UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF ELECTRICITY

ENERGIA SIERRA JUAREZ U.S. TRANSMISSION, LLC

Docket No. PP-334

APPLICATION FOR AMENDMENT TO PRESIDENTIAL PERMIT NO. PP-334

Submitted by:
Energia Sierra Juarez U.S. Transmission, LLC
488 8th Avenue, San Diego, CA 92101

May 18, 2022

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF ELECTRICITY

ENERGIA SIERRA JUAREZ U.S. TRANSMISSION, LLC	)	**Docket No. PP-334**

APPLICATION OF ENERGIA SIERRA JUAREZ U.S. TRANSMISSION, LLC FOR AMENDMENT TO PRESIDENTIAL PERMIT NO. PP-334

I. BACKGROUND

Pursuant to Executive Order (EO) No. 10485, as amended by EO 12038, and 10 C.F.R. § 205.320 *et seq.*, Energia Sierra Juarez U.S. Transmission, LLC (ESJ) hereby applies for an amendment to its Presidential Permit No. PP-334 (PP-334) to authorize an increase in the rate of transmission over ESJ's operating electric power generation tie line (the ESJ Tie Line). PP-334 was issued on August 31, 2012, authorizing ESJ to construct and operate the ESJ Tie Line to transmit electricity across the border from Mexico into the United States.

The ESJ Tie Line is a double-circuit 230-kV electric transmission line originating at San Diego Gas and Electric Company's East County (ECO) Substation in San Diego County, where the line interconnects with the Imperial Valley-Miguel segment of the Southwest Powerlink. From the ECO Substation, the ESJ Tie Line extends approximately 0.65 miles (1 km) southward, supported by three steel lattice towers situated within a 130-foot wide corridor of land owned by ESJ in eastern San Diego County, to the U.S.-Mexico border near Jacumba, California. At the border, the ESJ Tie Line transitions to a generation tie line constructed and operated by Energía Sierra Juarez, S. de R.L. de C.V. (ESJ Mexico), a Mexican affiliate of ESJ, which extends approximately 1 mile (1.6 km) further south to an interconnection point for a wind generating facility in Mexico (the ESJ Wind Project) owned and operated by ESJ Mexico.

The ESJ Tie Line commenced commercial operation in June of 2015, and ESJ has been operating the line in accordance with PP-334 since that time to transmit power from the initial phase of the ESJ Wind Project generating facilities in Mexico to the electric grid in California at the ECO Substation.[1] The ESJ Tie Line has the thermal capacity to transmit up to 1250 megawatts (MW) of electricity, corresponding to the total potential generating capacity of the ESJ Wind Project.[2] The ESJ Wind Project was to be developed in several phases. At the time PP-334 was issued in 2012, the California Independent System Operator (CAISO) had completed a generation interconnection study only for the first 400 MW of generation from the ESJ Wind Project. As a result, PP-334 included a provision limiting the maximum non-simultaneous rate of transmission over the ESJ Tie Line to 400 MW. Article 4 of the permit stated that ESJ may apply for a modification to the permit to increase the authorized rate of transmission at such time as CAISO completes interconnection studies for power generated by the ESJ Wind Project great than 400 MW.

The initial phase of the ESJ Wind Project consisted of 47 turbines with a generating capacity of 155 MW. A second phase, consisting of an additional 26 turbines generating 108 MW (and thus encompassed by the initial CAISO interconnection study), commenced operations in January 2022 and is delivering energy from the ESJ Wind Project over the ESJ Tie Line to the electric grid in California at the ECO Substation. The next phase of generation planned for the ESJ Wind Project, known as Cimarron Wind, is expected to add another 300 MW of generation, at which point the total output from the ESJ Wind Project would exceed 400 MW, triggering the need for a further interconnection study and amendment of PP-334. CAISO has completed the required interconnection study, which evaluated the additional 300 MW of generation from Cimarron Wind beyond the 400 MW previously approved in PP-334, as documented in the

[1] In connection with the 2012 PP-334 authorization, DOE also issued an electricity export authorization (EA-402) on August 29, 2014, to Energia Sierra Juarez U.S., LLC, a wholly owned subsidiary of ESJ Mexico, to use the ESJ Tie Line to export electric energy to the ESJ Wind Project generating facilities for the purpose of providing start-up power and other station power uses. The export authorization limited exports to an instantaneous transmission rate of 6 MW.

[2] At present, the entire electrical output of the ESJ Wind Project is delivered over the ESJ Tie Line to the CAISO system at the ECO Substation. The ESJ Wind Project is not connected to Mexico's national electric system owned and operated by Comisión Federal de Electricidad (CFE) or any other transmission facilities.

Queue Cluster 12 Phase II Report dated November 20, 2020 (Cluster 12 Phase II Report), a copy of which is submitted with this application as **Exhibit A**.[3]

In accordance with Article 4 of PP-334, ESJ is now requesting a modification to the permit to increase the maximum authorized rate of transmission over the ESJ Tie Line to 700 MW based on the CAISO interconnection study for Cimarron Wind.[4] The proposed increase in the rate of transmission requires no physical modifications to the ESJ Tie Line. There will be minor changes to other transmission facilities not within the scope of PP-334. The Cimarron Wind facility will be required to participate in certain remedial action schemes (RASs) as part of its interconnected operation with the CAISO system, as described in the Cluster 12 Phase II Report, and SDG&E will make certain minor physical changes at the ECO Substation, as also described in the Cluster 12 Phase II Report, to allow Cimarron Wind (and the other Cluster 12 projects) to participate in these RASs.[5] In addition, minor modifications will be made to the existing generation tie line facilities in Mexico to allow the Cimarron Wind project to connect to these facilities.[6]

The requested modification to PP-334 will allow the delivery of electricity generated at the Cimarron Wind facility, once operational, over the ESJ Tie Line to the CAISO grid in support of California's goal of achieving 100% carbon-neutrality by 2045.

[3] The Cluster 12 Phase II Report is a subsequently prepared appendix to the "Queue Cluster 12 Phase I Interconnection Study Report" dated January 15, 2020 (Phase 1 Study Area Report). The Phase I Study Area Report assessed the impact on the CAISO controlled transmission grid of twenty-one generation projects, with a total capacity of 4,805 MW, assigned to Queue Cluster 12. Nineteen projects in Cluster 12 requested interconnection to the CAISO grid. The Cluster 12 Phase II Report focuses on the impacts to the grid from the requested interconnection for the Cimarron Wind facility.

[4] An additional 137 MW of generation capacity based on the original CAISO interconnection study would remain available for future expansion of ESJ Wind without the need for further amendment to PP-334.

[5] As shown on Table 8.2 of the Cluster 12 Phase II Report, these minor physical changes involve the addition of panels and monitoring equipment associated with the RASs.

[6] A new substation will be built at the Cimarron Wind site and will interconnect to the existing tie line in Mexico via a new approximately 20-mile long generation tie line. Attached to this application as **Exhibit B** is a map showing the proposed Cimarron Wind generation facility, the new tie line that will connect this facility to the existing tie line facilities in Mexico, the transition of these tie line facilities to the ESJ Tie Line at the U.S.-Mexico border, and the termination point for the ESJ Tie Line at the ECO Substation. **Exhibit B** shows approximate locations of the facilities to be constructed in Mexico as part of the Cimarron Wind project, which are subject to change.

II. PRESIDENTIAL PERMIT AMENDMENT APPLICATION

(a) Information Regarding the Applicant

(1) Legal Name of Applicant:

Energia Sierra Juarez U.S. Transmission, LLC.

(2) Legal Name of All Partners:

None.

(3) Address for Correspondence:

Primary contact

Name: Emily C. Shults
Title: Senior Vice President - Development
Company: Energia Sierra Juarez U.S., LLC
Address: 488 8th Avenue, San Diego, CA 92101
Tel: (619) 696-2623
Email: eshults@sempraglobal.com

Secondary Contact

Name: Eric J. Murdock
Title: Partner
Company: HUNTON ANDREWS KURTH LLP
2200 Pennsylvania Ave., N.W., Washington DC 20037
Tel: (202) 955-1576
Email: emurdock@hunton.com

(4) Foreign Government Ownership. Neither ESJ nor the ESJ Tie Line is owned wholly or in part by a foreign government nor is either ESJ or the ESJ Tie Line directly or indirectly assisted by a foreign government or instrumentality. ESJ has no agreements with any foreign government pertaining to its ownership of the ESJ Tie Line.[7]

(5) Existing Contracts with Foreign Governments or Foreign Private Concerns. ESJ does not have any existing contracts with any foreign government, or any foreign private concerns relating to any purchase, sale or delivery of electric energy.

(6) Corporate Authority and Compliance with Laws. Attached to this application as **Exhibit C** is an opinion of counsel stating that the operation and maintenance of

[7] Abu Dhabi Investment Authority ("ADIA"), a sovereign wealth fund, has entered through affiliates into a purchase agreement for a **noncontrolling** 10% interest in Sempra Infrastructure Partners, LP, the parent company of ESJ. This transaction is expected to close in summer of 2022, subject to receipt of approvals from, among others, Mexico's antitrust regulatory commission.

the ESJ Tie Line, as modified by this proposed amendment to PP-334, is within ESJ's corporate powers and that ESJ has complied with or will comply with all pertinent federal and state laws.

(b) Information Regarding the Transmission Line to be Covered by the Presidential Permit Amendment.

(1) General Technical Description.

(i) Number of circuits; operating voltage and frequency; conductor size, type and number of phases.

The ESJ Tie Line consists of two 230-kV overhead circuits, with a nominal operating voltage of 230-kV, three-phase, at a frequency of 60 Hz. The maximum operating voltage is 245-kV. The conductors are 2 bundle 954 MCM 54/7 ACSS (aluminum conductor steel supported). The technical parameters of the ESJ Tie Line were reviewed in connection with the original Presidential permit application and approved by the issuance of PP-334. The ESJ Tie line extends approximately 0.6 miles south from the SDG&E ECO Substation to the U.S.-Mexico border, crossing the border at coordinates longitude 116° 06' 56.81" W and latitude 032° 37' 03.62" N.

As noted above, the ESJ Tie Line currently uses one of the two circuits exclusively to import power generated at the ESJ Wind Project to the CAISO system (and to provide station power to the ESJ Wind Project), subject to the permit condition in PP-334 currently limiting the maximum non-simultaneous rate of transmission to 400 MW.

Each of the two existing 230-kV circuits on the ESJ Tie Line has a thermal capacity limit of 1,250 MW, considering a 0.9 Power Factor and normal operating conditions for ACSS conductors. No physical changes are needed to the ESJ Tie Line to allow the transmission into the United States of the entire electrical output from the planned 300 MW Cimarron Wind facility in Mexico (or the transmission of station power from the United States to the Cimarron Wind facility) in addition to initial 400 MW currently authorized by PP-334. The Cimarron Wind facility will be able to utilize either of the two ESJ Tie Line circuits by connecting a tie line from the Cimarron Substation to the available circuit of the ESJ Tie Line located in Mexico, as noted above.

(ii) Additional Information Regarding Overhead Lines.

(A) Wind/Ice Loading Design Parameters.

The existing ESJ Tie Line was designed for an anticipated wind loading of 200 kilometers per hour (125 miles per hour). No ice loading design criteria were necessary. There will be no change to the stresses on the ESJ Tie Line in connection with the requested increase in the authorized rate of transmission.

(B) Description of Supporting Structures.

No changes are needed to the three existing ESJ Tie Line supporting structures in connection with the requested increased in the authorized rate of transmission. The structures were constructed in accordance with the plans submitted with the application for the original Presidential permit.

(C) Structure Spacing.

There will be no changes to the spacing of the three existing structures for the ESJ Tie Line in connection with the requested increase in the authorized rate of transmission.

(D) Conductor Spacing.

There will be no changes to the horizontal spacing of the existing conductors for the ESJ Tie Line in connection with the requested increase in the authorized rate of transmission.

(E) Line to Ground and Conductor Side Clearances.

There will no changes to the existing clearances between the conductors and the ground or supporting structures for the ESJ Tie Line in connection with the requested increase in the authorized rate of transmission.

(iii) Additional Information Regarding Underground and Underwater Lines.

There are no underground or underwater lines associated with the ESJ Tie Line.

(2) Project Map.

Exhibit B is a map showing the proposed Cimarron Wind generation facility, the connection of this facility to the existing transmission facilities in Mexico, the transition of these transmission facilities to the ESJ Tie Line at the U.S.-Mexico border, and the termination point for the ESJ Tie Line at the ECO Substation. **Exhibit B** reflects the approximate physical location and ownership of each of these facilities on each side of the U.S.-Mexico border.

(3) Bulk Power System Information.

(i) Expected Power Transfer Capability.

The maximum power transfer capability is limited by the maximum electric thermal capability for the double-circuit 230 kV line. The normal thermal capability for the line is approximately 1,250 MW at a 0.9 power factor. The short-time emergency thermal capability of the line is approximately 1,500 MW at a 0.90 power factor.

(ii) System Power Flow Plots.

The system power flow plots are provided in the Cluster 12 Phase II Study Report attached as **Exhibit A**.

(iii) Interference Reduction Data.

A 230-kV line normally does not present radio or television interference problems and the ESJ Tie Line mitigates possible interference by utilizing corona rings on the insulators and corona free hardware.

(iv) Relay Protection.

The existing interconnection of the ESJ Tie Line to the ECO Substation will conform to the CAISO interconnection requirements relating to the addition of the electrical output from the Cimarron Wind facility and therefore will comply with SDG&E Utility Practices for relay protection. The transmission line will not be interconnected with the CFE grid.

(v) System Stability Analysis.

This information will be provided if requested after review of the system power flow plots.

(c) **Potential Environmental Impacts of Proposed Increased Rate of Transmission.**

(1) Assessment of Environmental Impacts.

In connection with the issuance of PP-334, DOE prepared a Draft Environmental Impact Statement (DEIS), which was published for agency and public review and comment in September of 2010, followed by a Final Environmental Impact Statement (FEIS) dated May 2012 (DOE/EIS-0414) in accordance with the requirements of the National Environmental

Policy Act (NEPA).[8] The FEIS included a detailed evaluation of direct, indirect, and cumulative effects from the construction and operation of the ESJ Tie Line. The FEIS also evaluated numerous mitigation measures to lessen potential impacts to affected resources, and Article 6 of PP-334 requires ESJ to implement all project-specific environmental protection and mitigation measures contained in the FEIS. In its Record of Decision to issue PP-334, DOE concluded that it had "employed all practicable means to avoid or minimize environmental harm from the design, construction and operation" of the ESJ Tie Line. 77 Fed. Reg. 49789, 49791 (August 17, 2012).[9]

As described above, there are no physical changes to the ESJ Tie Line associated with the requested increase in the authorized rate of transmission under PP-334. Moreover, the assessment of potential environmental impacts from the operation of the ESJ Tie Line documented in the FEIS was not constrained by any limit on the rate of transmission over the line. The evaluation was based on the understanding that the line would have the capacity to transmit up to 1,250 MW. *See* SEIS at 2-1 (describing the project being evaluated as "either a double-circuit 230,000 volt (230-kV) transmission line or a single circuit 500-kV transmission line which would connect up to 1,250 MW of electric power from renewable energy generators (the ESJ Wind project) to be located in the general vicinity of La Rumorosa, Northern Baja California, Mexico"). The permit condition limiting the rate of transmission to 400 MW was not based on any concerns about environmental impacts disclosed in FEIS or related mitigation measures. Rather, as discussed above, this limit was included in the permit solely due to the fact that grid reliability studies had been completed at that time only for the interconnection of the first 400 MW of electrical output from ESJ Wind.

---

[8] The FEIS is available at https://www.energy.gov/nepa/eis-0414-presidential-permit-application-energia-sierra-juarez-transmission-line-california

[9] DOE's NEPA review for PP-334 was challenged in federal district court in a case styled *Backcountry Against Dumps v. Moniz* (Civ. No. 3:12-cv-03062) (S.D. Cal.). The court affirmed the sufficiency of DOE's NEPA review in all but two respects. First, the court found that DOE had not adequately considered distributed generation as a possible alternative to the importation of wind power from Mexico over the ESJ Tie Line. Second, the court found that DOE should have considered the impacts in Mexico from both the ESJ Tie Line and the ESJ Wind facilities in Mexico. DOE prepared a Supplemental Environmental Impact Statement (SEIS) dated September 2018 (DOE/SEIS-0414-S1) to address these issues. With respect to the first issue, the SEIS concluded that distributed generation was not a technically feasible alternative. With respect to the second issue, the SEIS (i) concluded that the analysis presented in the FEIS of impacts from the ESJ Tie Line in the United States also adequately addressed impacts from the ESJ Tie Line in Mexico, and (ii) incorporated the findings from the environmental assessments of impacts in Mexico from the ESJ Wind facilities in Mexico that were prepared by the Mexican regulatory authorities having jurisdiction over these facilities.

There is only one topic addressed in the FEIS – possible exposure to electromagnetic fields – for which the rate of transmission was potentially relevant to the assessment of operational impacts from the ESJ Tie Line. Specifically, Section 3.8.1.2 of the FEIS states: "Magnetic fields are created when electric current flows; the greater the current, the stronger the magnetic field." FEIS at 3-148. The assessment of these impacts in the FEIS was based on "typical" magnetic field levels for transmission lines of different voltages (115-kV, 230-kV, and 500-kV) at various distances from the conductors and was not constrained by any limitation on the rate of transmission related to the CAISO interconnection studies completed as of that time. FEIS at 3-149 (Table 3.8-1). Ultimately, the FEIS concluded that because "there are no public trails, recreational areas, or other developments to cause visitors to linger in the vicinity of the transmission lines, . . . little public exposure is expected and what exposure does occur would be brief." FEIS at 3-153. The FEIS further noted that the nearest potential residence was an unoccupied mobile home approximately 1600 feet to the west of the ESJ Tie Line and that "EMF levels at this distance would be below typical household levels." *Id.* The FEIS ultimately concluded that "no impact to public health and safety is expected due to magnetic fields generated during operation of the Project." FEIS at 3-154. The area in the vicinity of the ESJ Tie Line remains undeveloped, and no residences are located any closer to the line than the unoccupied mobile home discussed in the FEIS. The findings of the FEIS regarding impacts from EMF therefore remain valid for the operation of the ESJ Tie Line at the increased rate of transmission requested by this application.

In view of the foregoing, the environmental impacts resulting from the continued operation of the ESJ Tie Line following the requested increase in the authorized rate of transmission will be no different from the operational impacts previously addressed in the FEIS. Moreover, under Article 6 of PP-334, the operation of the ESJ Tie Line will continue to be subject to mitigation requirements described in the FEIS.

(2) List of known Historic Places

There are no known sites listed or eligible for listing on the National Register of Historic Places within the project area. Section 3.5 of the FEIS addresses potential impacts to cultural resources and concludes that because there will be no ground disturbances associated with the operation of the ESJ Tie Line, no impacts to cultural resources are anticipated during operation

of the line. The same is true for operation of the ESJ Tie Line following the requested increase in the authorized rate of transmission.

(3) Right-of-Way Width

The permanent right-of-way for the existing ESJ Tie Line is 130 feet wide. There is no change to the existing right-of-way associated with the requested increase in the authorized rate of transmission.

(4) Threatened or Endangered Species

Section 3.1.1.4 and Appendix C.3 of the FEIS identified all special status plant species, including plant species listed as threatened or endangered under the Endangered Species Act (ESA), that have the potential to occur within or adjacent to the ESJ Tie Line right-of-way corridor. Section 3.1.1.6 and Appendix C.5 of the FEIS identified all special status wildlife species, including wildlife species listed as threatened or endangered under the ESA, that have the potential to occur within or adjacent to the ESJ Tie Line right-of-way corridor.

(d) Alternatives to the Proposal.

As described above, the proposed modification to PP-334 to increase the authorized rate of transmission does not involve any potential alternative routing alignments or other physical changes to the ESJ Tie line, which will remain within the existing right-of-way corridor. Accordingly, the only two alternatives to be considered by DOE are (i) denying the requested permit modification (*i.e.*, the "no action" alternative) or (ii) granting the requested permit modification to allow the ESJ Line to operate at a higher rate of transmission.[10] As discussed above, the environmental impacts of these two alternatives are essentially the same.

[10] One other possible alternative could be for DOE to approve a modification to PP-334 authorizing an increase in the rate of transmission of less than 300 MW. Such an alternative would not achieve the project purpose of importing all of the renewable energy output from the Cimarron Wind project to the electric grid in California. In any event, the impacts from such an alternative would be no different from the two alternatives noted above.

(e) Verification

This application has been verified under oath by an officer of Energia Sierra Juarez U.S., LLC[11] having knowledge of the matters set forth above. This verification is attached as **Exhibit D**.

[11] Energia Sierra Juarez U.S. Transmission, LLC is managed by its sole member, and it does not have officers; its sole member is Energia Sierra Juarez U.S., LLC. An officer of Energia Sierra Juarez U.S., LLC, therefore may sign on behalf of Energia Sierra Juarez U.S. Transmission, LLC.

Exhibit A

CAISO Cluster 12 Phase II Report

Appendix A – Q1660

Controladora Sierra Juarez D. de R.L. de C.V.

Cimarron Wind

Queue Cluster 12 Phase II Report

November 20, 2020

This study has been completed in coordination with San Diego Gas & Electric Company per CAISO Tariff Appendix DD Generator Interconnection and Deliverability Allocation Procedures (GIDAP)

CONFIDENTIAL

Table of Contents

Attachments

Attachment 1 – Transient Stability Plots

Interconnection Study Document History

No.	Date	Document Title	Description of Document
2	11/20/2020	Queue Cluster 12 Phase II	Final Queue Cluster 12 Phase II Report
1	1/15/2020	Queue Cluster 12 Phase I	Final Queue Cluster 12 Phase I Report

1. Introduction

Controladora Sierra Juarez D. de R.L. de C.V., an Interconnection Customer (IC), submitted a completed Interconnection Request (IR) to the California Independent System Operator Corporation (CAISO) to interconnect Cimarron Wind (Project) to the CAISO Controlled Grid. The Project is a wind generating facility with a requested net output of 300 MW at the Point of Interconnection (POI). The IC requested that the POI for the Project be at the 230kV bus at the East County (ECO) Substation. The proposed Commercial Operation Date (COD) of the Project is 12/31/2024. The Project is designated as Queue Position 1660 (Q1660) in the CAISO Generation Interconnection Queue.

In accordance with Federal Energy Regulatory Commission (FERC) approved CAISO Tariff Appendix DD Generator Interconnection and Deliverability Allocation Procedures (GIDAP), the Project was grouped with Queue Cluster 12 (QC12) projects to determine the impacts of the group as well as impacts of the Project on the CAISO Controlled Grid.

The SDG&E Study Area Report (Area Report) has been prepared separately identifying the combined impacts of all projects in the group on the CAISO Controlled Grid. This Appendix A report focuses only on the impacts or impact contributions of this Project, and it is not intended to supersede any contractual terms or conditions specified in an interconnection agreement.

This report provides the following:

1. Transmission system impacts caused by the Project;
2. System reinforcements necessary to mitigate the adverse impacts caused by the Project under various system conditions;
3. A list of required facilities and a good faith estimate of the Project's cost responsibility and time to construct these facilities.

Table 1.1 provides a summary of the project information.

Table 1.1: Project General Information

Project Location	Autopista Mexicali – Tijuana Tramo Rumorosa, Tecate km 62+541 Cuerpo A, Tijuana, MX 01510 Latitude: 32.23247 Longitude: -115.961325
Number and Type of Generators	The project consists of 75x4.7 MVA Vestas, V150 (42) Wind turbines generation inverters
Generation Capacity by Source Type	Wind = 352.5 MVA
Generating Facility Gross Capacity	352.5 MVA
Generating Facility Gross Output	311.6 MW
Generator Auxiliary Load	0 MW
Maximum Net Output at Generation Facility	311.6 MW
Estimated Losses between the Generating Facility and POI	11.6 MW
Estimated Maximum Interconnection Service Capacity (Net MW Output at POI) *(Note 1)*	300 MW *(Note 2)*
Requested Interconnection Service Capacity (Net MW Output at POI) *(Note 3)*	300 MW
Interconnection Customer description of automatic control scheme which will be installed to ensure that the Maximum MW at POI does not exceed requested value	The project plant software settings will be developed to ensure that the maximum MW at POI does not exceed 300 MW.
Deliverability Requested	On-Peak: Full Capacity Off-Peak: OPDS
Option (A/B) Requested	Option A
Step-Up Transformers	• 2x230/34.5/13.8-kV unit transformer, three phase, rated for 120/159.6/200 MVA with 9.825% impedance on a 120 MVA base • 75x34.5/0.72-kV unit transformer, three phase, rated for 4.7 MVA each with 9% on a 4.7 MVA base
Point of Interconnection	ECO Substation 230kV
Interconnection Customer Requested In - Service Date	08/31/2024
Interconnection Customer Requested Commercial Operation Date	12/31/2024

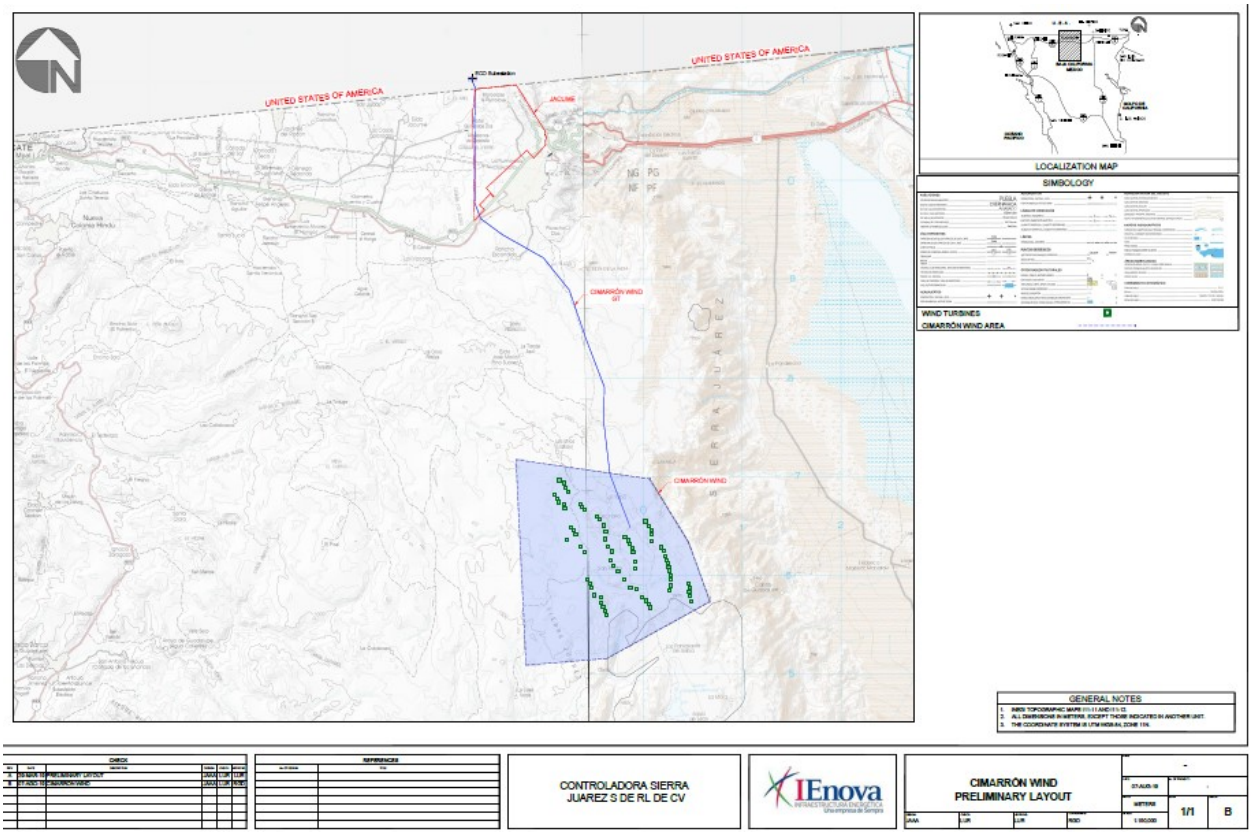
Notes for Table 1.1:

Note 1: The MW output at the POI varies under different operating conditions.

Note 2: The IC is reminded that this value is tied to the generation tie-line losses. The estimated Maximum Net Output at POI and Generation Tie-Line Losses values illustrated above are contingent upon the accuracy of the technical data provided by the IC, and are subject to change should the IC change its generation tie line parameters during the final engineering and design phase of the Project.

Note 3: The IC will need to install or demonstrate that a control system will be put in place which will manage the Project's output to not exceed requested Point of Interconnection delivery amount.

Figure 1.1: Map of the Project Location



2. Study Assumptions

For detailed assumptions, please refer to the Area Report. The following assumptions are only specific to this project:

A. The requested In-Service Date of the Project is 08/31/2024.

B. The expected Commercial Operation Date of the Project is 12/31/2024.

C. The IC will engineer, procure, construct, own, and maintain the Project facilities.

3. Reliability Standards, Study Criteria and Methodology

The generator interconnection studies will be conducted to ensure the CAISO controlled grid is in compliance with the North American Electric Reliability Corporation (NERC) reliability standards, WECC regional criteria, and the CAISO planning standards. Refer to Section 3 of the Area Report for details of the applicable reliability standards, study criteria, and methodology.

4. Reliability Assessment Results

The Project was studied as part of the QC12 projects, the results of which can be found in the Area Report, Section 4, Reliability Assessment.

4.1 Steady State Power Flow Analysis Results

The Project was identified as contributing to multiple overloads as described in the following sections. A combination of congestion management and RAS to trip the Project under identified contingency outage conditions would be required to mitigate the power flow impacts of the Project.

4.1.1 Steady-State Thermal Overloads in SDG&E System

The reliability assessment identified that the Project contributes to the following overloads:

Table 4.1: Thermal Overloads identified in Reliability Assessment

Overloaded Facilities	Worst Category Contingency	Post-QC12 HS*/LL* Loading (%) (Note 1)
IV Bank 82, Imperial Valley – Imperial Valley BK82 MP 230/500kV BK	P0: Base Case	108 (HS)
IV Bank 81, Imperial Valley – Imperial Valley BK81 MP 230/500kV BK	P0: Base Case	106 (HS)
IV Bank 80, Imperial Valley – Imperial Valley BK80 MP 500kV TL	P0: Base Case	106 (HS)
ECO Bank 60, ECO – ECO 230/138kV BK (add to Q1660, Q1661 (Reliability only)	P0: Base Case	137 (HS)
ECO Bank 62, ECO – ECO 230/138kV BK (add to Q1660, Q1661 (Reliability only)	P0: Base Case	137 (HS)
ECO Bank 80, ECO – ECO MP 230/500kV BK	P0: Base Case	115 (HS)
TL23006, San Onofre – San Luis Rey ckt #1 230kV TL	P0: Base Case	176 (HS)
TL23002, San Onofre – San Luis Rey ckt #2 230kV TL	P0: Base Case	133 (HS)
TL23010, San Onofre – San Luis Rey ckt #3 230kV TL	P0: Base Case	132 (HS)
TL23011A, Encina Tap – San Luis Rey 230kV TL	P0: Base Case	156 (HS)
TL23011B, Encina Tap – Encina 230kV TL	P0: Base Case	102 (HS)
TL23026, Silvergate – Bay Boulevard 230kV TL	P0: Base Case	113 (HS)
TL23028A, Silvergate – Old Town Tap 230kV TL	P0: Base Case	103 (HS)
TL50001, Miguel – Miguel 500kV TL	P1: Ocotillo – Q1429 – Suncrest 500kV TL	112.3 (HS)
TL50001, ECO – Miguel 500kV TL	P1: Suncrest – Q1429 500kV TL	100.7 (HS)
Miguel Bank 80, Miguel – Miguel MP 500/230kV BK	P1: Miguel BK 81, 500/230kV BK	147.1 (HS)
Miguel Bank 81, Miguel – Miguel 230/500kV BK	P1: Miguel BK80, 500/230kV BK	115.8 (HS)
TL23054, Suncrest – Suncrest Tap1, 230kV TL	P1: 50001, ECO – Miguel 500kV TL	100.3 (HS)
TL23054, Sycamore Tap1 – Sycamore, 230kV TL	P1: TL50001, ECO – Miguel 500kV TL	103.8 (HS)
TL23055, Suncrest – Suncrest Tap2, 230kV TL	P1: TL23054, Suncrest – Sycamore 230kV TL	100.8 (HS)
TL23055, Sycamore Tap2 – Sycamore, 230kV TL	P1: TL50001, ECO – Miguel 500kV TL	103.8 (HS)

Overloaded Facilities	Worst Category Contingency	Post-QC12 HS*/LL* Loading (%) (Note 1)
TL23011B, Encina Tap – San Luis Ray, 230kV TL	P1: TL23003, San Luis Ray – Encina 230kV TL	102.3 (LL)
TL23041, Otay Mesa – Miguel - Sycamore 230kV TL	P1: TL23042, Otay Mesa – Miguel – Bay Blvd 230kV TL	97.8 (HS)
TL23042, Otay Mesa – Miguel – Bay Blvd 230kV TL	P1: TL23041, Otay Mesa – Miguel - Sycamore 230kV TL	97.9 (HS)
TL23071, Sycamore – Penasquitos 230kV TL	P1: TL23051, Sycamore – Artesian 230kV TL	107.4 (HS)
TL13820, Sycamore – Chicarita 138kV TL	P1: 23071, Sycamore – Penasquitos 230kV TL	108.2 (HS)
TL6906, Penasquitos – Mesa Rim 69kV TL	P1: TL6916, Sycamore -Scripps 69kV TL	103.8 (HS)
TL675, Penasquitos – Mesa Rim 69kV TL	P1: TL6916, Sycamore -Scripps 69kV TL	103.8 (HS)
TL6916, Sycamore – Scripps 69kV TL	P1: 23071, Sycamore – Penasquitos 230kV TL	110.2 (HS)
TL23029, Silvergate – Old Town 230 kV TL	P1: Silvergate – Old Town Tap 230 kV	131 (HS)
TL23027, Mission – Old Town 230kV TL	P7: Encina-San Luis Rey-Palomar 230 kV and Encina-San Luis Rey 230 kV	105 (HS)
TL50001, Miguel – ECO 500kV TL	P7: TL23054 & TL23055, Suncrest – Sycamore 230kV TLs	116.3 (HS)
TL50001, ECO – Miguel 500kV TL	P7: TL23054 & TL23055, Suncrest – Sycamore 230kV TLs	100.5 (HS)
TL23041, Otay Mesa – Miguel - Sycamore 230kV TL	P7: TL23042 & TL13815, Otay Mesa – Miguel – Bay Blvd & Grant Hill – Telegraph Canyon 230kV TLs	140.5 (HS)
TL23042, Otay Mesa – Miguel – Bay Blvd 230kV TL	P7: TL23021 & TL23041, Sycamore – Miguel & Otay Mesa – Miguel - Sycamore 230kV TLs	97.4 (HS)
TL23040, Otay Mesa – TJI -230 230kV TL	P7: TL23041 & TL23042, Otay Mesa – Miguel – Bay Blvd Otay Mesa – Miguel -Sycamore 230kV TLs	140.5 (HS)
TL23006, San Luis Rey – San Onofre #1 230kV TL	P7: TL23002 & TL23010, San Luis Rey – San Onofre #2 & #3 230kV TLs	107.6 (LL)
TL23001, Mission-San Luis Rey #2 230 kV TL	P7: Encina-San Luis Rey-Palomar 230 kV and Encina-San Luis Rey 230 kV	127 (HS)
TL23004, Mission-San Luis Rey #1 230 kV TL	P7: Encina-San Luis Rey-Palomar 230 kV and Encina-San Luis Rey 230 kV	128 (HS)
TL23003, San Luis Rey – Encina 230kV TL	P7: TL23011 & TL23051, San Luis Rey – Encina Tap – Pen & Pen – Artesian 230kV TLs	107.4 (LL)
TL23071, Sycamore – Penasquitos 230kV TL	P7: TL23051 & TL6920, Sycamore – Artesian 230kV and Sycamore – Artesian 69kV	108.7 (HS)
TL13810A, Doublet – Friars 138kV TL	P7: TL23013 & TL23071, Penasquitos – Old Town & Sycamore – Penasquitos 230kV TLs	122.6 (HS)
TL13810B, Penasquitos - Doublet Tap 138kV TL	P7: TL23013 & TL23071, Penasquitos – Old Town & Sycamore – Penasquitos 230kV TLs	97.8 (LL)
TL680, San Luis Rey - Melrose Tap – San Marcos 69kV TL	P7: TL693 & TL6966, Melrose – San Luis Rey & Ocean Ranch – San Luis Rey 69kV TLs	119.1 (HS)
TL6916, Sycamore – Scripps 69kV TL	P7: TL23013 & TL23071, Penasquitos – Old Town & Sycamore – Penasquitos 230kV TLs	122.7 (HS)

Note 1: Due to the total MW capacity of generation in the SDG&E area in Cluster 12, not all QC12 generation was dispatched in all scenarios of the contingency analysis due to multiple overloads that were identified under P0 conditions. Congestion management to mitigate the P0 overloads and a combination of congestion management/RAS for contingency conditions will be required for QC12 projects. Please see the area report Table 4.3a for details of overloads identified under P0 conditions.

4.1.2 Steady-State Voltage Results in SDG&E System

Many steady-state voltage violations were observed in the SDG&E transmission system due to the addition of the new Cluster 12 Projects, but they were mitigated by congestion management and RAS's.

4.1.3 Required Mitigations

The Project must adhere to the dispatch limitations identified in the QC12 Area Report to mitigate the constraints described in Section 4.1.1. The following RASs are required:

- Participate in the existing/modified Imperial Valley RASs
- Participate in the existing Otay Mesa RASs
- Participate in the existing/modified RAS to protect Miguel BK 80 / BK 81 500kV/230kV
- Participate in the existing/modified RAS to protect ECO BK 60 230kV/138kV
- Participate in the existing/modified RAS to protect ECO BK 62 230kV/138kV
- Participate in the existing/modified RAS to protect ECO BK 80 500kV/230kV
- Participate in the existing ECO/BUE Anti – Islanding Scheme to protect the facilities at ECO and BUE area for abnormal conditions
- Participate in the proposed RAS to protect TL23001 and TL23004 Mission – San Luis Rey #1 and #2 230kV lines
- Participate in the proposed RAS to protect TL23002/06/10 San Luis Rey – San Onofre #1, #2 & #3 230kV lines
- Participate in the proposed RAS to protect TL23071 Sycamore – Penasquitos 230kV line
- Although the Project contributes to the Encina area overloads , the Project will not be required to participate in the Remedial Action Schemes (RASs) mitigation plan, as tripping the Project when the condition occurs will be much less effective than tripping other projects
- Participate in the proposed RAS to protect TL23026 Bay Boulevard – Silvergate 230kV line
- Participate in the proposed RAS to protect TL23027 Mission – Old Town 230kV line
- Participate in the proposed RAS to protect TL23028A Silvergate – Old Town Tap 230kV line
- Participate in the proposed RAS to protect TL23029 Silvergate – Old Town 230kV line
- Participate in the proposed RAS to protect TL13820 Sycamore – Chicarita 138kV line
- Participate in the proposed RAS to protect TL6916 Sycamore –Scripps 69kV line
- Participate in the new RAS to protect TL675 Penasquitos – Mesa Rim 69kV line
- Participate in the new RAS to protect TL6906 Penasquitos – Mesa Rim 69kV line
- Participate in the new RAS to protect IV BK 80, 81, and 82 500kV/230kV

4.2 Short Circuit Analysis

Short circuit analyses were performed to determine the maximum available fault current at all buses in the SDG&E service territory, especially at the POI bus. This study evaluates the impact of increased fault current resulting from the addition of the Project.

4.2.1 Short Circuit Study Input Data

Currently, there is no industry consensus on PV, BESS, and wind plant fault duty analysis modeling. While an IEEE Power & Energy Society Joint Working Group is actively working to address the short circuit modeling challenges, preliminary input has been obtained from the developers of the ASPEN OneLiner program to conduct SDG&E fault duty studies for PV, energy storage and wind plants. The PV, energy storage and wind plants are assumed to be ungrounded, positive sequence current sources controlled and limited by the plant's array inverters (for PV & BESS) or the plant's rotor excitation controls (for wind) to a fault current contribution equal to 1.1 times the rated steady-state current output of the plant.

As such, the following generator short circuit model input data was used in conjunction with the transformer, collector system, and gen-tie impedance data provided by the IC to determine fault duty impacts of the Project:

Equivalent PV Generator Unit @ 0.72 kV and 100 MVA Base:

A. Positive Sequence subtransient reactance (X''1) = 0.909 p.u.

B. Negative Sequence reactance (X2) = 0.909 p.u.

C. Zero Sequence reactance (X0) = 99999 p.u.

D. Maximum Generator Fault Current Contribution at POI (230 kV) = 724 A.

4.2.2 Short Circuit Results – SDG&E Transmission System

Short circuit analysis results indicated that the addition of the Project and associated Network Upgrades will not cause any SDG&E circuit breakers to be overstressed.

The IC is not responsible for mitigating any pre-existing overstressed circuit breakers.

4.2.3 Preliminary Protection Requirements

The IC is responsible for the protection of its own system and equipment and must meet the requirements per the SDG&E Generation Interconnection Handbook. The SDG&E Generation Interconnection Handbook can be found at https://www.sdge.com/more-information/customer-generation

4.3 Transient Stability Analysis

Transient stability studies were conducted using the Heavy Summer and Light load cases to verify that the addition of the Project will not adversely impact the stability of the interconnected system following disturbances and abnormal operating conditions. The parameters for the generator dynamic model, as provided by the IC, were used in the evaluation of the Project.

```
##############################################################################################
# Q1660
##############################################################################################
regc_a   23114 "Q1660_G " 0.72 "12" : #9 mva=352.4  "lvplsw" 1.0  "rrpwr" 10.0  "brkpt" 0.15  "zerox" 0.06  "lvpl1" 1.2  "vtmax" 1.2  "lvpnt1" 0.1
"lvpnt0" -999  "qmin" -1.0  "accel" 1.0  "tg" 0.0  "tfltr" 0.03  "iqrmax" 106.15  "iqrmin" -106.15  "xe" 0
reec_a   23114 "Q1660_G " 0.72 "12" : #9 "mvab" 0  "vdip" -0.9  "vup" 1.10 "trv" 0.0  "dbd1" -0.2  "dbd2" 0.10  "kqv" 2  "iqh1" 1.0  "iql1" -1.0
"vref0" 0  "iqfrz" 0.0  "thld" 0.6  "thld2" 0.0  "tp" 0.05  "qmax" 0.5  "qmin" -0.5  "vmax" 1.1  "vmin" 0.9  "kqp" 0  "kqi" 3.00  "kvp" 18        "kvi" 5
"vref1" 0  "tiq" 0.05  "dpmax" 0.02  "dpmin" -0.02  "pmax" 1.05  "pmin" 0.05  "imax" 1.44  "tpord" 0.010  "pfflag" 0  "vflag" 0  "qflag" 0  "pflag" 1
"pqflag" 0        "vq1" 0.066  "iq1" 0.374  "vq2" 0.15  "iq2" 0.682  "vq3" 0.175  "iq3" 0.989  "vq4" 0.179  "iq4" 1.07  "vp1" 0.066  "ip1" 0.12  "vp2"
0.22  "ip2" 0.39  "vp3" 0.5  "ip3" 0.39  "vp4" 0.79  "ip4" 1.44
repc_a   23114 "Q1660_G " 0.72 "12" 23110 "Q1660_HS  " 230.0 : #9  "mvab" 352.4  "tfltr" 0.03  "kp" 18.0  "ki" 5.0  "tft" 0.0  "tfv" 0.05  "refflg"
1.0  "vfrz" 0.0  "rc" 0.0  "xc" 0.0  "kc" 0.02  "vcmpflg" 1.0  "emax" 0.10  "emin" -0.10  "dbd" 0.001  "qmax" 0.436  "qmin" -0.436  "kpg" 0.10  "kig"
0.050  "tp" 0.250  "fdbd1" 0.0  "fdbd2" 0.0  "femax" 99.0  "femin" -99.0  "pmax" 99.0  "pmin" -99.0  "tlag" 0.10  "ddn" 20.0  "dup" 0.0  "frqflg"
0.0  "outflag" 0.0 "puflag" 0.0
lhvrt    23114 "Q1660_G " 0.72 "12" 23111 "Q1660_LS  " 34.50 : #9 "vref" 1.0  "dvtrp1" 0.13  "dvtrp2" 0.16  "dvtrp3" 0.25  "dvtrp4" 0.36
"dvtrp5" -0.13  "dvtrp6" -0.2  "dvtrp7" -0.4  "dvtrp8" -0.6  "dvtrp9" -0.8  "dvtrp10" -1.0  "dttrp1" 1800.0  "dttrp2" 60.0  "dttrp3" 2.0  "dttrp4"
0.15  "dttrp5" 13.0  "dttrp6" 4.8  "dttrp7" 3.7  "dttrp8" 2.6  "dttrp9" 1.5  "dttrp10" 0.45 "alarm" 0.0
lhfrt    23114 "Q1660_G " 0.72 "12" 23111 "Q1660_LS  " 34.50 : #9 "fref" 60.0  "dftrp1" 3.6  "dftrp2" -3.6  "dftrp3" 0  "dftrp4" 0  "dftrp5" 0
"dftrp6" 0  "dftrp7" 0  "dftrp8" 0  "dftrp9" 0  "dftrp10" 0  "dttrp1" 10.0  "dttrp2" 30.0  "dttrp3" 0  "dttrp4" 0  "dttrp5" 0  "dttrp6" 0  "dttrp7" 0
"dttrp8" 0  "dttrp9" 0  "dttrp10" 0 "alarm" 0
#
```

4.3.1 Transient Stability Study Scenarios

Disturbance simulations were performed for a study period of 20 seconds for pre-Project cases and post-Project cases to determine whether the Project would cause any system instability during a variety of disturbances causing line and/or generator outages. For the Project, disturbances causing Category B and Category C line and/or generator outages were simulated by the contingency files outlined in Table 4.4 of the Area Report.

Description of the switching sequences can be found in Appendix G.

4.3.2 Results

The study concluded that the addition of the Project would not cause the SDG&E transmission system to become unstable following the select disturbances studied. There were some voltage dips identified and outlined in Appendix H, but further analysis will be conducted to determine whether base case characteristics can be modified to resolve the issues, as none of these violations could be directly attributed to the addition of this project.

Detailed results for the Project can be found in Attachment 1.

4.4 Reactive Power Deficiency Analysis

4.4.1 Post-Transient Voltage Stability Analysis

Using the Heavy Summer and Light Load cases described in Section 2 of the Area Report, the post-transient voltage stability analysis indicated that, under the studied conditions and system configuration, the addition of the Project did not result in any post-transient voltage deviations of 8% or more for any contingencies from the pre-project levels or cause post-transient voltage stability violations on SDG&E-owned transmission facilities.

The Project will not be responsible for pre-existing post-transient voltage deviations.

Detailed results of this analysis are provided in Appendix J.

4.5 Individual Project Power Factor Requirements and Evaluation

Per FERC Order 827, the non-synchronous Generating Facility will be required to maintain a composite power delivery at continuous rated power output at the high-side of the generator substation at a power factor within the range of 0.95 leading to 0.95 lagging. This power factor range shall be dynamic.

A base case power flow was evaluated to determine reactive power losses internal to the Project in order to ascertain if the reactive capability of the Project is adequate to supply these losses and meet the power factor requirements. A summary of the power factor evaluation is provided in the table below.

Table 4.2: Power Factor Evaluation

Operating Condition (Note 1)		
	Leading	Lagging
PGEN (MW)	311.6	311.6
QGEN (MVAR)	157.9	-68.8
PF at Generator Terminal	0.89	0.98
Pad-Mount Transformer Losses (MVAR)	24.2	28.5
Collector Equivalent Losses (MVAR)	13.8	18.1
Main Transformer Losses (MVAR)	39.4	45.5
Total Var Losses (MVAR)	77.4	92.1
Shunt Capacitors (MVAR)	28	28
Generator Reactive Capability (MVAR)	157.9	124.5
P at High Side of GSU (MW)	304.1	302.8
Q at High Side of GSU (MVAR)	80.5	-150.5
Dynamic Q at High Side of GSU	108.5	-150.5
Dynamic PF at High Side of GSU	**0.942**	**0.895**
Project Meets PF Requirements	**Yes**	**Yes**

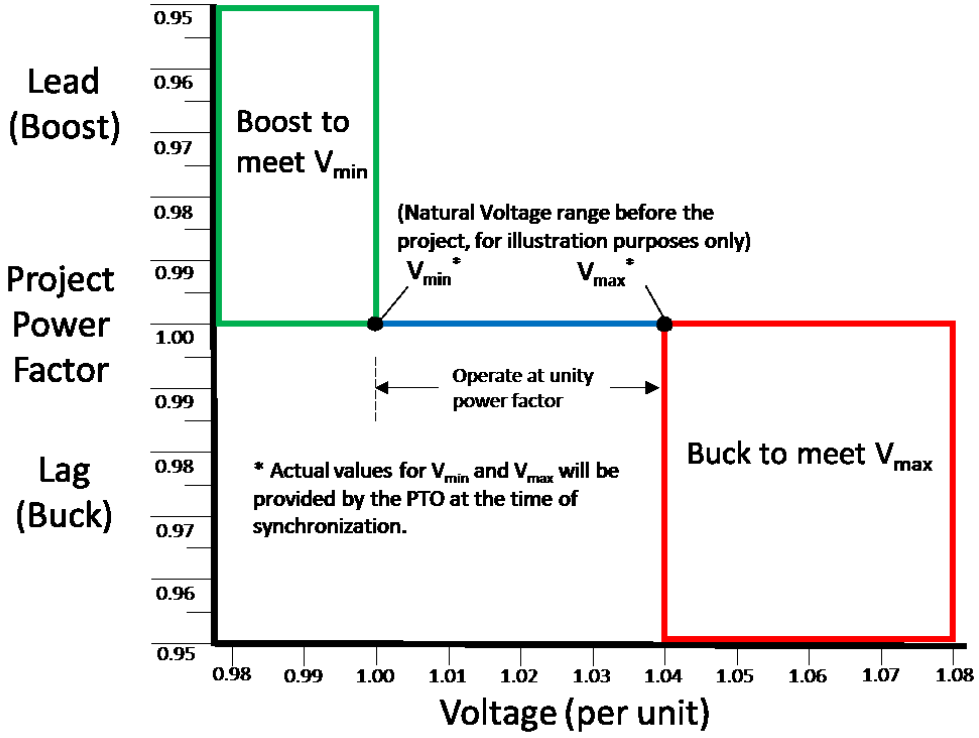
*Note 1: The operating condition indicates the operation mode of the generating facility. Projects that are energy storage and/or contains energy storage are evaluated to ensure they meet the power factor requirements in discharge & charge mode. All other projects are evaluated in discharge mode only. Leading implies the IC generation facility is providing reactive power **to** the ISO controlled grid, whereas lagging implies the IC generation facility is absorbing reactive power **from** the ISO controlled grid.*

Based on the technical details provided, as well as having the inverters operate at the generator net gross output of 311.6 MW in order to get a gross output to meet the requested MW output at POI, the Project has the reactive power capability of 0.95 power factor (leading and lagging) as measured at the high-side of the main transformer bank.

4.6 Operating Voltage Requirements

Under real-time operations, the inverter-based project is encouraged to operate under the control of an automatic voltage regulator with settings as shown in the figure below. The actual values of V_{min} and V_{max}, shown in the figure below, will be provided by the Participating Transmission Owner (PTO) to comply with the applicable NERC Standard. The PTO can provide preliminary V_{min} and V_{max} values or a setpoint value (preferably the value used in the study). Once the project executes a Generation Interconnection Agreement (GIA) and detailed engineering and design is complete, the PTO would ultimately provide (on the project's synchronization date) the operating procedure containing the voltage schedule at the Point of Interconnection (POI) or other location (e.g., high-side GSU or generator terminal) designated by mutual agreement. At this time, the IC would be given a voltage schedule (V_{min} and V_{max}) by the TOP (Transmission Operator, e.g., SDG&E's Electric Grid Operations) to comply with the NERC Standards. The V_{min} and V_{max} values are to be used as the basis for setting up the automatic voltage control mode (with its Automatic Voltage Regulator, AVR, in service and controlling voltage) of the Generating Facility in order to maintain system operating voltage. If SDG&E's voltage schedule (with additional tolerance band) is being exceeded, then the Project and the TOP are expected to coordinate the status and control of reactive devices at the Generating Facility. If SDG&E's voltage schedule and the system operating voltage are being continuously exceeded, curtailment or tripping of the Project could be required. The TOP reserves the right to change the voltage schedule depending on system condition or on a seasonal basis.

Figure 4.1: Project Voltage Control Illustration



4.7 Low/High Voltage Ride-Through (LHVRT) and Low/High Frequency Ride-Through (LHFRT) Capability

Consistent with PRC-024, the Generating Facility may not trip or cease to inject current within the "no-trip" zone of the frequency and voltage ride through curves of PRC-024. Momentary cessation—ceasing to inject current during a fault—is prohibited unless transient high voltage conditions rise to 1.20 per unit or more. For transient low voltage conditions, the Generating Facility will inject reactive current directionally proportional to the decrease in voltage. The inverter must produce full rating reactive current when the AC voltage at the inverter terminals drops to a level of 0.50 per unit and must continue to operate and attempt to maintain voltage for transient voltage conditions between 1.10 and 1.20 per unit. In addition, the Generating Facility may not trip or cease to inject current for momentary loss of synchrony within the no-trip zone of PRC-024.

4.8 Primary Frequency Response Requirement

Per FERC Order 842, the IC is required to install a governor or equivalent controls with the capability of operating: (1) with a maximum 5 percent droop and ±0.036 Hz deadband; or (2) in accordance with the relevant droop, deadband, and timely and sustained response settings from the Approved Applicable Reliability Standards providing for equivalent or more stringent parameters. The IC shall ensure that the Electric Generating Unit's real power response to sustained frequency deviations outside of the deadband setting is automatically provided and shall begin immediately after frequency deviates outside of the deadband, and to the extent the Electric Generating Unit has operating capability in the direction needed to correct the frequency deviation.

Per FERC Order 841, nuclear generating facilities and certain Combined Heat and Power (CHP) facilities are exempt from these primary frequency response requirements.

5. Deliverability Assessment Results

5.1 On-Peak Deliverability Assessment

The Generating Facility contributes to the following overloads in the On-Peak Deliverability Assessment:

Table 5.1: On-Peak Deliverability Assessment

Overloaded Facilities	Contingency	Max Flow
Sycamore-Penasquitos 230 kV	Artesian-Sycamore 230 kV	102%
Bay Boulevard-Silvergate 230 kV	Base Case	113%
Silvergate-Old Town 230 kV	Base Case	103%
Sycamore-Suncrest 230 kV #1	ECO-Miguel 500 kV	104%
Sycamore-Suncrest 230 kV #2	ECO-Miguel 500 kV	104%
Encina Tap-Encina 230 kV	Encina-San Luis Rey 230 kV	126%
Encina Tap-San Luis Rey 230 kV	Encina-San Luis Rey 230 kV	161%
Encina-San Luis Rey 230 kV	Encina-San Luis Rey-Palomar 230 kV	143%
Mission-San Luis Rey 230 kV #1	Encina-San Luis Rey-Palomar 230 kV and Encina-San Luis Rey 230 kV	128%

Overloaded Facilities	Contingency	Max Flow
Mission-San Luis Rey 230 kV #2	Encina-San Luis Rey-Palomar 230 kV and Encina-San Luis Rey 230 kV	127%
Old Town-Mission 230 kV	Encina-San Luis Rey-Palomar 230 kV and Encina-San Luis Rey 230 kV	105%
Encina Tap-San Luis Rey 230 kV	Escondido-Talega-Capistrano 230 kV	109%
ECO-Miguel 500 kV	IV-Ocotillo 500 kV	108%
Miguel 500/230 kV #2	Miguel 500/230 kV #1	136%
Miguel 500/230 kV #1	Miguel 500/230 kV #2	133%
Bay Boulevard-Silvergate 230 kV	Miguel-Mission 230 kV #1 and #2	115%
Miguel 500/230 kV #1	Ocotillo-Suncrest 500 kV	105%
Miguel 500/230 kV #2	Ocotillo-Suncrest 500 kV	105%
ECO-Miguel 500 kV	Ocotillo-Suncrest 500 kV	109%
Bay Boulevard-Silvergate 230 kV	Ocotillo-Suncrest 500 kV	104%
Silvergate-Old Town 230 kV	Old Town-Mission 230 kV and Silvergate-Old Town-Mission 230 kV	111%
Escondido-Talega Tap 230 kV	San Luis Rey-Encina 230 kV and San Luis Rey-Encina-Palomar 230 kV	102%
Encina-San Luis Rey 230 kV	San Luis Rey-Encina-Palomar 230 kV and Batiquitos-Shadowridge 138 kV	143%
Encina-San Luis Rey 230 kV	San Luis Rey-Encina-Palomar 230 kV and Encina-Palomar 138 kV	143%
Encina-San Luis Rey 230 kV	San Luis Rey-Encina-Palomar 230 kV and Palomar-Artesian 230 kV	149%
Encina-San Luis Rey 230 kV	San Luis Rey-Encina-Palomar 230 kV and Palomar-Batiquitos 138 kV	142%
San Luis Rey-San Onofre 230 kV #1	San Luis Rey-San Onofre 230 kV #2 and #3	154%
Silvergate-Old Town 230 kV	Silvergate-Mission-Old Town 230 kV	128%
Silvergate-Old Town Tap 230 kV	Silvergate-Old Town 230 kV	130%
Silvergate-Old Town 230 kV	Silvergate-Old Town Tap 230 kV	131%
Bay Boulevard-Silvergate 230 kV	Sycamore-Penasquitos 230 kV	107%
Sycamore-Suncrest 230 kV #2	Sycamore-Suncrest 230 kV #1	101%
ECO-Miguel 500 kV	Sycamore-Suncrest 230 kV #1 and #2	108%
Bay Boulevard-Silvergate 230 kV	Sycamore-Suncrest 230 kV #1 and #2	105%
Miguel 500/230 kV #1	Sycamore-Suncrest 230 kV #1 and #2	104%
Sycamore-Suncrest 230 kV #1	Sycamore-Suncrest 230 kV #2	101%

5.2 Off-Peak Deliverability Assessment

The Generating Facility contributes to the following overloads in the Off-Peak Deliverability Assessment:

Table 5.2: Off-Peak Deliverability Assessment

Overloaded Facilities	Contingency	Max Flow
Miguel 500/230 kV #2	Miguel 500/230 kV #1	124%
Miguel 500/230 kV #1	Miguel 500/230 kV #2	126%

5.3 Required Mitigations

The following Reliability and Delivery Network Upgrades are assigned to the Project to address the on-peak deliverability constraints:

- Participate in the proposed RAS to protect TL23002/06/10 San Luis Rey-San Onofre 230 kV #1 #2 & #3 lines
- Participate in existing/modified Imperial Valley RASs
- Participate in the proposed RAS to protect TL23071 Sycamore-Penasquitos 230 kV line
- Participate in a new RAS to protect Silvergate-Bay Boulevard 230 kV line
- Participate in the proposed RAS to protect TL23029 Silvergate-Old Town 230 kV and TL23028 Silvergate-Old Town Tap 230 kV line
- Participate in a new RAS to protect Doublet/Friars/Penasquitos/Mission 138 kV lines
- Although the Project contributes to the Encina area overloads in Section 5.1, the Project will not be required to participate in the Remedial Action Schemes (RASs) mitigation plan, as tripping the Project when the condition occurs will be much less effective than tripping other projects

The Project contributes to the following area deliverability constraints:

- East of Miguel Area Constraint
- Silvergate-Bay Boulevard Area Constraint
- Encina-San Luis Rey Area Constraint
- Internal San Diego Area Constraint
- San Luis Rey-San Onofre Area Constraint

Since the Project selected Option A for deliverability, no ADNU are required. The Project needs to obtain FCDS through the TPD allocation subject to the identified area constraints. Refer to Area Report section 5.1.3 for more details regarding the area deliverability constraints.

The Project contributes to the following area off-peak constraints:

- East of Miguel Area Off-Peak Constraint

Refer to Area Report section 5.2.2 for more details regarding the area off-peak constraint.

6. Steady State Charging Results

This section is not applicable to the Project since it is not an energy storage facility.

7. Upgrades, Cost Estimates, and Time to Construct Estimates

An In-Service Date (ISD) and Commercial Operation Date (COD) assessment was performed for this Generating Facility to establish SDG&E's estimate of the earliest achievable ISD based on the QC12 Phase II Interconnection Study process timelines and the time required for SDG&E to complete the facilities needed to enable physical interconnection as an Interim Deliverability or Energy Only Deliverability interconnection (as applicable) for the Generating Facility. This date may be different from the IC's requested ISD and will be the basis for establishing the associated milestones in the draft GIA.

7.1 ISD Estimation Details

This section is not applicable to the Project because the Project is proposing to use the existing Q159A gen-tie.

7.2 ISD Conclusion

Because the Project is proposing to use an existing gen-tie to interconnect, the IC's requested ISD of August 31, 2024 and COD of December 31, 2024 appears to be achievable.

The CAISO will perform its Annual Reassessment (January - July 2021) and Transmission Plan Deliverability (TPD) Allocation[1] (due April 2021). Any changes in scope, cost, or schedule requirements that come out of CAISO's Annual Reassessment and 2021 TPD Allocation will be reflected in a 2021 Reassessment Report, which will be used to revise the draft GIA (if under negotiation) or amend the GIA (if already executed).

7.3 System Upgrades Required for Reliable Interconnection

The Operational Studies identified that the following facilities are required in order to provide for reliable interconnection:

7.3.1 PTO's Interconnection Facilities

Refer to Table 8.1 for detailed description of PTO's Interconnection facilities.

7.3.2 Reliability Network Upgrades

7.3.2.1 Remedial Action Schemes

Per CAISO guidelines, all Remedial Action Schemes (RASs) are classified as Reliability Network Upgrades to ensure compatibility with the CAISO market model. RAS can minimize overburdening of CAISO's congestion management system, by reducing the number of binding constraints that can increase processing time to a point that could create reliability concerns. Once a RAS is introduced, all generation that significantly contributes to the constraints that are mitigated by the RAS must participate to avoid the need for complex programming that is incompatible with the CAISO market model capabilities.

[1] The TPD Allocation Process is estimated to be completed in April 2021. The actual date may vary.

The following RNUs were identified for the Project:

- Participate in the existing/modified Imperial Valley RASs
- Participate in the existing Otay Mesa RASs
- Participate in the existing/modified RAS to protect Miguel BK 80 / BK 81 500kV/230kV
- Participate in the existing/modified RAS to protect ECO BK 60 230kV/138kV
- Participate in the existing/modified RAS to protect ECO BK 62 230kV/138kV
- Participate in the existing/modified RAS to protect ECO BK 80 500kV/230kV
- Participate in the existing ECO/BUE Anti – Islanding Scheme to protect the facilities at ECO and BUE area for abnormal conditions
- Participate in the proposed RAS to protect TL23001 and TL23004 Mission – San Luis Rey #1 and #2 230kV lines
- Participate in the proposed RAS to protect TL23002/06/10 San Luis Rey – San Onofre #1, #2 & #3 230kV lines
- Participate in the proposed RAS to protect TL23071 Sycamore – Penasquitos 230kV line
- Although the Project contributes to the Encina area overloads , the Project will not be required to participate in the Remedial Action Schemes (RASs) mitigation plan, as tripping the Project when the condition occurs will be much less effective than tripping other projects
- Participate in the proposed RAS to protect TL23026 Bay Boulevard – Silvergate 230kV line
- Participate in the proposed RAS to protect TL23027 Mission – Old Town 230kV line
- Participate in the proposed RAS to protect TL23028A Silvergate – Old Town Tap 230kV line
- Participate in the proposed RAS to protect TL23029 Silvergate – Old Town 230kV line
- Participate in the proposed RAS to protect TL13820 Sycamore – Chicarita 138kV line
- Participate in the proposed RAS to protect TL6916 Sycamore –Scripps 69kV line
- Participate in the new RAS to protect TL675 Penasquitos – Mesa Rim 69kV line
- Participate in the new RAS to protect TL6906 Penasquitos – Mesa Rim 69kV line
- Participate in the new RAS to protect IV BK 80, 81, and 82 500kV/230kV

7.4 System Upgrades Required for Full Capacity Deliverability Status

The Project would be granted its requested FCDS only if the Project receives TPD allocation in the forthcoming TPD Allocation Study Process. Furthermore, timing of obtaining the requested FCDS is dependent on the completion of DNUs identified below in this report, which may be updated in any subsequent annual reassessment. Until such time that these DNUs are completed and placed in-service, the Project may be granted Interim Deliverability Status based on annual system availability.

In order to provide for FCDS, the following facilities are required in addition to the Reliability Network Upgrades identified for the Project:

7.4.1 Triggered Delivery Network Upgrades

- None

7.4.2 Delivery Network Upgrades Triggered by Earlier Queued Projects

- None

7.4.3 Approved Transmission Upgrades

- Upgrade the series capacitor banks at Eldorado and Lugo on the Eldorado – Lugo 500 kV Transmission Line to 3,800 A (normal), 4,000 A (emergency) ratings.
- Equip the Eldorado – Lugo 500 kV line terminating positions at Eldorado and Lugo Substations with 4,000 A-rated equipment.
- Upgrade the series capacitor bank at Mohave on the Lugo – Mohave 500 kV Transmission Line to 3,800 A (normal), 4,000 A (emergency) ratings.
- Equip the Lugo 500 kV line terminating position at Mohave Substation with 4,000 A-rated equipment.
- Lugo-Victorville 500 kV upgrade

7.5 Interim COD Based Deliverability Assessment for Information Only

The COD Based Deliverability Assessment was performed for study years 2021, 2022, 2023 and 2024 by modeling the transmission and generation in service in the corresponding study year. For details of the transmission and generation assumption, refer to Section 2 of the Area Report. The COD Based Deliverability Assessment results are non-binding and for information only.

The Project contributes to the following deliverability constraints:

- East of Miguel Area Constraint
- Silvergate-Bay Boulevard Area Constraint
- Encina-San Luis Rey Area Constraint
- Internal San Diego Area Constraint
- San Luis Rey-San Onofre Area Constraint

The Project could have 100% interim deliverability under the year by year transmission and generation assumptions. However, if some or all the transmission upgrades are delayed or more generation is actually in commercial operation than assumed, the interim deliverability of the Project will be impacted.

7.6 Conclusion

The Project will have Full Capacity deliverability status as granted by the TPD Allocation Study when the Network Upgrades listed in Section 7.4 are in service.

8. Upgrades, Cost Estimates, and Time to Construct Estimates

The following good faith estimate of time to construct (license/permit, design, procure material, and construct) the facilities is based on the assumptions outlined in Section 2 of this report, and is applicable from the submittal of written authorization to proceed after the execution of the Generator Interconnection Agreement (GIA).

SDG&E encourages the Interconnection Customers to include the PTO's Interconnection Facilities and Network Upgrades work scope (where applicable) in their environmental impact assessment and report. In the cost estimate, SDG&E included the cost and time to construct as if SDG&E was to obtain a Permit to Construct (PTC) or Certificate of Public Convenience and Necessity (CPCN), if it was anticipated.

The estimated costs, Cost Allocation Factors, and estimated time to construct for the PTO's Interconnection Facilities and Network Upgrades for which the Project is responsible for are shown in Tables 8.1 and 8.2.

Table 8.1: PTO's Interconnection Facilities, Estimated Costs, and Estimated Time to Construct Summary

Type of Upgrade	Upgrade	Cost Allocation Factor	Estimated Cost x 1,000 Constant	Estimated Cost x 1,000 Escalated (Note 1)	Estimated Cost x 1,000 Escalated with ITCCA (Note 2)	Estimated Time to Construct (Months) (Note 3)
PTO's Interconnection Facilities	Project Q1660 will share the gen-tie with Q159A at ECO Gen 1 (Note 4)	#N/A	#N/A	#N/A	#N/A	#N/A

Notes for Table 8.1:

Note 1: *Estimated costs in "as year spent" dollars and in thousands of dollars, excluding Allowance for Funds Used During Construction (AFUDC). Estimated costs include land purchases and licensing/permitting costs, when appropriate.*

Note 2: *Income Tax Component of Contributions and Advances ("ITCCA") is an additional charge to compensate the PTO for the net present value of the liability for federal and state income taxes. If the PTO is taxed on the value of the asset contribution (the PTO's Interconnection Facilities), the net present value of the tax impact will in turn, be collected from the IC. The IC shall complete the PTO's "Safe Harbors Questionnaire" and the PTO shall determine if the ITCCA is applicable. The safe harbor requirements are per Internal Revenue Service ("IRS") Notice 2016-36. The PTO is authorized by the CPUC to collect ITCCA when applicable. The asset contributions will be subject to the Tax Factor effective at the time of payment. (The ITCCA included in the table utilized the Tax Factor effective on the issue date of the study.)*

Note 3: *Time to construct estimates includes time for licensing/permitting, when appropriate. The estimated time to construct is for a typical project construction duration may change due to the number of projects simultaneously in construction. Multiple projects impact resources, system outage availability, and environmental windows of construction. A key assumption is SDG&E will need to obtain CPUC licensing and regulatory approvals prior to design, procurement, and construction of the proposed facilities. The time to construct is not cumulative.*

Note 4: *Interconnection customers that share the PTO Interconnection Facilities that were, or will be, funded by another interconnection customer(s), are obligated to compensate that other interconnection customer(s) for the use of the PTO Interconnection Facilities in accordance with the applicable provisions of the CAISO Tariff: Appendix FF: SGIA, Article 4.1 and Appendix EE: LGIA: Article 9.9.2.*

Table 8.2: Network Upgrades, Estimated Costs, and Estimated Time to Construct Summary

Network Upgrade Type (Note 1)	Sum of Total Cost Constant ($k)	NU Total Cost Escalated (2019 $k)	Project Allocation	Allocated Cost (2019 $k)	Allocated Cost (Escalated $k)	Max of Estimated Time to Construct (Months) (Note 2)
GRNU						
ICs Panel(s) and Monitoring Equipment for Existing, Proposed, and New RAS(s)	$250	$250	100.00%	$250	$250	12
New RAS to Protect IV Bk 80, 81 and 82 (Note 3 and 4)	$300	$300	16.57%	$50	$50	12
New RAS to Protect TL675 Penasquitos - Mesa Rim 69kV line (Note 3 and 4)	$100	$100	12.07%	$12	$12	12
New RAS to Protect TL6906 Penasquitos - Mesa Rim 69kV line (Note 3 and 4)	$100	$100	12.07%	$12	$12	12
Total GRNU	**$750**	**$750**		**$324**	**$324**	
CANU-GR						
Existing ECO/BUE anti-islanding scheme for radial generators (Note 3 and 4)	$100	$100	50.00%	$50	$50	12
Existing Imperial Valley RAS' (Note 3 and 4)	$700	$700	16.57%	$116	$116	12
Existing Otay Mesa RASs (Note 3 and 4)	$300	$300	18.63%	$56	$56	12
Existing RAS Miguel BK 80 / BK 81 (Note 3 and 4)	$200	$200	16.57%	$33	$33	12
Proposed RAS to Protect ECO Bank 60 230kV/138kV (Note 3 and 4)	$100	$100	50.00%	$50	$50	12
Proposed RAS to Protect ECO Bank 62 230kV/138kV (Note 3 and 4)	$100	$100	50.00%	$50	$50	12
Proposed RAS to Protect ECO BANK 80 500/230kV (Note 3 and 4)	$100	$100	50.00%	$50	$50	12
Proposed RAS to Protect TL13820 Sycamore – Chicarita 138kV line (Note 3 and 4)	$250	$250	11.17%	$28	$28	12
Proposed RAS to Protect TL23001 and TL23004 Mission - San Luis Rey #1 and #2 230kV lines (Note 3 and 4)	$200	$200	11.17%	$22	$22	12
Proposed RAS to Protect TL23002/06/10 San Luis Rey - San Onofre #1, #2 and #3 230 kV lines (Note 3 and 4)	$750	$750	11.17%	$84	$84	12
Proposed RAS to Protect TL23026 Bay Boulevard - Silvergate 230 kV line (Note 3 and 4)	$100	$100	14.93%	$15	$15	12
Proposed RAS to Protect TL23027 Mission - Old Town 230 kV Line (Note 3 and 4)	$100	$100	11.39%	$11	$11	12
Proposed RAS to Protect TL23028A Silvergate – Old Town Tap 230 kV line (Note 3 and 4)	$100	$100	13.27%	$13	$13	12
Proposed RAS to Protect TL23029 Silvergate - Old Town 230 kV Line (Note 3 and 4)	$100	$100	11.72%	$12	$12	12
Proposed RAS to Protect TL23071 Sycamore - Penasquitos 230 kV line (Note 3 and 4)	$100	$100	11.49%	$11	$11	12
Proposed RAS to Protect TL6916 Sycamore - Scripps 69 kV line (Note 3 and 4)	$250	$250	11.98%	$30	$30	12
Total CANU-GR	**$3,550**	**$3,550**		**$632**	**$632**	

Notes for Table 8.2:

Note 1: *Estimated costs in "as year spent" dollars and in thousands of dollars, excluding Allowance for Funds Used During Construction (AFUDC). Estimated costs include land purchases and licensing/permitting costs, when appropriate.*

Note 2: *Time to construct estimates includes time for licensing/permitting, when appropriate. The estimated time to construct is for a typical project construction duration may change due to the number of projects simultaneously in construction. Multiple projects impact resources, system outage availability, and environmental windows of construction. A key assumption is SDG&E will need to obtain CPUC licensing and regulatory approvals prior to design, procurement, and construction of the proposed facilities. The time to construct is not cumulative.*

Note 3: *Per CAISO guidelines, all Remedial Action Schemes (RASs) are classified as Reliability Network Upgrades to ensure compatibility with the CAISO market model. RAS can minimize overburdening of CAISO's congestion management system, by reducing the number of binding constraints that can increase processing time to a point that could create reliability concerns. Once a RAS is introduced, all generation that significantly contributes to the constraints that are mitigated by the RAS must participate to avoid the need for complex programming that is incompatible with the CAISO market model capabilities.*

Note 4: *This RAS cost is for shared protection facilities, which include but are not limited to, the cost of: Panels at the various monitored points, fiber optic cable (if required) as well as software/programming (if required).*

Note 5: *This RAS cost is for customer-specific protection, which include but are not limited to, the cost of: PTO aggregation of monitored data and a PTO panel dedicated to the IC at the POI control house as well as the interface between the panel(s) and communication to the Point Of Change of Ownership (POCO). This is a one-time cost.*

Table 8.3: MCE and MCR Allocations

Cimarron Wind	Q1660
Deliverability Option	A
A. Phase II ANU Cost Allocation for Current Cost Responsibility (CCR)	
A.1 GRNU Cost ($k)	$ 324
A.2 LDNU Cost ($k)	$ -
A.3 IRNU Cost ($k)	$ -
A.4 LOPNU Cost ($k)	$ -
Phase II ANU Cost Allocation for CCR ($k) (*A = A.1 + A.2 + A.3 + A.4)*	$ 324
B. Phase II ANU Cost Allocation for Maximum Cost Responsibility (MCR)	
B.1 GRNU Cost ($k)	$ 324
B.2 LDNU Cost ($k)	$ -
B.3 IRNU Cost ($k)	$ -
B.4 LOPNU Cost ($k)	$ -
Phase II ANU Cost Allocation for MCR ($k) (*B = B.1 + B.2 + B.3 + B.4)*	$ 324
C. Phase II CANU Cost Allocation	
C.1 CANU - GRNU ($k)	$ 632
C.2 CANU - LDNU ($k)	$ -
C.3 CANU - IRNU ($k)	$ -
C.4 CANU - LOPNU ($k)	$ -
Phase II CANU Cost Allocation ($k) (*C = C.1 + C.2 + C.3+ C.4*)	$ 632
D. MCR from Phase I	
D.1 Phase I CCR for ANU ($k)	$ 315
D.2 Phase I CANU Cost for Upgrades Becoming ANU in Phase II ($k)	$ -
Phase I MCR ($k) (*D = D.1 + D.2*)	$ 315
E. Maximum Cost Responsibility ($k) *(E = min{B, D})*	$ 315
F. Current Cost Responsibility ($k) *(F = min{A, E})*	$ 315
G. Maximum Cost Exposure ($k) *(G = C + E)*	$ 947
H. Project ADNU Cost Responsibility ($k)	$ -

Notes for Table 8.3:

Current Cost Responsibility - The Interconnection Customer's current allocated costs for Assigned Network Upgrades, not to exceed the Maximum Cost Responsibility. This cost is used to calculate the Interconnection Customer's Interconnection Financial Security requirement.

Maximum Cost Responsibility - The lower sum of the Interconnection Customer's (1) full cost of assigned Interconnection Reliability Network Upgrades and (2) allocated costs for all other Assigned Network Upgrades, from its Phase I or Phase II Interconnection Studies, not to exceed the Maximum Cot Exposure.

Maximum Cost Exposure - The sum of (1) the Interconnection Customer's Maximum Cot Responsibility and (2) the Conditionally Assigned Network Upgrades from its Phase I or Phase II Interconnection Study.

9. Affected System Coordination

Please see Section 8 of the QC12 Phase II Area Report.

10. Environmental Evaluation/Permitting

Please see Section 9 of the QC12 Phase II Area Report.

11. Local Furnishing Bonds

Section 10 of the QC12 Phase II Area Report identifies requirements related to SDG&E's Local Furnishing Bonds ("LFBs") that are implicated by the interconnection projects, studied as a cluster, proposed to connect to SDG&E-owned transmission facilities. Such projects may be internal to SDG&E's wholly-owned Local Transmission System (SDG&E's "Local Transmission System") or external to it. Identified below are LFB-related considerations implicated by the Project's particular circumstances.

The PTO completed an assessment to determine whether the generation associated with the Project will cause an Impairment involving the "Amended Annual Net Importer Test" and the "Character Test" under applicable IRS private letter rulings as supplemented from time to time.

It appears at this time that the energy produced by this Project will not cause an Impairment to the tax-exempt status of the LFBs involving the Amended Annual Net Importer Test.

The Character Test involves an assessment whether SDG&E is required to acquire any component of the Local Furnishing Transmission System sooner, larger, more costly, or of a different design than is needed for the purpose of providing electric service to Local Retail Customers. The assessment indicated that an Impairment involving the "Character Test" may occur, as discussed below.

The Project is proposing to connect to SDG&E's Local Transmission System. If the output of this project is fully contracted to SDG&E, an Impairment involving the Character Test will not occur from the construction and energization of new Interconnection Facilities and Network Upgrades that are required for this project, even if any of such facilities are located within the Local Transmission System. However, in the event that output from this project is not fully contracted to SDG&E, then an Impairment involving the Character Test would occur if the interconnection of this project requires SDG&E to own new Interconnection Facilities or Network Upgrades within the Local Transmission System. The means by which such Impairment, if any, is resolved is set forth in SDG&E's Appendix B (SDG&E Encumbrances) to the CAISO's Transmission Control Agreement. This procedure requires SDG&E, in good faith, to promptly seek an opinion from a nationally recognized bond counsel selected by SDG&E that the requested action or inaction will not adversely affect the tax-exempt status of the LFBs. This procedure further requires that such opinion be of the type generally considered by the municipal bond market as unqualified. If SDG&E is unable to obtain such unqualified opinion, then pursuant to a written request by an Eligible Entity (as defined in the SDG&E Encumbrances), SDG&E, in good faith, will promptly seek a ruling from the IRS that the requested action or inaction will not adversely affect the tax-exempt status of interest on the LFBs. In addition, pursuant to certain provisions of the Code, SDG&E may also be required to redeem a portion of the LFBs in order to mitigate an Impairment.

The Project proposes to connect to SDG&E's Local Transmission System and therefore is required to meet either of the two following requirements:

A. The energy from the Project must be fully contracted to SDG&E, or

B. The Project must:

1. Pay any costs SDG&E incurs in mitigating the Impairment due to the Character Test, and
2. Obtain a FERC order under Sections 211/213 of the Federal Power Act compelling SDG&E to provide transmission service, including interconnection service.

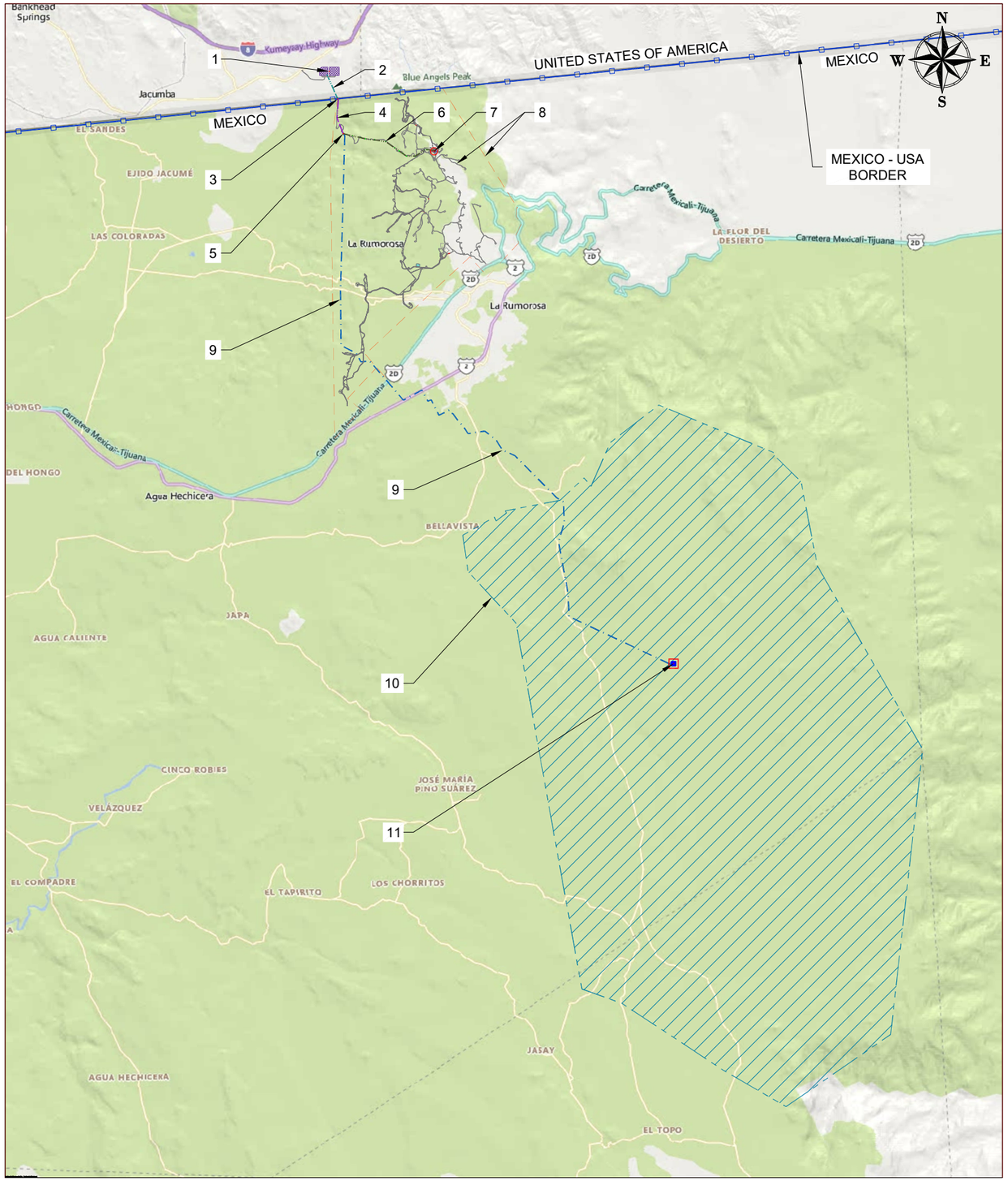
12. Subsynchronous Interaction Evaluations

SDG&E has performed a screening test to determine if inverter-based generation projects in Queue Cluster 12 could have potential SSCI concerns. Based on the initial screening test, the Project **is** expected to participate in an SSCI study. For more information regarding this requirement, please see Section 3.5 of SDG&E's Generation Interconnection Handbook[2].

[2] https://www.sdge.com/sites/default/files/GI_Handbook_12-18-2017.pdf

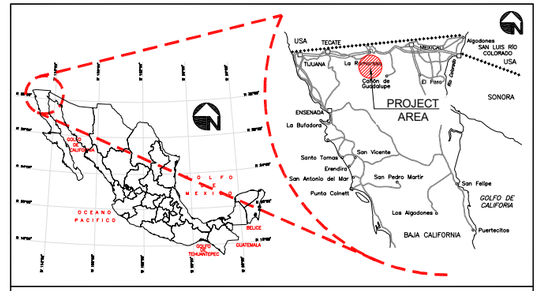
Exhibit B

Project Map



LEGEND

1	EAST COUNTY (ECO) SUBSTATION OWNED BY SAN DIEGO GAS & ELECTRIC COMPANY.
2	EXISTING TRANSMISSION LINE (GEN-TIE), USA SIDE.
3	POINT WHERE THE EXISTING GEN-TIE CROSSES THE USA-MEXICO BORDER.
4	PORTION OF ESJ GEN-TIE INFRASTRUCTURE PROPOSED TO BE SHARED WITH CIMARRON WIND GEN-TIE, OWNED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.
5	INTERCONNECTION POINT OF THE CIMARRON WIND GEN-TIE WITH EXISTING GEN-TIE.
6	EXISTING TRANSMISSION LINE (GEN-TIE) ON MEXICO SIDE, OWNED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.
7	EXISTING SUBSTATION OWNED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.
8	LOCATION OF THE EXISTING WIND FARMS OWNED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.
9	APPROXIMATE ROUTE FOR CIMARRON WIND GEN-TIE, TO BE OWNED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.
10	PROPOSED LOCATION FOR CIMARRON WIND PROJECT, TO BE LEASED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.
11	PROPOSED LOCATION FOR CIMARRON WIND SUBSTATION, TO BE OWNED BY ENERGÍA SIERRA JUÁREZ S. DE R.L. DE C.V.



GENERAL AREA MAP

NOTES:

1. THE COORDINATE AND ALTIMETRY SYSTEM USED IS THE **GEOGRAPHIC COORDINATE SYSTEM.**

REFERENCES:

No. OF DOCUMENT	TITLE

CHECK:

REV.	DESCRIPTION	DATE
0	FOR PERMITS	14/MAR/22
1	FOR PERMITS	05/MAY/22

SEMPRA™

BUSINESS NAME: ENERGÍA SIERRA JUÁREZ, S. DE R.L. DE C.V.

DESIGN:	CHECK:	APPROVE:
JAAA	LEUR	LFJA

PROJECT NAME: CIMARRON WIND

DOCUMENT NAME:

LOCATION MAP

UNITS: N/A	No. OF DOCUMENT: PR0221-CI-300-PL-008	
SCALE: 1" = 3 MILES		
DATE: 06/MAY/22	SHEET: 1/1	REVISION: 2

Exhibit C

Counsel Opinion - Corporate Authority and Compliance with Laws

May 4, 2022

U.S. Department of Energy
1000 Independence Ave.,
SW Washington, DC 20585

Ladies and Gentlemen:

This opinion is rendered in connection with the application ("Application") of Energia Sierra Juarez U.S. Transmission, LLC, a Delaware limited liability company ("ESJ US-T") to amend ESJ US-T's presidential permit 334 (OE Docket No. PP-334) for the purpose of increasing the allowable capacity of transmission over the existing electric transmission facilities operated and maintained by ESJ US-T crossing the border of the United States for the transmission of electricity between the United States and Mexico, filed herewith.

Based on my understanding of the Application and my examination of such documents, records, and matters of law as I have considered to be relevant in the premises, pursuant to 10 C.F..R. Sec. 205.322(a)(6), it is my opinion that:

1. Operating the existing electric transmission line at an increased capacity, as contemplated by the Application, is within the corporate power of ESJ US-T.

2. Based on information provided by representatives of ESJ US-T and to the best of my knowledge, ESJ US-T has complied or will comply with all pertinent Federal and State laws.

I am opining herein as to the effect on the subject transaction only of the federal laws of the United States and the internal laws of the State of California, and I express no opinion with respect to the applicability thereto, or effect thereon, of the laws of any other jurisdiction or as to any matters of municipal law or the laws of any other local agencies within any state. This opinion is issued as of the date hereof and is necessarily limited to the laws now in effect. I am not assuming any obligation to review or update this opinion should applicable law or the existing facts and circumstances change. This opinion is provided by me acting as counsel for ESJ US-T solely for your use in connection with the Application and is not to be made available to or relied upon by any other persons or entities without my prior written consent.

Very truly yours,

Jerrod L. Harrison
Assistant General Counsel
Sempra Infrastructure

Exhibit D

Verification Statement

The undersigned attests that she is an officer of Energia Sierra Juarez U.S., LLC, acting on behalf of Energia Sierra Juarez U.S., LLC in its capacity as the sole member and manager of Energia Sierra Juarez U.S. Transmission, LLC, and that she has read and has knowledge of the matters set forth in this application, and that the facts and representations set forth in said application are true and correct to the best of her knowledge.

Emily C. Shults
Senior Vice President – Development

State of Texas
County of Harris

Sworn to (affirmed) and subscribed before me this 13th day of May 2022, by Emily C. Shults.

Signature of Notary Public

Lindsay Lee Catterall

LINDSAY LEE CATTERALL
Notary Public, State of Texas
Comm. Expires 03-14-2026
Notary ID 133642227

My Commission expires: 03-14-2026