resulting in substantially greater environmental impacts. This alternative has, therefore, been retained for full analysis in the EIR.

4.2.5 Alternative 5: 230 kV Submarine Segment Alternative Route

Description

Alternative 5 involves changes to portions of the proposed 230 kV submarine segment route to reduce the total area where the submarine cables would be within an existing sand and gravel mining lease (Figure 5). Alternative 4 was developed by LSPGC based on their coordination with the State Lands Commission and the mining lease holder to minimize impacts on mining activities.

Project Objectives

Alternative 5 only relocates a portion of the submarine segment. The alternative would be functionally equivalent to the Proposed Project and would meet all project objectives.

Technical, Legal, and Regulatory Feasibility

The alternative would be constructed in the same manner as the Proposed Project and would be technically feasible. The alternative would require similar lease from State Lands Commission for the submarine segment and would have similar requirements for navigation from U.S. Army Corps of Engineers to the Proposed Project and would meet legal and regulatory feasibility.

ALTERNATIVES SCREENING REPORT

Environmental Feasibility

Environmental Advantages

Environmental advantages by resource area topic are as follows:

- **Minerals:** The alternative would reduce conflicts with sand mining leases and associated mineral extraction.

Environmental Disadvantages

There are no known potential environmental disadvantages.

Conclusion

RETAINED FOR ANALYSIS. Alternative 5 meets the project objectives and is potentially feasible. The alternative would reduce impacts on mineral resources without resulting in substantially greater environmental impacts. This alternative has, therefore, been retained for full analysis in the EIR.

4.2.6 Alternative 6a/6b: Underground Portions of the 230 kV Transmission Line within Suisun Marsh Protection Plan Management Areas

Description

Alternative 6a/6b involves an underground 230 kV transmission line within a different area than the 230 kV overhead segment between the proposed Collinsville Substation and the Delta. The underground transmission line would be located west of the proposed route located on PG&E-owned property as shown in Figure 6 and Figure 7. The underground 230 kV route would be located in roads and routed to avoid wetlands where possible and would extend south of the proposed substation site to the northern shore of the Delta. Alternative 6a/6b was identified by LSPGC as a way of minimizing impacts on the Suisun Marsh Protection Plan Management Area.

Consideration of CEQA Criteria

Project Objectives

Alternative 6a/6b would be functionally equivalent to the Proposed Project. The alternative could require additional time for engineering and may not be in operation by May 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

There are no known technical constraints to Alternative 6a/6b. The Alternative 6a/6b alignment avoids the hazard throw zone from the wind turbines along the Proposed Project overhead segment and it would be located underground to minimize conflicts with the Suisun Marsh Protection Plan. The alternative would be located within land owned by PG&E, who is a party to the project, and would have similar regulator permitting requirements as the proposed overhead segment. The alternative thus meets legal feasibility and has no known regulatory feasibility challenges.

Environmental Feasibility

Environmental Advantages

Environmental advantages by resource area topic are as follows:

- **Hazards:** The alternative avoids the hazard throw zone for wind turbines.
- **Land Use:** The alternative would be located underground and may reduce potential for conflict with the Suisun Marsh Protection Plan

Environmental Disadvantages

Potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Biological Resources:** The underground construction would result in greater disturbance (trenching) and increased potential impacts on biological resources.
- **Cultural Resources and Tribal Cultural Resources:** The underground construction would result in increased potential for cultural and tribal cultural resource impacts.
- **Hydrology and Water Quality and Geology and Soils:** The underground construction and vaults along the shoreline would result in increased potential for water quality impacts, soil impacts, and paleontological impacts.

Conclusion

RETAINED FOR ANALYSIS. Alternative 6a/6b meets project objectives and is potentially feasible. The alternative would avoid significant impacts from location within the hazard throw zone from the wind farm without resulting in substantially greater environmental impacts. This alternative has, therefore, been retained for full analysis in the EIR.

4.3 Alternatives Eliminated

4.3.1 Substation Alternatives Eliminated

Collinsville Substation Northeast of Proposed Site

Description

The alternative substation site B1 involves a different location for the Collinsville Substation, approximately 0.7 mile northeast of the proposed substation site, that is closer to PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line (approximately 0.3 mile south) (Figure 8). The alternative substation site B1 would be approximately 0.7 mile south of Talbert Lane. The 500 kV interconnection lines would be approximately 0.6 mile long in total. The 230 kV overhead transmission line would extend from the alternative substation site south for approximately 1.4 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 0.4 mile long. This alternative was developed by LSPGC as a variant to alternative substation sites identified by the CPUC (i.e., Site B2).

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation in proximity to the Vaca Dixon–Tesla 500 kV transmission line and an interconnection to the PG&E Pittsburg Substation that is functionally equivalent to the Proposed Project. The alternative may require additional time for engineering, which could make it challenging to achieve commercial operation by June 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

Under this alternative, the location of the LSPGC Collinsville Substation would be surrounded by wind turbines on three sides. This would make it challenging to interconnect the future 230 kV and 500 kV lines that are planned for in the Proposed Project. However, it is likely that the alternative would be technically feasible. The alternative is located within areas that are under the same land ownership as the Proposed Project. The alternative has greater potential to conflict with the existing wind farm access and electrical lines due to closer proximity to the wind farm. While these conflicts could make the location infeasible, for the purpose of this analysis, the location is considered potentially feasible.

Environmental Feasibility

Environmental Advantages

The environmental advantages of this alternative by resource area topic are as follows:

- **Land Use:** The alternative would relocate the substation outside of the Delta Plan and Suisun Marsh Projection Plan areas.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Air Quality/Greenhouse Gases:** The location of the substation under this alternative would be in difficult topography, resulting in more extensive grading and leading to higher air pollutant emissions during construction due to increased truck trips.
- **Biological Resources:** The location of the substation under this alternative would be closer to the wind farm and could result in increased impact from avian collisions with wind turbines.
- **Geology and Soil:** There is approximately 70 feet of elevation change east to west and another 50 feet of elevation change north to south as compared to the approximately 10 feet of elevation change east to west and south to north at the current proposed LSPGC Collinsville Substation location. These conditions would require significantly higher grading demands and slope stabilization measures. The additional grading would result in increased potential for topsoil loss and erosion.

ALTERNATIVES SCREENING REPORT

- **Hydrology:** The alternative could require more complex drainage management due to construction within a hill slope. The additional grading would result in increased potential for soil erosion and associated water quality impacts.
- **Utilities:** The location would have greater impacts on SMUD electrical lines within the wind farm and could require relocation of infrastructure.

Conclusion

ELIMINATED. Alternative Substation Site B1 is eliminated from further analysis because it would not reduce or avoid any significant impacts associated with the proposed Project and would generate additional environmental impacts and conflicts with the wind farm. This alternative has therefore been eliminated from full analysis in the EIR.

Collinsville Substation East of Talbert Lane (Site B2)

Description

The alternative substation site B2 involves a different location for the Collinsville Substation, approximately 1.4 miles northeast of the proposed substation site, that is closer to PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line (approximately 0.3 mile south) (Figure 9). The alternative substation site B2 would be approximately 200 feet east of Talbert Lane. The 500 kV interconnection lines would be approximately 1.0 mile long in total. The 230 kV overhead transmission line would extend from the alternative substation site southeast for approximately 1.9 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 200 feet long. This alternative was developed by the CPUC.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation in proximity to the Vaca Dixon-Tesla 500 kV transmission line and an interconnection to the PG&E Pittsburg Substation that is functionally equivalent to the Proposed Project. The alternative may require additional time for engineering, which could make it challenging to achieve commercial operation by May 2028; however, it would still meet most project objectives.

Technical, Legal, and Regulatory Feasibility

The technical needs of this alternative would not exceed those of the Proposed Project. The proposed location for the LSPGC Collinsville Substation under this alternative would not require specialized construction methods, equipment and/or parts. Accordingly, this alternative meets the technical feasibility criteria.

The alternative is located on land owned by the same landowner as the proposed project is considered legally feasible to implement. There are no regulator challenges to developing the substation at the alternative B site. The alternative also meets regulatory feasibility criteria.

Environmental Feasibility

Environmental Advantages

ALTERNATIVES SCREENING REPORT

The environmental advantages of this alternative by resource area topic are as follows:

- **Land Use:** The location would be outside of the Delta Plan secondary zone.
- **Biological Resources and Energy:** The proposed 500 kV transmission interconnection line would be shorter than the Proposed Project would require fewer LSTs. The impact to raptor perching and conflicts with the wind towers would be slightly less than the Proposed Project.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Agricultural Resources:** The alternative is located in an active agricultural production area and would have greater impacts on agricultural resources than the Proposed Project.

Conclusion

ELIMINATED. The alternative substation site B2 is eliminated from further analysis because it would only minimally reduce impacts from raptor conflicts with the reduced number of LSTs and would avoid location in the Delta Plan secondary zone but would result in greater impacts on agricultural use. Since there are other substation site alternatives that will be considered in detail and would not involve loss of active agricultural production (i.e., Alternative 1 and Alternative 2), this alternative has been eliminated from full analysis in the EIR.

Collinsville Substation on Industrial Zoned Land (Site C)

Description

The alternative substation site C involves a different location for the Collinsville Substation, approximately 2.3 miles southeast of the proposed substation site, that is on land zoned for industrial use immediately adjacent to the north shore of the Delta (Figure 10). The alternative substation site C would be approximately 200 feet south of Stratton Lane and 400 feet northwest of the Delta. The 500 kV interconnection lines would be approximately 4.5 miles long in total. The 230 kV overhead segment would extend from the alternative substation site east for approximately 2.2 miles to the proposed transition structures on the northern shore of the Delta. The 12 kV distribution line would be approximately 0.5 mile long. This alternative was developed by the CPUC.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation and an interconnection with the Vaca Dixon–Tesla 500 kV Transmission Line and an interconnection to the PG&E Pittsburg Substation that is functionally equivalent to the Proposed Project. The 500 kV interconnection would be longer than the Proposed Project. The alternative may require additional time for engineering, which could make it challenging to achieve commercial operation by June 2028; however, it would still meet most project objectives.

ALTERNATIVES SCREENING REPORT

Technical, Legal, and Regulatory Feasibility

The technical needs of this alternative would not exceed those of the Proposed Project. The proposed location for the LSPGC Collinsville Substation under this alternative would not require specialized equipment and/or parts to complete the Proposed Project. The substation site would be located within a floodplain and may require additional fill to raise the substation site above the floodplain; however, it is considered technically feasible to achieve the required elevation. As such, this alternative meets the technical feasibility criteria.

The alternative substation site C is zoned as Industrial – Water Dependent (I-WD). Areas zoned as I-WD are waterfront lands within Solano County that are of statewide and regional importance because they are among the few remaining deep-water sites suitable for water-dependent industries. As the project is not a water-dependent industry, it would be inconsistent with the zoning; however, the CPUC has overriding jurisdiction for the Project, and the zoning conflict would not make the alternative infeasible. The alternative would be on land that is under the same ownership as the Collinsville Substation site, and development on the site is potentially legally feasible; however, the landowner has proposed use of the site for ship building, which may conflict with the substation siting. While there could be potential feasibility challenges due to other development proposals, the site is considered potentially feasible given the lack of definition in the other site development plans.

Environmental Feasibility

Environmental Advantages

The alternative would not avoid any significant environmental impacts of the Proposed Project.

Environmental Disadvantages

The potential disadvantages of this alternative by resource area topic are as follows:

- **Air Quality/Noise:** The longer extent of 500 kV and 230 kV transmission lines would require increased construction activity and increased emissions. The transmission lines would surround a potential sensitive receptor at 6684 Talbert Lane on three sides.
- **Geology and Soil:** The soil conditions are less favorable than for the Proposed Project due to proximity to the river and placement on top of dredge spoils, which could lead to significant cost impacts—particularly if the pier foundation depths and slab foundations require additional subsurface improvements.
- **Land Use:** The alternative substation site C is zoned as Industrial – Water Dependent (I-WD) District. Certain waterfront lands within Solano County are of statewide and regional significance because they are among the few remaining deep-water sites suitable for water-dependent industries.
- **Hydrology:** Location within a floodplain would create additional risks of water quality impacts due to flooding as well as impacts on the floodplain.
- **Biological Resources and Energy:** The alternative would require a larger extent of 500 kV interconnection transmission LSTs within the wind farm, which could increase avian interactions with the wind farm. The alternative would be located adjacent the Delta and construction would have increased impacts on species within the delta from

ALTERNATIVES SCREENING REPORT

potential pile driving as well as increased impacts on wetlands and habitats adjacent the Delta.

- **Cultural Resources and Tribal Cultural Resources:** The alternative is located in areas that are very sensitive for tribal cultural resources and would have greater sensitivity than the proposed Collinsville Substation site.

Conclusion

ELIMINATED. Alternative Substation Site C is eliminated from further analysis because it would not measurably reduce any significant impact of the Proposed Project and would generate additional environmental impacts. This alternative has therefore been eliminated from full analysis in the EIR.

Collinsville Substation North of Pittsburg Substation (Site D)

Description

The alternative substation site D involves a different location for the Collinsville Substation, approximately 4.1 miles southwest of the proposed substation site on the south side of the Delta (Figure 11). The alternative substation site D would be at an abandoned PG&E power plant immediately north of the existing Pittsburg Substation. The 500 kV interconnection lines would extend from PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line for a total corridor distance of roughly 6.5 miles, with approximately 1.6 miles in the overhead position and 5.9 miles in the submarine position.⁶ The 230 kV underground segment would extend from the alternative substation site to the southwest side of Pittsburg Substation for approximately 0.8 mile. This alternative was developed in response to scoping comments from California Forever, which requested consideration of an alternative substation location south of the Delta near the existing Pittsburg Substation site.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation site. Two seasonal windows would be required to install 12 submarine cables, which would cause the cable installation to occur a year later and after the May 2028 CAISO operational date. However, the alternative is considered potentially able to meet most basic project objectives by providing a new source of 500 kV power into the Bay Area.

Technical, Legal, and Regulatory Feasibility

Submerged 500 kV transmission cables are not commercially available. Due to the need for dual landing points on the north shore, two separate 500 kV corridors would be required to avoid the wind turbine throw-distance buffers. Further, the combination of 500 kV and 230 kV duct banks needed for the Proposed Project and the existing Transbay duct banks would completely

⁶ Under the alternative substation site D scenario, the total length of the 500 kV overhead lines would be at least two times greater than the corridor length. Each circuit of the 500 kV submarine lines would include 6 cables; therefore, the total length of the 500 kV submarine cables would be approximately 12 times greater than the corridor length.

ALTERNATIVES SCREENING REPORT

encircle the substation due to spacing needed between each of the duct. This would prevent any future lines from being able to access the Collinsville Substation, including any required upgrades, which would constrain operation and expansion of this substation. Accordingly, this alternative would not meet the technical feasibility criteria as the technology for a buried 500 kV line is not commercially available.

Planning for a housing development at alternative substation site D is in progress by Lennar Homes and is supported by the City of Pittsburg (refer to EIR Section 4.0). Development of a substation at this location would conflict with the proposed development plans; however, for purposes of this analysis it is possible the alternative could meet legal feasibility criteria due to CPUC overriding jurisdiction.

As similar to the Proposed Project, LSPGC or PG&E would obtain any necessary permits, licenses, or certifications required prior to construction and operation of the Proposed Project. Accordingly, this alternative would meet regulatory feasibility criteria.

Environmental Feasibility

Environmental Advantages

The environmental advantages of this alternative by resource area topic are as follows:

- **Agriculture:** The alternative would avoid development of the substation on areas zoned for agricultural use.

Environmental Disadvantages

The potential disadvantages of this alternative by resource area topic are as follows:

- **Air Quality/GHG:** This alternative would require an increase in cut/fill values due to the likely contamination at this site, which would lead to an increase in emissions during construction.
- **Biological Resources.** The increased number of cables crossing the Delta would have greater potential for impacts on fish and marine mammals. The alternative would also require more LSTs, which would result in greater potential for avian interactions with wind turbines.
- **Hazards and Hazardous Materials:** Under this alternative, the proposed LSPGC Collinsville Substation would be developed on the abandoned PG&E Power Plant site; accordingly, there is a high probability of contamination at the site, which would require remediation.
- **Mineral Resources:** Additional submarine cables would have a significantly greater impact on sand mining lease areas.

Conclusion

ELIMINATED. Alternative substation site D is eliminated from further analysis because it would not be technically feasible. This alternative has therefore been eliminated from full analysis in the EIR.

Collinsville Substation South of Pittsburg Substation (Site E)

Description

The alternative substation site E involves a different location for the Collinsville Substation, approximately 4.5 miles southwest of the proposed substation site, on the south side of the Delta (Figure 12). The alternative substation site E would be located at an abandoned material storage area where large aboveground storage tanks are currently present immediately south of the existing Pittsburg Substation. The 500 kV interconnection lines would extend from PG&E's existing Vaca Dixon–Tesla 500 kV Transmission Line for a total corridor distance of roughly 7.5 miles, with approximately 1.6 miles in the overhead position, 5.9 miles in the submarine position, and 1.0 mile in the underground position.⁷ The 230 kV underground segment would extend from the alternative substation site to the southwest side of Pittsburg Substation for approximately 0.7 mile. This alternative was developed in response to scoping comments from California Forever, which requested consideration of an alternative substation location south of the Delta near the existing Pittsburg Substation site.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes a new substation site. Two seasonal windows would be required to install 12 submarine cables, which would require an additional year for construction and cause the cable installation to occur after the May 2028 operational date for in the CAISO transmission plan. However, the alternative is considered potentially able to meet most basic project objectives by providing a new source of 500 kV power into the Bay Area.

Technical, Legal, and Regulatory Feasibility

Submerged 500 kV transmission cables are not commercially available. Due to the need for dual landing points on the north shore, two separate 500 kV corridors would be required to avoid the wind turbine throw distance buffers. Further, the combination of 500 kV and 230 kV duct banks needed for the Proposed Project and the existing Transbay duct banks would completely encircle the substation due to spacing needed between each of the duct. This would prevent any future lines from being able to access the Collinsville Substation, including any required upgrades, which would constrain operation and expansion of this substation. Accordingly, this alternative would not meet the technical feasibility criteria because 500 kV submarine cables is not commercially available.

Planning for a housing development at substation site D is in progress by Lennar Homes and is supported by the City of Pittsburg. Development of a substation at this location would conflict with the proposed development plans; however, for purposes of this analysis, it is possible the alternative could meet legal feasibility criteria due to CPUC overriding jurisdiction.

⁷ Under the alternative substation site E scenario, the total length of the 500 kV overhead lines would be at least two times greater than the corridor length. Each circuit of the 500 kV submarine lines would include 6 cables; therefore, the total length of the 500 kV submarine cables would be approximately 12 times greater than the corridor length.

ALTERNATIVES SCREENING REPORT

As similar to the Proposed Project, LSPGC or PG&E would obtain any necessary permits, licenses, or certifications required prior to construct and operation of the Proposed Project. Accordingly, this alternative would meet regulatory feasibility criteria.

Environmental Feasibility

Environmental Advantages

The environmental advantages of this alternative by resource area topic are as follows:

- **Agriculture:** The alternative would avoid development of the substation on areas zoned for agricultural use.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resource area topic are as follows:

- **Air Quality/GHG:** This alternative would require an increase in cut/fill values due to the likely contamination at this site, which would lead to an increase in emissions during construction.
- **Biological Resources:** The increased number of cables crossing the Delta would have greater potential for impacts on fish and marine mammals. The alternative would also require more LSTs, which would result in greater potential for avian interactions with wind turbines.
- **Hazards and Hazardous Materials:** Under this alternative the proposed LSPGC Collinsville Substation would be developed on the abandoned PG&E Power Plant site; accordingly, there is a high probability of contamination at the site, which would require remediation.
- **Mineral Resources:** Additional submarine cables would have a significantly greater impact on sand mining lease areas.

Conclusion

ELIMINATED. Alternative substation site E is eliminated from further analysis because it is not technically feasible. This alternative has therefore been eliminated from full analysis in the EIR.

4.3.2 Route Relocation Alternatives Eliminated

Submarine Segment Outside of BCDC Jurisdiction

Description.

This alternative would relocate the portion of the submarine segment within BCDC jurisdiction to the east to avoid BCDC jurisdiction.

Consideration of CEQA Criteria

Project Objectives

The submarine route relocation would be functionally equivalent to the Proposed Project and would meet all project objectives.

ALTERNATIVES SCREENING REPORT

Technical, Legal, and Regulatory Feasibility

The alternative has the potential to locate the submarine segment in areas that contain more rock or other buried objects that could make it harder to achieve the target burial depth required by USACE for the navigation channel. However, the alternative is considered to potentially meet technical and regulatory feasibility. The alternative would meet legal feasibility and would have comparable legal considerations to the Proposed Project.

Environmental Feasibility

Environmental Advantages

The alternative would not avoid any significant impacts of the Proposed Project.

Environmental Disadvantages

The alternative is not anticipated to create any new significant impacts compared to the Proposed Project.

Conclusion

ELIMINATED. The Submarine Segment Outside of BCDC Jurisdiction meets the project objectives and is potentially feasible. However, the alternative would not reduce or avoid any significant impact of the Proposed Project. This alternative has, therefore, been eliminated from full analysis in the EIR.

4.3.3 Transmission Structure Alternatives Eliminated

In-river Transition Structure

Description

This alternative involves an in-river transition structure and a six-pole guyed dead-end structure just south of the northern shore of the Delta instead of the two onshore riser structures where the 230 kV overhead and submarine segments meet on the northern shore of the Delta. This alternative is otherwise identical to the Proposed Project. This alternative was part of the original project defined by LSPGC and was later changed to the proposed on-shore riser structures.

Consideration of CEQA Criteria

Project Objectives

The in-river transition structure alternative would meet all project objectives as it is functionally equivalent to the Proposed Project and was part of the initial LSPGC application.

Technical, Legal, and Regulatory Feasibility

This alternative would potentially meet technical, legal, and regulatory feasibility criteria. The alternative is technically feasible and was initially a part of LSPGC's application. The alternative would result in greater in-water impacts, necessitating additional permit requirements compared to the Proposed Project. In addition, the alternative could conflict with navigation; however, it is considered to meet regulatory feasibility criteria.

ALTERNATIVES SCREENING REPORT

Environmental Feasibility

Environmental Advantages

The alternative would not avoid any significant impacts of the Proposed Project.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resource area topic are as follows:

- **Biological Resources:** The in-river transition structure would be located south of the northern shore of the Delta and would result in greater environmental impacts on fish and marine mammals due to pile driving in the Delta.
- **Hydrology:** The alternative would involve construction in the Delta and would result in greater sedimentation and water quality impacts from construction of structures in the river.
- **Hazards:** The in-water structure could result in hazards for marine vessels and navigation.

Conclusion

ELIMINATED. The In-river Transition Structure Alternative meets the project objectives and is potentially feasible. However, the alternative would not reduce or avoid any significant impact of the Proposed Project and would have greater environmental impacts than the Proposed Project. This alternative has, therefore, been eliminated from full analysis in the EIR.

500 kV Interconnection Lines on a Single Set of Structures

Description

This alternative involves collocating the two 500 kV interconnection lines on a single set of transmission structures, thereby reducing the total ROW and number of structures by approximately half. This alternative was developed in response to scoping comments and coordination with SMUD.

Consideration of CEQA Criteria

Project Objectives

The alternative would be similar to the Proposed Project by providing a 500 kV interconnection to the Collinsville Substation. The alternative would not meet planning criteria for transmission lines by locating both sets of lines on a single structure and would not meet reliability criteria. Therefore, this alternative would not meet most of the project objectives by not providing a reliable supply of electricity.

Technical, Legal, and Regulatory Feasibility

The alternative is potentially technically feasible but would require much taller/larger towers to accommodate two lines on the same structure. The alternative would be located within the same landownership as the Proposed Project and would meet legal feasibility criteria. The alternative would not meet technical planning criteria for transmission lines as damage to a

ALTERNATIVES SCREENING REPORT

single tower would remove both lines for service. Due to the importance of the transmission lines to the region, the alternative does not meet regulatory feasibility.

Environmental Feasibility

Environmental Advantages

The potential environmental advantages of this alternative by resources area topic are as follows:

- **Biological Resources:** The alternative may reduce the number of LSTs required, which could reduce potential for perching and avian interactions with the wind farm.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Hazards:** The much taller transmission towers would result in increased potential for air traffic hazards.
- **Energy:** Use of a single set of towers would reduce energy reliability. Because the Proposed Project is needed for policy reasons to interconnect renewable energy, the alternative could have a significant energy impact.

Conclusion

ELIMINATED. The alternative would fail to meet most project objectives because it would provide an unreliable transmission line interconnection for the Proposed Project and it would not meet regulatory feasibility requirements as it would not conform to requirements for transmission line design. This alternative has, therefore, been eliminated from full analysis in the EIR.

4.3.4 Construction Method Alternatives Eliminated

230 kV Submarine Segment – Full HDD Installation

Description

This alternative involves the installation of the 230 kV submarine segment cables using HDD methods for the entire 4.5-mile Delta crossing. This alternative was developed in response to scoping comments and coordination with State Lands Commission.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes an alternative method of construction but does not change the Proposed Project functional specifications. The alternative would meet project objectives.

Technical, Legal, and Regulatory Feasibility

It is beyond the limits of current technology to use HDD methods for the entire crossing of the Delta. HDD involves drilling along a horizontal arc that would pass beneath the resource or infrastructure to be avoided. The HDD technology uses a hydraulically powered horizontal

ALTERNATIVES SCREENING REPORT

drilling rig supported by a drilling mud tank and a power unit for the hydraulic pumps and mud pumps. A variable-angle drilling unit would initially be adjusted to the proper design angle for the drill. HDD methods require a workspace the length of the entire boring/cable. LSPGC reviewed the maximum extent of distance from the shoreline that the HDD could reach and has determined that distances of up to 1,500 feet waterward are feasible due to on land workspace limitation and limitations on boring. The Delta crossing is approximately 4.5 miles and is not feasible and the drilling technology and on land workspace limitations do not accommodate the boring. .

Environmental Feasibility

Environmental Advantages

The potential environmental advantages of this alternative by resource area topic are as follows:

- **Minerals:** The alternative would avoid conflicts with the sand mining lease.
- **Biological Resources and Hydrology and Water Quality:** The alternative would reduce impacts from construction within the Delta.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Hydrology and Water Quality:** The large sending pit would result in a potential risk of frac-out and impacts from dewatering.

Conclusion

ELIMINATED. The full HDD alternative would not meet technical feasibility criteria. This alternative has, therefore, been eliminated from full analysis in the EIR.

230 kV Submarine Segment – Partial HDD Installation

Description

The alternative would install the submarine cable using horizontal directional drilling for the entire crossing of the Delta. This alternative involves the installation of the 230 kV submarine segment cables using HDD methods for portions of the Delta crossing, including near the northern and southern shores of the Delta. This alternative was developed based on scoping comments and coordination with State Lands Commission.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes an alternative method of construction but does not change the Proposed Project functional specifications. The alternative would meet project objectives.

Technical, Legal, and Regulatory Feasibility

It is technically feasible to construct a portion of the 230 kV submarine cable via HDD. LSPGC determined that up to 1,500 feet of cable could be installed using HDD. The location of the

ALTERNATIVES SCREENING REPORT

construction would be similar to the Proposed Project and would be legally feasible. The construction method would also meet regulatory feasibility criteria.

Environmental Feasibility

Environmental Advantages

The alternative would not avoid any significant impacts of the Proposed Project.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Hydrology and Water Quality.** The large sending pit would result in a potential risk of frac-out and impacts from dewatering.

Conclusion

ELIMINATED. The alternative meets the project objectives and technical, legal, and regulatory feasibility but would not avoid or reduce any significant impacts of the Proposed Project. This alternative has, therefore, been eliminated from full analysis in the EIR.

Reduced Activity Level for In-Water Work

The alternative would involve reduced hours of marine vessel activity for the submarine segment installation to avoid exceedance of an air quality threshold. The alternative would limit the hours of operation for marine vessels to 8 hours per day instead of 24 hours per day. The reduced hours of operation would extend the duration of construction by two additional years as the in-water installation would take three years/seasons to install instead of one due to limited operating periods for in-water construction.

Consideration of CEQA Criteria

Project Objectives

The alternative proposes reduced hours of operation for in water work but does not change the Proposed Project functional specifications. The alternative would delay the in-service date of the project by approximately 2 years. The alternative would meet most project objectives but would result in a substantial delay.

Technical, Legal, and Regulatory Feasibility

It is logistically infeasible to construct the in-water submarine segment only 8 hours a day. The reduced hours of construction would result in multiple mobilizations and demobilizations and hours where the equipment is sitting unable to work. The extended duration of construction would be impractical.

Environmental Feasibility

Environmental Advantages

The alternative may avoid the significant air quality impacts due to the daily and annual reduction in air pollution due to reduced activity levels. However, the total emissions generated

ALTERNATIVES SCREENING REPORT

during the overall construction would be greater due to multiple rounds of mobilization to the Proposed Project site over multiple seasons.

Environmental Disadvantages

The potential environmental disadvantages of this alternative by resources area topic are as follows:

- **Biological Resources.** The multiple years of construction would extend the duration of project impacts associated with in water construction and would result in greater impacts on fish and marine mammals.
- **Hydrology and Water Quality.** The multiple years of construction would result in greater hydrology and water quality impacts by extending the duration that impacts would occur over multiple years.
- **Recreation and Transportation.** The increased duration of in-water work would result in greater impacts on in-water recreation and transportation.

Conclusion

ELIMINATED. The alternative meets some project objectives but would be impractical to implement and would result in greater environmental impacts due to the extended duration of in-water activities. This alternative has, therefore, been eliminated from full analysis in the EIR.