Appendix A – WDT1539

[redacted]

[redacted]

Queue Cluster 11 Phase II Report

November 20, 2019

This study has been completed in coordination with the California Independent System Operator Corporation (ISO) per Southern California Edison Company's Wholesale Distribution Access Tariff (WDAT), Attachment I Generator Interconnection Procedures (GIP)

Interconnection Study Document History

No.	Date	Document Title	Description of Document
1	11/20/19	Queue Cluster 11 Phase II Appendix A Report	Final Phase II interconnection study report

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ATTACHMENTS

A. INTRODUCTION

[redacted], the Interconnection Customer (IC), submitted a completed Interconnection Request (IR) to Southern California Edison (SCE), the Distribution Provider, for their proposed [redacted] facility (Generating Facility).

In accordance with FERC approved SCE's WDAT Attachment I Generator Interconnection Procedures (GIP), the Generating Facility was grouped with Queue Cluster 11 (QC11) Phase II projects to determine the impacts of the group as well as impacts of the Generating Facility on SCE's Distribution System and the ISO Grid.

An Area Report and, where applicable, a Subtransmission Assessment Report have been prepared separately identifying the combined impacts of all projects on the ISO Grid and to distribution facilities served out of the [redacted] Subtransmission System, respectively. This Appendix A report focuses only on the impacts or impact contributions of the Generating Facility at SCE's electric system and is not intended to supersede any contractual terms or conditions specified in the forthcoming Generator Interconnection Agreement (GIA).

B. REPORT OBJECTIVE

SCE has now performed the QC11 Phase II Study for the Generating Facility, and this report addresses the results of the analysis.

The report provides the following:

1. Distribution and transmission system impacts allocated to the Generating Facility.
2. System reinforcements or mitigation necessary to address the adverse impacts allocated to the Generating Facility under various system conditions.
3. A list of required facilities and a good faith estimate of the Generating Facility's cost responsibility and time to construct[1], with the assumption of SCE constructing the required facilities. Such information is provided in Attachment 1 and Attachment 2 as separate documents in the Appendix A report package of the Generating Facility.
4. Identification of potential short circuit duty impacts to Affected Systems served from the Subtransmission or Distribution System.

Lastly, since the Generating Facility encompasses energy storage devices, an analysis to determine the charging impacts on SCE's electric system was conducted as well. The analyses focused on the Charging Demand[2] aspects of the Generating Facility and considered varying levels of system demand with minimal generation dispatch within the local distribution system.

Accordingly, the report also discloses the adequacy of SCE's electric system to support the Generating Facility when operating in charging mode, identifies system limitations that may restrict the Generating Facility when operating in charging mode during certain demand conditions, and provides a high-level

[1] It should be noted that construction is only part of the duration of months specified in the study, which includes final engineering, licensing, and other activities required to bring such facilities into service. These durations are from the execution of the GIA, receipt of: all required information, funding, and written authorization to proceed with design and engineering, procurement, and construction from the IC as will be specified in the GIA to commence the work.

[2] Charging Demand: The flow of wholesale electric energy from the Distribution System solely to charge the storage component of the Eligible Customer's Resource from the Distribution System for later redelivery of such energy, net of Resource losses, to the Distribution System. Charging Demand does not include the delivery of energy for purposes that are subject to the SCE's retail tariff.

explanation of potential exposure of the Generating Facility of charging restrictions on the electric system. The Generating Facility will follow ISO market dispatch instructions when in charging mode and in discharging mode while adhering to SCE's charging restrictions.

The IC is reminded that this QC11 Phase II study is independent from the firm charging demand study[3] that SCE previously performed at the IC's request for its Generating Facility. Accordingly, this QC11 Phase II study report only identifies the plan of service and system requirements (i.e., participation in DERMS) to provide the IC's Generating Facility "as-available" charging distribution service. In the event the IC elects to proceed with firm charging distribution service[4], then the plan of service and system requirements provided in this QC11 Phase II study will be supplemented or superseded, as applicable, by those identified in the firm charging demand study for the Generating Facility

C. DESCRIPTION OF GENERATING FACILITY

The Generating Facility shall consists of all equipment and facilities comprising the IC's battery storage [redacted] plant in [redacted], California, as disclosed by the IC in its IR, including Attachment B, as may have been amended during the Interconnection Study process, as summarized below in Table A.1.

Table A.1: Generating Facility general information per the IR, including Attachment B

[redacted]	
Generating Facility Output	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
Generating Facility Charging	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]

Generation output limit for the Generating Facility

The forthcoming GIA will provide for, a total net capacity of [redacted] at the POI. If the Generating Facility is capable of exceeding these values, the IC shall be required to install, own and maintain a control limiting device or, alternatively, by means of configuring the Generating Facility's control

[3] [redacted]

[4] [redacted]

system, as approved by SCE that will ensure the Generating Facility complies with these restrictions. In addition, SCE may require the following:

- An SCE protection device as backup to customer control system, and/or
- A DERMS function (Generation Control Monitoring Systems) which will open the SCE-owned device (e.g., Remote Control Switch Generation (RCSG))

As available-charging limit for the Generating Facility

The IC has requested, and the forthcoming GIA provide for a total Charging Capacity of [redacted] as measured at the high-side of the main step-up transformer(s) and [redacted] at the POI. If the Generating Facility is capable of exceeding these values, the IC agrees to install, own, operate and maintain a control limiting device or, alternatively, by means of configuring the Generating Facility's control system to ensure the Generating Facility does not exceed the total Charging Capacity provided under the GIA at the high-side of the main step-up transformer(s) and POI.

The proposed plan for interconnecting the Generating Facility is illustrated in Figure A.1. Whereas Figure A.2 illustrates the location of the Generating Facility. Additional Generating Facility information is provided in Table A.2.

Figure A.1: Generating Facility One-Line Diagram

Figure A.2: Generating Facility Location Map

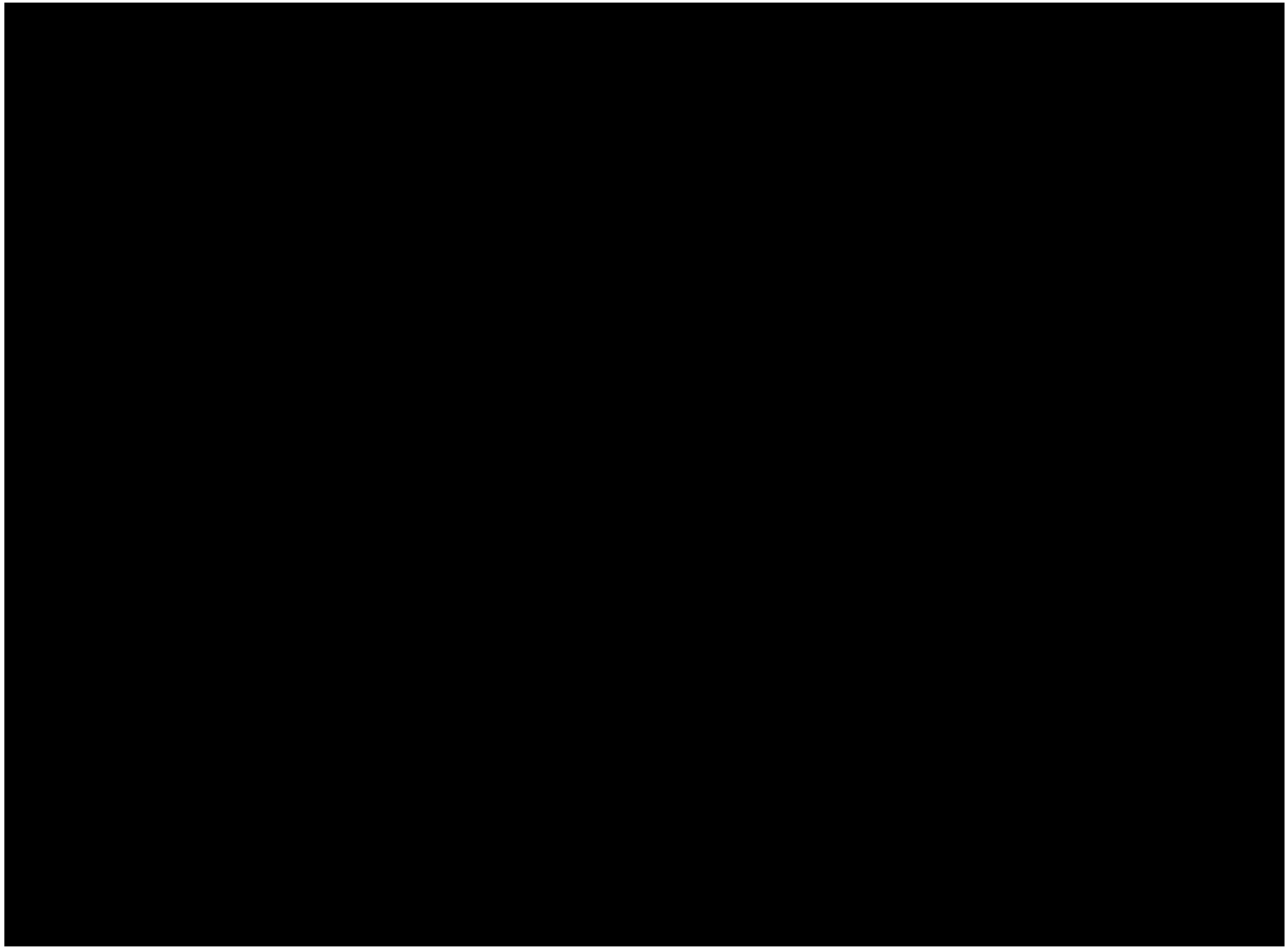


Table A.2: Additional Generating Facility General Information per IR, including Attachment B

Generating Facility Location	[redacted]
SCE's Planning Area	[redacted]
Interconnection Voltage	[redacted]
POI	[redacted]
Number and Types of Generators	[redacted]
Requested Maximum Generating Facility Delivery at POI	[redacted]
Pad-Mount Transformer(s) Downstream of Main Transformer Bank T1	[redacted]
Generator Data Downstream of Main Transformer Bank T1	[redacted]
Generator Auxiliary Load and/or Station Light and Power	[redacted]
Deliverability Requested	[redacted]
Option (A/B) Requested	[redacted]
Proposed Dates[5]	
In-Service Date (ISD)	[redacted]
Initial Synchronization Date/Trial Operation	[redacted]
Commercial Operation Date (COD)	[redacted]

D. STUDY ASSUMPTIONS

For detailed assumptions regarding the group cluster analysis, please refer to the QC11 Phase II Area Report. Below are the assumptions specific to the Generating Facility:

1. The Generating Facility was modeled as described in Table A.1 and Table A.2 above.
2. Wildfire mitigation measures have been incorporated into all of SCE's construction standards and operational practices. SCE has notified ICs with a proposed Generating Facility and associated Interconnection Facilities to be located in, or interconnecting to, an identified high fire risk area (HFRA) or high fire risk area circuit (HFRA circuit). As a result of implementing

[5] Such dates are specified in the Generating Facility's Attachment B. Actual ISD and COD will depend on licensing, engineering, detailed design, and construction requirements to interconnect the Generating Facility after the GIA has been executed.

these mitigation measures, please be advised that the facilities and their associated costs identified in this Cluster Study (Attachment 1 and Attachment 2) are above and beyond the mitigation identified in previous cluster studies. SCE is implementing these measures to address the heightened wildfire risk in HFRAs and HFRA circuits. In the future, SCE may develop and implement additional mitigation measures in these HFRAs to continuously ensure the safety and reliability of SCEs Transmission System and the public it serves.

3. The facilities that will be installed by SCE and the IC are detailed in Attachment 1.

4. Environmental Activities, Permits, and Licensing.

   The assumptions for the Environmental Activities, Permits, and Licensing are as follows:

   i. SCE's Interconnection Facilities (IFs) and Distribution Upgrades (DUs) needed to interconnect the Generating Facility:

      SCE's scope of work will not require a California Public Utilities Commission (CPUC) license.

      a. SCE's IFs and DUs needed to interconnect the Generating Facility:
         - SCE will act as the lead for regulatory agency communication for permits issued to SCE covering SCE facilities.
         - SCE environmental activities may include, but are not limited to, the following:
            - Perform all environmental studies and construction monitoring of SCE internal substation construction activities and provide study results to the IC for inclusion in its environmental documents, if applicable.
            - Collaborate with the IC during the environmental study phase on the IC's proposed study methodologies and findings, as studies are being planned and performed for SCE's scope of work.
            - Review IC's California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA) documents, technical studies, surveys, and other environmental documentation to ensure SCE's scope of work is adequately described in such documents (IC will include SCE's scope of work in its environmental documents. If the Generating Facility's CEQA and/or NEPA documents do not sufficiently incorporate SCE's scope of work, SCE's assumed environmental work and permitting level of effort may increase, resulting in the need to update cost and duration estimates, and potentially amend the IA).
            - Review SCE's internal existing technical reports/documents when available.
            - Prepare SCE's IF and DU project description, including scope changes during permitting/pre-construction or construction.
            - Communicate scope changes to the IC's environmental team and discuss/approve subsequent actions including new surveys as necessary.
            - Complete General Order 131-D Consistency Determination and Environmental Evaluation.
            - Regulatory agency communication, consultation, reporting, and acquisition of SCE permits addressing SCE's facilities and scope of work.
            - Prepare environmental requirements for construction clearance.
            - Develop communication plan.

- Perform pre-construction coordination field visit.
- Provide Environmental Awareness/Worker Environmental Awareness Program (WEAP) training.
- Perform construction monitoring oversight for IFs and DUs.
- Complete construction and post-construction site assessments.

- IC performs all environmental studies and prepares draft environmental permit applications related to the installation of SCE's IFs and DUs, except for the SCE internal substation activities as described above. The IC's responsibilities include as applicable, but are not limited to: notifications to the Native American Heritage Commission (NAHC) and follow-up notifications to the tribes and individuals in the NAHC contact list; performing cultural and paleontological resources records searches, cultural resources inventories (survey and recording), testing and evaluation and/or data recovery of archaeological sites, and appropriate documents in the form of inventory reports, research design, and/or data recovery reports; cultural and paleontological monitoring when/if required, and arranging curation agreements for artifacts and fossil specimens collected; performing a California Natural Diversity Database search, habitat assessment, and protocol or focused surveys for species with the potential of occurring in identified suitable habitat; conducting jurisdictional delineations for wetlands or other regulated waters; preparing draft environmental permit applications, pre-construction biological resource surveys for IFs and DUs, biological resource monitoring during construction for IFs and DUs, and cultural and paleontological monitoring during construction for IFs and DUs; mitigation costs including, but not limited to, offsite/compensatory mitigation and onsite restoration, and developing mitigation plans or other environmental reports or submittals to support installation of SCE's IFs and DUs.
- Prior to commencing work and during execution of work, the IC should collaborate and obtain SCE concurrence on all work outlined above. Should the IC-performed environmental studies, surveys, or construction monitoring not meet the Federal or State industry standards in accordance with Applicable Laws and Regulations, and as determined by SCE, the IC shall be obligated to remedy deficiencies under SCE's direction, or SCE shall undertake additional environmental studies, surveys, or construction monitoring at the sole expense of the IC. If these scenarios occur, the cost estimate must be updated to reflect the changes to the assumptions.
- The estimated costs provided in this study assume that the IC will perform part of the environmental scope of work that would normally be performed by SCE for SCE-owned IFs and DUs, if applicable, to interconnect the Generating Facility. The IC shall provide SCE a signed Affidavit summarizing the actual costs for work performed by the IC within thirty (30) days from the Generating Facility's ISD. The IC acknowledges and accepts that these costs will be subject to an Interconnection Facilities Charge, a Distribution Facilities Charge, if applicable, and Income Tax Component of Contribution (ITCC).

ii. SCE's Reliability Network Upgrades (RNUs) and Delivery Network Upgrades (DNUs) assigned to the Generating Facility**:** No Environmental activities were assumed as no environmental impacts were identified based on the RNUs and DNUs that will be installed by SCE disclosed in Attachment 1.

iii. For further details on the environmental evaluation and permitting/licensing requirements for generation interconnection projects, refer to Appendix K of the Area report.

5. **Energy Storage Considerations**:

- With respect to Charging Demand, SCE currently offers "as available" only basis. Charging restrictions will be required and implemented using the Distributed Energy Resource Management System (DERMS) and/or charging schedule.
- SCE is in the course of developing a "firm charging" process. Once the process is established and accepted by FERC, SCE will notify ICs of the process along with its terms and conditions.
- The load assumptions used for SCE's Distribution System consider SCE's 2019-2028 Distribution Load Forecast.
- To model the hourly forecast demand performance of SCE's Distribution System, historical year 2017-2018 B-Bank and circuit data were obtained and adjusted to reflect the worst case year within SCE's Distribution Load forecast. The use of historical data established a baseline upon which to build a comparable hourly demand performance for the worst case year in SCE's Distribution Load Forecast.
- The IC should note that, due to the dynamic nature of SCE's distribution system, the operational limitations yielded by the charging analysis results disclosed in this report are for informational purposes only. Furthermore, the charging analysis used historical system performance information, which can only speak to past system performance. Hence, based on future real time operational conditions, the Generating Facility's ability to charge may be further restricted.
- This study assumes that the Generating Facility will include all equipment, software, appropriate controls, and other related equipment necessary to maintain Charging Demand restrictions per SCE's requirements and must be reviewed and approved by SCE.
- The Generating Facility will be required to comply with SCE's voltage regulation requirements as stated in SCE's Rule 2 at the Point of Change of Ownership (POCO) while in parallel with SCE's Distribution System. This will require limiting discharging and charging ramp rate in order to avoid unnecessary flicker that may impact other customers. Upon execution of the GIA, SCE will provide the IC with the required ramp rate[6] control parameters and other necessary information to allow the IC to develop its storage control limit. Ongoing changes to the ramp rate control scheme may be required as determined by changes in the distribution system topology or other changes in the distribution system. However, typical ramp rates for facilities connected to SCE's Distribution System are 10% of nameplate rating, per minute. SCE would review and approve the ramp rates to insure compliance with SCE's Rule 2 requirements.
- The IC is reminded that per GIP Section 3.13, it is mandatory that Interconnection Requests use smart inverters. Failure to use smart inverters may result in SCE not allowing a generating facility to interconnect and operate in parallel with SCE's Distribution System. For further information on smart inverters, the IC is encourage to

[6] It is assumed that ramp rates for each Generating Facility will be dependent upon their inherent technology types. While very quick response ramp rates (i.e. going from full charge to full discharge instantaneously, or vice-versa) may be beneficial for other grid services, SCE, may, at its discretion, require establishing limits to maintain safety and reliability of its distribution system.

visit the Go Solar California Website at the following link: http://www.gosolarcalifornia.ca.gov/equipment/inverters.php

- At this stage, since DERMS is conceptual and under development, it is assumed that DERMS will not be available prior to the commercial operation date of the Generating Facility. Further details will be available during the final engineering and design phase of the Generating Facility. In concept, DERMS will monitor system loading conditions from both monitored data of SCE's facilities and IC's facilities. DERMS will calculate the available charging capacity limits and will transmit the limits to the IC. It will be required that the IC's control system follows the provided limits. If the IC's control system does not comply with this requirement, SCE will mitigate this condition at its discretion including but not limited to disconnecting the Generating Facility from the grid using SCE controlled equipment.
- The facilities and costs to implement DERMS are included in Attachments 1 and 2. In order to ensure Charging Demand capability's limits and restrictions are communicated in a timely and reliable manner; the IC is responsible for providing reliable communications and identifying a location subject to SCE's requirements. The communication interface is based upon SCE's requirements.
- The preliminary charging analysis discussed in this report assumed that Charging Demand is curtailable before wholesale and retail load, and this assumption was used to determine the charging restrictions contained in this report for the Generating Facility.
- Metering configurations for wholesale and retail services will require adherence to PUC, CALISO, energy procurement contracts or other relevant metering requirement. This study assumes that retail service for the Generating Facility station light and power will be provided by SCE via the installation of separate metering serviced configuration. Final metering requirements will be identified as part of execution of the Generating Facility which could result in modifications to the Generating Facility, additional metering provision requirements and increased cost.

6. Other items to Consider:
    - As a requirement for Interconnection Customers electing to share the responsibility to perform the environmental activities for SCE-owned Interconnection Facilities (IFs), Distribution Upgrades (DUs), and/or other facilities based on the study assumption(s) as disclosed in Section D.4, and to ensure proper accounting of costs used in the calculation of the Income Tax Component of Contribution ("ITCC") and Operations & Maintenance ("O&M") charges, referred to as an Interconnection Facilities Charge and/or a Distribution Upgrades Charge, if applicable in the forthcoming GIA for the Generating Facility, the IC is required to complete and submit an "Environmental Services Costs Declaration Form" ("Form"). An authorized representative of the IC will sign the Form attesting to the actual costs spent on environmental services work that would otherwise have been performed by SCE for SCE-owned IFs, DUs and/or other facilities required to interconnect the Generating Facility.

      The Form shall be provided to SCE by a specified date in the Generating Facility's forthcoming GIA Appendix B - Milestone table. Should the IC fail to provide the Form by the specified deadline, SCE will hold the IC in default of the GIA pursuant to the terms therein. The costs declared by the IC in the Form, once approved by SCE will be used to

adjust the ITCC and the applicable monthly O&M charges for the Generation Facility and will be reflected via an amendment to the GIA upon true-up.

The information declared in the Form is subject to review and/or audit by SCE pursuant to the terms and conditions in the forthcoming GIA. Should an audit be deemed necessary by SCE, the IC will need to provide supporting documentation (copies of invoices/receipts) to substantiate the costs declared in the Form within ten (10) business days from receipt of notice.

The IC is advised that should the environmental studies and resulting reports not meet the industry standards utilized in the State of California and/or by SCE in accordance with Applicable Laws and Regulations, as determined by SCE, the IC shall be required to remedy all deficiencies under SCE's direction. Otherwise, SCE will be required to perform the additional environmental studies at the sole expense of the IC to the GIA, and associated costs will be reflected during the true-up amendment.

E. TECHNICAL REQUIREMENTS[7]

1. **Protection Requirements**
   Protection requirements are designed and intended to protect SCE's electric system only. The preliminary protection requirements were based upon the interconnection plan as shown in the one-line diagram depicted in line item #4 in Attachment 1.

   The IC is responsible for the protection of its own system and equipment and must meet the requirements in SCE's Interconnection Handbook provided in Attachment 4.

2. **Power Factor Requirements**
   The Generating Facility will be required to maintain a composite power delivery at continuous rated power output at the high-side of the generator substation or other equivalent location. At that point, the generator must provide dynamic reactive power within the power factor range of 0.95 leading to 0.95 lagging or otherwise required by Rule 21 Section Hh as shown in Figure Hh-1 and Table Hh-4 below. The Generating Facility may meet the dynamic reactive power requirement by utilizing a combination of the inherent dynamic reactive power capability of the inverter, dynamic reactive power devices, and static reactive power devices to make up for losses. The Generating Facility must also be designed to accommodate a VAR schedule provided by SCE. SCE will determine if the VAR schedule is necessary based on future re-arrangements of SCE's Distribution System.

3. **Operating Voltage Requirements**
   Under real-time operations, the Generating Facility will be required to operate under the control of automatic voltage regulation compliant with Rule 21 Section Hh requirements as shown in Rule 21 Figure Hh-1 and Table Hh-4 below. The Voltage Setpoints are to be used as the basis for

[7] The IC is advised that it shall comply with mandatory regulatory standards of but not limited to FERC/NERC/WECC/CPUC and there may be technical requirements in addition to those that outlined above in Section C of this report that are included in the SCE's Interconnection Handbook or that will be addressed in the Generating Facility's GIA.

setting up the automatic voltage control mode (with its automatic voltage regulator in service and controlling voltage) of the Generating Facility in order to maintain scheduled voltage at a reference point. The Generating Facility must also be designed to:

I. Parallel with SCE's electric system without causing a voltage fluctuation at the PCC greater than plus/minus 5% of the prevailing voltage level of SCE's electric system at the PCC.

II. Meet SCE's flicker requirement IEEE 1547-4.1.3. Furthermore, the Generating Facility shall not create objectionable flicker for other customers on SCE's Distribution or Transmission system. To minimize the adverse voltage effects experienced by other customers (IEEE 1547-4.3.2), flicker at the PCC caused by the Generating Facility should not exceed the limits defined by the "Maximum Borderline of Irritation Curve" identified in IEEE 519-1992 (IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, IEEE STD 519-1992). This requirement is necessary to minimize the adverse voltage affects experienced by other Customers on SCE's electric system.

Figure Hh-1: Voltage and Reactive Default Settings

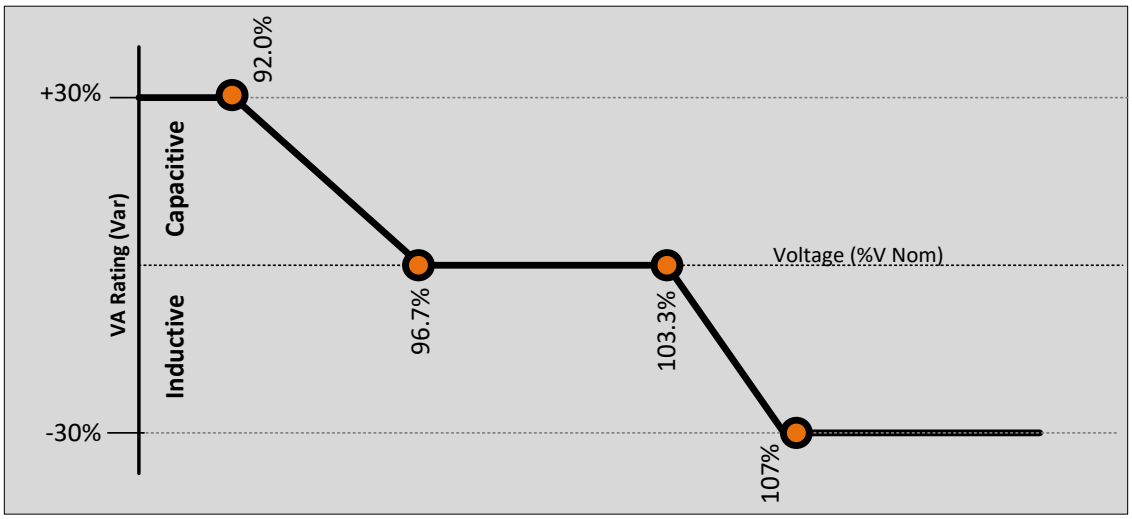


Table Hh-4: Voltage and Reactive Default Settings

Voltage Setpoint	Voltage Value	Reactive Setpoint	Reactive Value	Operation
V1	92.0%	Q1	30%	Reactive Power Injection
V2	96.7%	Q2	0	Unity Power Factor
V3	103.3%	Q3	0	Unity Power Factor
V4	107.0%	Q4	30%	Reactive Power Absorption

4. **Harmonic Requirements**

The harmonic impact of the subject inverter-based generation was not part of this study. Impacts on voltage distortion levels may be significant due to the penetration level of the Generating Facility with respect to the local distribution's grid strength. As with all equipment connected to SCE's Distribution System, the Generating Facility will be subject to the provisions of CPUC Rule 2.E, allowing SCE to require the IC to mitigate interference with service other SCE customers, including harmonic impacts, if the harmonic interference is caused by the IC.

Given the amount of generation and the strength of the distribution system, SCE may require a harmonic study during the execution and construction phase to ensure that the Generating Facility complies with the harmonic current limits outlined in IEEE 519-2014. During that time, SCE will then provide the required SCE distribution system data that are to be used as part of the harmonic study.

Additionally, SCE may require the IC to be served through a dedicated distribution transformer which serves no other customers. The purpose of the dedicated transformer is to confine any voltage fluctuations or harmonics produced by the Generating Facility to the IC's own system.

5. **Low Voltage Ride-Through (LVRT) Capability**
   An inverter-based Generating Facility shall comply with the voltage ride-through requirements set forth in Rule 21 Section Hh or successor requirements as they may be amended from time to time.

6. **Frequency Disturbance Ride-Through Capability**
   An inverter-based Generating Facility shall comply with the frequency ride-through requirements set forth in Rule 21 Section Hh or successor requirements as they may be amended from time to time.

F. RELIABILITY STANDARDS, STUDY CRITERIA AND METHODOLOGY

The generator interconnection studies were conducted to ensure the ISO-controlled grid follows the North American Electric Reliability Corporation (NERC) reliability standards, WECC regional criteria, and the ISO planning standards. Refer to Section C of the Area Report for details of the applicable reliability standards, study criteria, and methodology.

1. **Discharging Analysis Planning Criteria**

   This study was conducted by applying SCE's Distribution Planning Criteria. More specifically, the key criteria applicable to this Phase II Study are as follows:

   - The thermal rating of any conductor, connector, or apparatus shall not exceed 100% of its normal rated capacity with all facilities in service (N-0 or base case). Rating is subject to changed based on impacts to dependent factors from this Generating Facility.
   - The thermal rating of any conductor, connector, or apparatus shall not exceed 100% of its emergency rated capacity under loss of one element (N-1) conditions. Rating is subject to changed based on impacts to dependent factors from this Generating Facility.
   - The thermal rating of any B-Bank shall not exceed 100% of its rated capacity with all facilities in service (N-0 or base case). Rated capacity is subject to changed based on impacts to dependent factors from this Generating Facility.

- The thermal rating of any B-Bank shall not exceed 100% of its rating capacity under loss of one element (N-1) or emergency conditions. Rated capacity is subject to changed based on impacts to dependent factors from this Generating Facility.
- Operational flexibility, safety, and reliability of the distribution system shall always be maintained.
- Circuit voltage profiles shall be maintained to comply with SCE's CPUC Jurisdictional Rule 2 tariff requirements. The IC will be responsible for maintaining designated voltage levels under all conditions, including but not limited to the conditions identified above.
- The power factor for the Generating Facility is assumed to be within WDAT requirements of 0.95 lagging or leading.
- Expected loading on the distribution system, as projected by SCE's internal 2019-2028 distribution system forecast, is utilized for the purposes of this charging analysis.
- A Generating Facility connected to the distribution system are analyzed offline (pre-project) and online (post-project) during peak demand conditions, as well as during absolute minimum demand conditions, as to determine the worst case scenario between these two "book-ends" of demand.
- The short-circuit duty contribution from the inverter system was determined using inverter manufacturer specification sheets (as needed).

2. Charging Analysis Planning Criteria

   This study was conducted by applying SCE's Distribution Planning Criteria. More specifically, the key criteria applicable to this Phase II Study are as follows:

   - The thermal rating of any conductor, connector, or apparatus shall not exceed 100% of its normal rated capacity with all facilities in service (N-0 or base case). Rating is subject to changed based on impacts to dependent factors from this Generating Facility with a storage device.
   - The thermal rating of any conductor, connector, or apparatus shall not exceed 100% of its emergency rated capacity under loss of one element (N-1) conditions. Rating is subject to changed based on impacts to dependent factors from this Generating Facility with a storage device.
   - The thermal rating of any B-Bank shall not exceed 100% of its rated capacity with all facilities in service (N-0 or base case). Rated capacity is subject to changed based on impacts to dependent factors from this Generating Facility with a storage device.
   - The thermal rating of any B-Bank shall not exceed 100% of its rating capacity under loss of one element (N-1) or emergency conditions. Rated capacity is subject to changed based on impacts to dependent factors from this Generating Facility with a storage device.
   - Operational flexibility, safety, and reliability of the distribution system shall always be maintained.
   - Circuit voltage profiles shall be maintained to comply with SCE's CPUC Jurisdictional Rule 2 tariff requirements. The IC will be responsible for maintaining designated voltage levels under all conditions, including but not limited to the conditions identified above.
   - Expected loading on the distribution system, as projected by SCE's internal 2019-2028 distribution system forecast, is utilized for the purposes of this charging analysis.

- A Generating Facility with storage devices connected to the distribution system are analyzed online (post-project) during peak demand conditions, as to determine the worst case scenario

3. Coordination with Affected Systems

Per GIP Section 3.7, SCE will notify the Affected System[8] Operators that are potentially affected by an IC's IR or group of interconnection requests subject to a Group Study. SCE will coordinate the conduct of any studies required to determine the impact of the IR on Affected Systems with Affected System Operators and, if possible, include those results (if available) in its applicable Interconnection Study within the time frame specified in the GIP. SCE will include such Affected System Operators in all meetings held with IC as required by the GIP. IC will cooperate with SCE in all matters related to the conduct of studies and the determination of modifications to Affected Systems. A transmission provider which may be an Affected System shall cooperate with SCE with whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems.

Refer to Section F for additional information.

G. POWER FLOW RELIABILITY ASSESSMENT RESULTS

I. Discharging Analysis of the Generating Facility

a) Steady State Power Flow Analysis Results – ISO controlled facilities

[redacted] The details of the analysis are provided in the corresponding Area Report.

Lastly, Section J – Deliverability Assessment Results of this report provides information on any Delivery Network Upgrades (Local or Area) assigned to the project, if any.

b) Steady State Power Flow – 66 kV or 115 kV (non-ISO controlled)

[redacted] The details of the analysis are provided in the corresponding Area Report and applicable Subtransmission Assessment Report.

c) Steady State Power Flow Analysis Results – 50 kV and below

a) Generating Facility Technology Type Discussion

[8] **Affected System** shall mean an **electric system** other than the SCE's Distribution System that may be affected by the proposed interconnection. For purposes of this compliance requirement, Affected Systems will consist of neighboring municipalities.

[redacted]

1. **Thermal Overload:**

[redacted]

2. **Distribution Design Standards Compliance**

[redacted]

b) Study Results with Circuit Reconfiguration

[redacted]

1. **Thermal Overloads**

[redacted]

[redacted]

2. Voltage Performance

[redacted]

3. Protection

[redacted]

4. Operational Performance and Relevant Generating Facility Notes

Due to the distribution system topology and various potential N-1 scenarios, thermal overloads under various emergency N-1 conditions (loss of a B-Bank or loss of the Circuit) are expected. As a result, the Generating Facility may be disconnected to allow for system troubleshooting. SCE's Grid Operators will determine if and when the Generating Facility may be able to be reconnected during the abnormal condition. Once the system is returned to normal conditions, SCE's Grid Operators will reconnect the Generating Facilities for normal operation.

SCE's Grid Operators require adequate monitoring capabilities of bi-directional power flow to maintain ability to operate SCE's grid. [redacted]

5. Required Mitigations

[redacted]

II. As-Available Charging Analysis of the Generating Facility

a) Steady State Power Flow Analysis Results – ISO controlled facilities

[redacted]

b) Steady State Power Flow Analysis Results 66 kV or 115 kV (non-ISO controlled)

The Generating Facility is required to provide 0.95 leading/0.95 lagging power factor regulation capability at the high-side of the IC's substation or other equivalent location. With respect to Charging Demand, SCE currently offers "as-available" service pursuant to the WDAT. [redacted]

[redacted]

The details of the analysis are provided in the applicable Subtransmission Assessment Report.

c) Steady State Power Flow Analysis Results – 50 kV and below

This study evaluated the impacts on the Circuit and Substation with as-available charging for the interconnection of Generating Facility.

1. Thermal Overloads

[redacted]

2. Voltage Performance

[redacted]

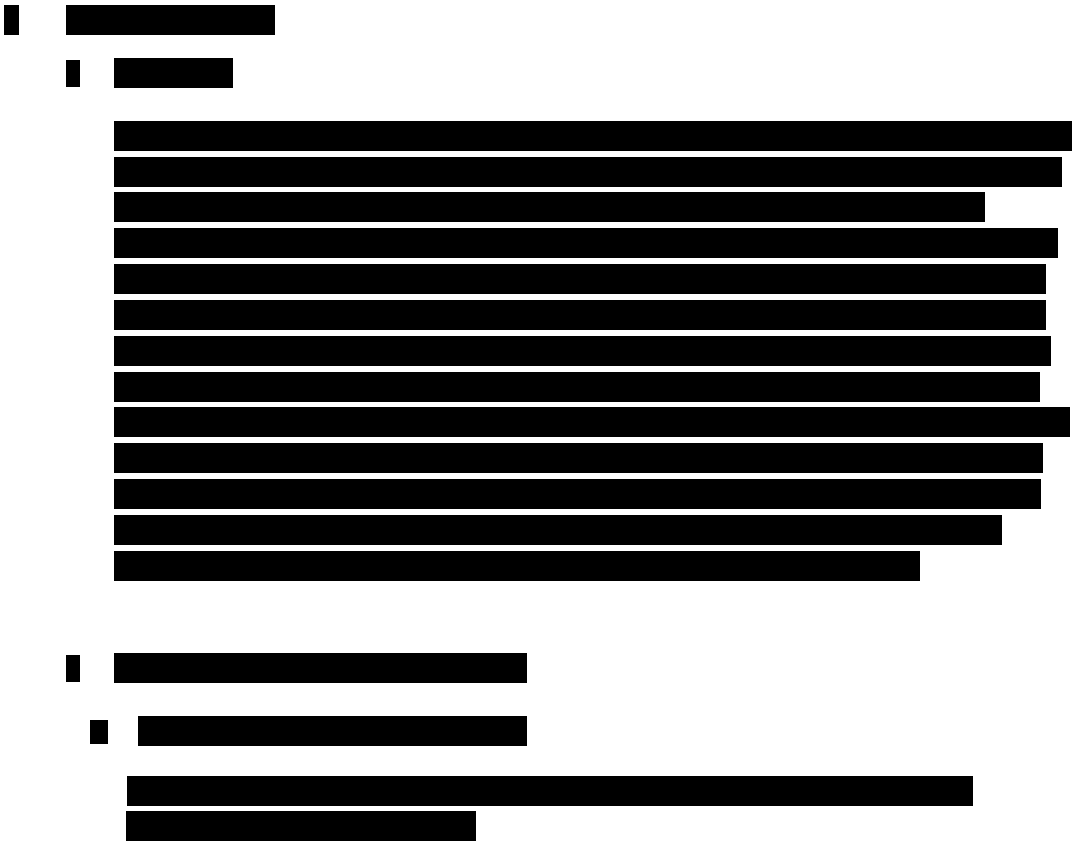
3. Protection

[redacted]

4. Operational Performance and Relevant Generating Facility Notes

Due to the distribution system topology and various potential N-1 scenarios, thermal overloads under various emergency N-1 conditions (loss of a B-Bank or loss of the Circuit) are expected. As a result, the Generating Facility may be disconnected to allow for system troubleshooting. SCE's Grid Operators will determine if and when the Generating Facility may be able to be reconnected during the abnormal condition. Once the system is returned to normal conditions, SCE's Grid Operators will reconnect the Generating Facilities for normal operation.

5. Charging Restrictions



II. Additional Factor(s) to Restrictions

SCE provides, in Table 2-1, an estimated number of hours that the Generating Facility may be restricted to charge at a given demand value in a given month. This is subject to change as loading on the distribution system changes. Note that charging restrictions illustrated in the tables below are before DERMS implementation for the respective areas within the distribution system (i.e. distribution substation or distribution circuit). The Generating Facility's actual charging restrictions will be based on the most restrictive loading conditions and real time information from the distribution and transmission systems.

Table 2-1: [redacted]
# of Charging Hours Restricted for Energy Storage System

[redacted]

Table 2-2: [redacted]
Charging Hour Restrictions of Day for Energy Storage System

[redacted]

Table 2-3: [redacted]
Maximum Allowable Charging Schedule

[redacted]

Table 3-1: [redacted]
# of Charging Hours Restricted for Energy Storage System

[redacted]

Table 3-2: [redacted]
Charging Hour Restrictions of Day for Energy Storage System

[redacted]

Table 3-3: [redacted]
Maximum Allowable Charging Schedule

[redacted]

6. Required Mitigations

With respect to Charging Demand, SCE currently offers "as-available" service pursuant to the WDAT. [redacted] to follow a static charging restriction schedule provided by SCE until DERMS is operational.

H. SHORT-CIRCUIT DUTY RESULTS

Short-circuit duty (SCD) studies were performed to determine the fault duty impact of adding the Phase II projects to the distribution system and to ensure system coordination. The fault duties were calculated with and without the projects to identify any equipment overstress conditions. Once overstressed circuit breakers are identified, the fault current contribution from each individual project in Phase II is determined. Each project in the cluster will be responsible for its share of the upgrade cost based on the rules set forth in Section 4 of the GIP.

1. SCE-owned Facilities

All bus locations where the Phase II projects increase the short-circuit duty by 0.1 kA or more and where duty was found to be in excess of 60% of the minimum breaker nameplate rating are listed in the Area Report (Appendix H). These values have been used to determine if any equipment is overstressed as a result of the inclusion of Phase II interconnections and corresponding Distribution and Network Upgrades, if any.

The responsibility to finance SCD related Distribution and Reliability Network Upgrades identified from increases in short circuit duty through the Group Study shall be assigned pro rata to all projects requiring the upgrade based on SCD contribution of each project.

The QC11 Phase II SCD evaluation results are summarized below.

a. ISO controlled facilities:

[redacted]

b. Subtransmission Level Results (66 kV or 115 kV non-ISO controlled):

[redacted]

c. Distribution Level Results (50 kV and below):

[redacted]

2. Affected Systems

[redacted]

I. DELIVERABILITY ASSESSMENT RESULTS

1. On Peak Deliverability Assessment

[redacted]

2. Off- Peak Deliverability Assessment

[redacted]

3. Required Mitigations

[redacted]

J. INTERCONNECTION FACILITIES, NETWORK UPGRADES, AND DISTRIBUTION UPGRADES

Please see Attachment 1 for SCE's IF's, RNU's, Delivery Network Upgrades[9] (DNU's), and DU's allocated to the Generating Facility. Please note that SCE considered current system configuration, approved SCE sponsored projects, and all queued generation in determining scope for IFs and/or Plan of Service but will not "reserve" the identified scope of upgrades for the proposed POI unless a GIA is executed per the specified timelines shown in Table L.1.

[9] At the IC's discretion, the IC or parties other than SCE pursuant to Section 10.2 under GIP may construct an Option (B) Generating Facility Area Delivery Network Upgrades (ADNUs) not allocated TP Deliverability. If SCE does not construct the ADNUs, the IC is not required to make the third Interconnection Financial Security posting to SCE pursuant to Section 4.8.4.2.1 under GIP.

K. COST AND CONSTRUCTION DURATION ESTIMATE

1. Cost Estimate

The Generating Facility's estimated interconnection costs, adjusted for inflation and provided in 'constant' 2019 dollars escalated to the Generating Facility's feasible operating date (as identified below), are provided in Attachment 2 and the Generating Facility's allocated cost for shared network upgrades are provided in Attachment 3. The costs will be utilized in developing the GIA. However, should there be a delay in executing the GIA beyond 2020, a new cost estimate adjusted for inflation will be required and reflected into the GIA.

2. Construction Duration Estimate

The construction duration for the identified facilities is as follows:

a. SCE's Interconnection Facilities– [redacted]

b. Reliability Network Upgrades

c. Distribution Upgrades

Please refer to Attachment 1 for details related to this item.

Note 1—Construction Duration Estimates and Identified Upgrades. Any construction durations identified in this section may vary. During the cluster study process, SCE includes all queued and active generation projects without regard to corresponding desired in-service dates or actual project status to identify Short Circuit Duty and Distribution upgrades and a duration for SCE to build them. Such duration, of course, affects the In-Service Date for this specific project. As status for queued projects change (withdrawals, downsizing, suspensions, or deferred in-service dates),

SCE may be able to accelerate in-service dates for projects affected by status changes. Furthermore, SCE will only begin design/construction of an identified SCD and Distribution Upgrade when enough projects 1) execute and fund a GIA and/or a Letter of Agreement with SCE and 2) those projects trigger the need for an upgrade.

Note 2 -- Construction Duration Estimates and Coordination of Environmental Work. Where this study assumes that the IC will perform environmental work related to the installation of SCE's IFs, DUs, and RNUs as specified in this report, the IC is advised that any durations provided above assume so and that the IC will perform this environmental work and Civil Construction related to the installation of SCE's IFs and/or DUs specified in this report and will perform them in parallel with SCE's preliminary design and engineering. The IC is expected to engage SCE to obtain concurrence prior to commencement of any environmental work and during execution of that work. Since SCE will be using the IC's environmental documents and/or work products, IC delays producing them may delay SCE's ability to obtain required permits and/or license(s). Such delays would likely cause additional delays in the commencement of SCE's final engineering, procurement, and construction. These delays could increase any durations identified in this report and push out the feasible ISD provided in Table L.1 ISD and COD Assessment.

All civil construction related to SCE's IF and DUs must be completed and approved by SCE inspectors prior to SCE scheduling the electrical construction of the Interconnection Facilities and Distribution Upgrades.

3. Other Costs to the Generating Facility

[redacted]

L. IN-SERVICE DATE AND COMMERCIAL OPERATION DATE ASSESSMENT

An ISD and COD assessment was performed for this Generating Facility to establish SCE's estimate of the earliest achievable ISD based on the QC11 Phase II Interconnection Study process timelines and the time required for SCE 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.

Details pertaining to Full Capacity Deliverability Status and Partial Deliverability Status are provided below.

1. ISD Estimation Details

[10] The IC understands and acknowledges that the Civil Construction in support of the interconnection for the Generating Facility may be classified as the IC-constructed SCE IF and/or DUs and may require transfer of ownership pursuant to Section 3 (1) under Appendix C of the GIA. The IC understands and acknowledges that it shall be responsible for the ITCC and ongoing monthly IF Charge and/or DUs charge of the portion of Civil Construction and prior to the ISD of the Civil Construction, IC shall provide SCE the final invoiced costs of the portion of Civil Construction transferred to SCE and shall be an acceptable form to SCE.

For the QC11 Phase II Interconnection Study, the estimated earliest achievable ISD is derived by the time requirements to complete the QC11 Interconnection Study Process, tender a draft GIA, negotiate and execute the GIA, and construct the necessary facilities as described below in Table L.1.

Table L.1: ISD and COD Assessment

Reference starting point	Days/Months	Issuance of Phase II Interconnection Study Report	[redacted]
Add:	**30 CD**	Phase II Results Meetings	[redacted]
Add:	**15 BD (20 CD)**	**Starting Point:** TPD Results issued and IC response provided	[redacted]
Add:	**30 CD**	**Earliest Reasonable Tender of draft GIA**	[redacted]
Add:	**90 CD**	GIA negotiation time, execution, filing, and related activities.	[redacted]
Add: Construction Duration	[redacted]	Construction duration outlined in the Phase II Study Report. Construction completion no earlier than date which reflects earliest ISD	[redacted]
	Reference:	IC-requested ISD via Attachment B	[redacted]
	Reference:	IC-requested COD via Attachment B	[redacted]
		Difference between IC ISD and COD	[redacted]
Equals:		Earliest achievable In-Service Date (ISD)	[redacted]
		Earliest achievable Commercial Operation Date (COD) (Using difference between ISD and COD requested by IC)	[redacted]

Notes on the Achievable ISD and COD calculation:

1) Assumes duration required to construct those facilities required for an Interim Deliverability Interconnection or Energy Only interconnection (as applicable) for the Generating Facility until the applicable DNUs are completed.

2) The construction durations shown represent the estimated amount of time needed to design, procure, and construct the facilities with the start date of the duration based on the effective date of the GIA; and necessarily include timely receipt of all

required information and written authorizations to proceed (ATP), and timely receipt of construction payments and financial security postings and other milestones.

3) Assume that GIA is tendered after the TP Delivery allocation results are disclosed.

2. ISD Conclusion

[redacted]

SCE can reasonably tender a draft GIA by [redacted]. The draft GIA should be executed and/or filed at FERC no later than [redacted] and will include the earliest ISD and COD as identified in Table L.1.

The ISO will perform its Annual Reassessment [redacted] and Transmission Plan Deliverability (TPD) Allocation[11] [redacted] Any changes in scope, cost, or schedule requirements that come out of ISO's Annual Reassessment and [redacted] TPD Allocation will be reflected in a [redacted] Reassessment Report, which will be used to revise the draft GIA (if under negotiation) or amend the GIA (if already executed).

M. TIMING OF FULL CAPACITY DELIVERABILITY STATUS, INTERIM DELIVERABILITY, AREA CONSTRAINTS, AND OPERATIONAL INFORMATION

The Generating Facility would be granted its requested FCDS only if the Generating Facility receives TPD allocation in the forthcoming TPD Allocation Study. Furthermore, timing of obtaining the requested FCDS is dependent on the completion of Delivery Network Upgrades identified below in this report, which may be updated in any subsequent annual reassessment. Until such time that the these Delivery Network Upgrades are completed and placed into service, the Generating Facility may be granted Interim Deliverability Status based on annual system availability. The sections below provide a discussion of the timing of FCDS, Interim Deliverability, Area Constraints, and Operational Information.

[redacted]

2. Interim Operational Deliverability Assessment for Information Only

The operational deliverability assessment was performed for study years 2020 ~ 2022 by modeling the Transmission and generation in service in the corresponding study year. For details

[11] The TPD Allocation Process is estimated to be completed in April 2020. The actual date may vary.

of the Transmission and generation assumption, refer to Section E.3 of the Area Report. No deliverability issues were identified.

[redacted]

N. ADDITIONAL STUDY ANNOTATIONS

1. **Conceptual Plan of Service**

   The results provided in this study are based on conceptual engineering and a preliminary Plan of Service (POS) and are not sufficient for permitting of facilities. The POS is subject to change as part of final engineering and design.

2. **Ramp Rate Requirements**

   This study does not include analysis related to the following system variability conditions, et. al.

   - Generating Facility ramp rate: inverter-based generator's output profile are capable of discharging and charging at high rates from no output to full output.
   - Generating Facility output variability: inverter-based generator's output profile are capable of changing abruptly and frequently.

   These fast rates of change can negatively impact SCE's distribution system voltage profile and other customers. This study assumes that the Interconnection Customer's generating facility will include all equipment, software, and appropriate controls necessary to maintain the generator output profile per SCE requirements. The Interconnection Customer will be responsible for maintaining designated voltage levels under all conditions, including but not limited to the conditions identified above. Upon execution of the GIA, SCE will provide the Interconnection Customer with the required ramp rate control parameters. The ramp rate controls will be a function of the generation penetration on the distribution system, as well as SCE's distribution system configuration (additional parameters maybe considered, as need). Changes to the ramp rate control scheme may be required as determined by increased generation, changes in the distribution system topology, or other changes in the distribution system.

3. **IC's Technical Data**

   The study accuracy and results for the QC11 Phase II Interconnection Study was contingent upon the accuracy of the technical data provided by the IC during the Interconnection Study Cycle in the IR, including Attachment B, for the Generating Facility. Any changes from the data provided must be approved by SCE in accordance with the Material Modification Process (MMA) per GIP Section 4.5.7.2.

4. **Study Impacts on Affected Systems**

   Results or consequences of this Phase II Study may require additional studies, facility additions, and/or operating procedures to address impacts to neighboring utilities and/or regional forums. For example, impacts may include but are not limited to WECC Path Ratings, short-circuit duties outside of the ISO Controlled Grid, and sub-synchronous resonance (SSR). Refer to Affected

Systems Coordination Section H of the Area Report and Table F.1 above in Section F for additional information.

5. **Use of SCE's Facilities**
   The IC is responsible for acquiring all property rights necessary for the IC's Interconnection Facilities, including those required to cross SCE's facilities and property. This Phase II Study does not include the method or estimated cost to the IC of SCE mitigation measures that may be required to accommodate any proposed crossing of SCE's facilities. The crossing of SCE property rights shall only be permitted upon written agreement between SCE and the IC at SCE's sole determination. Any proposed crossing of SCE property rights will require a separate study and/or evaluation, at the IC's expense, to determine whether such use may be accommodated. If the IC's Facilities result in the need to modify SCE's existing facilities, SCE recommends that the IC identify and include a description of such modifications in the IC's environmental study reports submitted to the lead agency permitting the Generating Facility.

6. **SCE's Interconnection Handbook**
   The IC shall be required to adhere to all applicable requirements in SCE's Interconnection Handbook. These include, but are not limited to, all applicable protection, voltage regulation, VAR correction, harmonics, switching and tagging, and metering requirements.

7. **Western Electricity Coordinating Council (WECC) Policies**
   The IC shall be required to adhere to all applicable WECC policies including, but not limited to, the WECC Generating Unit Model Validation Policy.

8. **System Protection Coordination**
   Adequate Protection coordination will be required between SCE-owned protection and IC-owned protection. If adequate protection coordination cannot be achieved, then modifications to the IC-owned facilities (i.e., Generation-tie or Substation modifications) may be required to allow for ample protection coordination.

9. **Standby Power and Temporary Construction Power**
   The Phase II Study does not address any requirements for standby power or temporary construction power that the Generating Facility may require prior to the ISD of the Interconnection Facilities. Should the Generating Facility require standby power or temporary construction power from SCE prior to the ISD of the IFs, the IC is responsible to make appropriate arrangements with SCE to receive and pay for such retail service. SCE recommends that the IC identify and include a description of such facilities in the IC's environmental study reports submitted to the lead agency permitting the Generating Facility.

10. **Licensing Cost and Estimated Time to Construct Estimate (Duration)**
    The estimated licensing cost and durations applied to this Generating Facility are based on the Generating Facility scope details presented in this Phase II study. These estimates are subject to change as the Generating Facility's environmental and real estate elements are further defined. Upon execution of the GIA, additional evaluation including but not limited to preliminary engineering, environmental surveys, and property right checks may enable licensing cost and/or duration updates to be provided.

11. **Network/Non-Network Classification of Telecommunication Facilities**

a. Non-Network (Interconnection Facilities) Telecommunications Facilities: The cost for telecommunication facilities that were identified as part of the IC's Interconnection Facilities was based on an assumption that these facilities would be sited, licensed, and constructed by the IC. The IC will own, operate, maintain, and construct main and diverse telecommunication paths associated with the IC's generation tie line, excluding terminal equipment at both ends. In addition, the telecommunication requirements for the RAS were assumed based on tripping of the generator's breaker in lieu of tripping the circuit breakers and opening the IC's gen-tie at the SCE's substation.

b. Network (Network Upgrades) Telecommunications Upgrades: Due to uncertainties related to telecommunication upgrades for the numerous projects in queues ahead of this Generating Facility, telecommunication upgrades for earlier higher queued projects without a signed GIA and these upgrades have not been constructed were not considered in this study. Depending on the scope of these earlier higher queued projects, the cost of telecommunication upgrades identified for Phase II may be reduced. Any changes in these assumptions may affect the cost and schedule for the identified telecommunication upgrades.

12. Ground Grid Analysis

A detailed ground grid analysis will be required as part of the final engineering for the Generating Facility at the SCE substations whose ground grids were flagged with duty concerns.

13. SCE Technical Requirements

The IC is advised that there may be technical requirements in addition to those that outlined above in Section C of this report that will be addressed in the Generating Facility GIA.

14. Applicability

This document has been prepared to identify the impact(s) contributions of the Generating Facility on the SCE electrical system; as well as establish the technical requirements to interconnect the Generating Facility to the POI that was evaluated in the Phase II Study for the Generating Facility. Nothing in this report is intended to supersede or establish terms/conditions specified in GIAs agreed to by the SCE, ISO, and the IC.

15. Process for Initial Synchronization Date/Trial Operation Date and COD of the Generating Facility

The IC is reminded that the ISO has implemented a New Resource Implementation (NRI) process that ensures that a generation resource meets all requirements before Initial Synchronization Date/Trial Operation Date and COD. The NRI uses a bucket system for deliverables from the IC that are required to be approved by the ISO. The first step of this process is to submit an "ISO Initial Contact Information Request form" at least seven (7) months in advance of the planned Initial Synchronization Date. Subsequently an NRI project number will be assigned to the Generating Facility for all future communications with the ISO. SCE have no involvement in this NRI process except to inform the IC of this process requirement. Further information on the NRI process can be obtained from the ISO Website using the following links:
New Resource Implementation webpage:
http://www.caiso.com/participate/Pages/NewResourceImplementation/Default.aspx

NRI Checklist:
http://www.caiso.com/Documents/NewResourceImplementationChecklist.xls

NRI Guide:
http://www.caiso.com/Documents/NewResourceImplementationGuide.doc

16. **Future Charging Restrictions**
    Charging restrictions not identified in this study may occur in the future if the underlying operating assumptions prove to be significantly different than the conditions evaluated in this study.*]*

17. **ISO Market Dispatch**
    This study did not evaluate any potential limitations that may be driven by the ISO market under real-time operating conditions.

18. Please note that SCE has made its best efforts to convey as much information as possible based on information provided by the IC about its proposed Generating Facility. The information contained herein may indicate to ICs that a project of its magnitude may be better suited to interconnect at higher voltage levels or downsize as to not incur significant amount of restrictions. Any determination to change POIs or downsize is purely at the IC's discretion and would be subject to a SCE's material modification review pursuant to the tariff.

Attachment 1:
Interconnection Facilities, Network Upgrades and Distribution Upgrades
Please refer to separate document

Attachment 2:
Escalated Cost and Time to Construct for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades

Please refer to separate document

Attachment 3:
Allocation of Network Upgrades for Cost Estimates and Maximum Network Upgrade Cost Responsibility

[redacted]

Attachment 4:
SCE's Interconnection Handbook

Preliminary Protection Requirements for Interconnection Facilities are outlined in the SCE's Interconnection Handbook at the following link:

https://www.sce.com/sites/default/files/inline-files/SCE_InterconnectionHandbook.pdf

Attachment 5:
Short-Circuit Duty Calculation Study Results
Please refer to the Appendix H of the Area Report

Attachment 6:

[redacted]

Attachment 7:
Subtransmission Assessment Report
Please refer to separate document