
Appendix A – WDT1266ISP



QUEUE CLUSTER 8 PHASE II REPORT

November 23, 2016

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

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Attachments:

- 1. Interconnection Facilities, Network Upgrades and Distribution Upgrades**
- 2. Escalated Cost and Time to Construct for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades**
- 3. Allocation of Network Upgrades for Cost Estimates**
- 4. Distribution Provider Interconnection Handbook**
- 5. Short Circuit Calculation Study Results (see Appendix H of the QC8 Phase II Area Report)**
- 6. Not Used**
- 7. SCE Northern Hemisphere Import Nomogram**

A. Introduction

██████████ the Interconnection Customer (IC), submitted an interconnection request for the ██████████ (Project), a ██████████ energy storage project utilizing battery technology. The Interconnection Request was submitted following the Independent Study Process (ISP) requesting the Point of Interconnection to the existing Windhub 66 kV Substation via the Windhub–Kalama 66 kV Line. A System Impact Study (SIS) was performed which did not identify the need for any Reliability Network Upgrades or Distribution Upgrades under an Energy Only interconnection. The cost and schedule for the Interconnection Facilities required to interconnect the Project, under Energy Only Deliverability status, have been provided in SCE’s previously issued ISP Interconnection Study report packages that included the Facilities Study report dated April 1, 2016 and the Addendum #1 to the final Facilities Study report dated May 17, 2016.

As part of the ISP request, the IC elected Full Capacity Deliverability Status (FCDS) with a desired Commercial Operation Date (COD) of December 31, 2020. The actual COD will depend on design and construction requirements to interconnect the Project to the Distribution Provider’s Distribution System; after the Generator Interconnection Agreement (GIA) has been executed and filed at the Federal Energy Regulatory Commission (FERC) for acceptance. In accordance with WDAT Attachment I Section 5.6 and Section 5.8.1.1, the Project was included in the QC8 Phase II Interconnection Studies for the purpose of performing the deliverability assessment for evaluation of the requested Full Capacity Deliverability Status and Short Circuit Duty (SCD) under an FCDS interconnection.

A QC8 Phase II Area Report has been prepared separately identifying the combined impacts of all projects in the cluster on the ISO grid. This Appendix A report provides the impacts or impact contributions of the Project to the ISO grid under an FCDS interconnection and it is not intended to supersede any contractual terms or conditions specified in an Interconnection Agreement.

The report provides the following:

1. Identify impacts on the ISO grid of the Project associated with the Full Capacity Deliverability Status
2. Preliminarily identify all Delivery Network Upgrades required to provide the Project with Full Capacity Deliverability Status
3. Preliminarily identify Reliability Network Upgrades required due to Full Capacity Deliverability Status
4. Establish the cost responsibility for Network Upgrades assigned to the IC due to Full Capacity Deliverability Status. A good faith estimate of the Project’s cost responsibility and time to

construct¹ these facilities is provided in Attachment 1 and Attachment 2 as separate documents in the Appendix A Project report package.

Please refer to previously issued Project ISP Interconnection Study reports for the detailed Project description.

B. Study Assumptions

The deliverability study assumptions are provided in the QC8 Phase II Area Report.

C. Deliverability Assessment Results

1. On Peak Deliverability Assessment

The Project does not contribute to any deliverability constraint.

2. Off-Peak Deliverability Assessment

Under off-peak conditions, [REDACTED] are overloaded under various contingency conditions. For details, see Section E.2 of the QC8 Phase II Area Report.

3. Required Mitigations

No Delivery Network Upgrades are required.

D. Short Circuit Duty Impacts under FCDS Interconnection

The SCD methodology for QC8 Phase II is discussed in the QC8 Phase II Area Report. Based on this methodology, there are no SCD mitigation costs allocated to the Project associated with the Full Capacity Deliverability Status.

E. Timing of Full Capacity Deliverability Status, Interim Deliverability, Area Constraints, and Operational Information

The Project would be granted its requested FCDS only if the Project 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 Delivery Network Upgrades are completed and placed into service, the Project 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.

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

1. System Upgrades Required for Full Capacity Deliverability Status

In order to provide for Full Capacity Deliverability Status, the following facilities are required in addition to the Reliability Network Upgrades in Section J.2 of this report:

- a. Triggered Delivery Network Upgrades - None
- b. Delivery Network Upgrades Triggered by Earlier Queued Projects – None
- c. Approved Transmission Upgrades
The entire Tehachapi Renewable Transmission Project (TRTP) is required to support the FCDS of the Project. The expected in-service date of TRTP is late 2016.
- d. Transmission Upgrades outside the ISO Controlled Grid - None

2. Interim Operational Deliverability Assessment for Information Only

The operational deliverability assessment was performed for study years 2017 ~ 2020 by modeling the Transmission and generation in service in the corresponding study year. For details of the Transmission and generation assumption, refer to Section E.3 of the Area Report. No deliverability issues were identified. Once TRTP is in service, the Project will have the deliverability status as granted by the Transmission Plan Deliverability allocation.

3. Area Constraints

With all approved transmission upgrades modeled, no area deliverability constraints were identified for the Project. However, interconnection of new generation in advance of completing the approved transmission upgrades and upgrades triggered by queued-ahead generation projects may result in increased congestion on the system. Furthermore, there are known transfer capability limitations, such as [REDACTED] [REDACTED] See Section D.1.1-(ii) for more details.

4. SCE Northern Hemisphere Import Nomogram

Refer to Attachment 2 and section G of this report for details of the deliverability and upgrades results, respectively. It is important to note that although no Delivery Network Upgrades were allocated to the Project, this outcome does not mean that the Project will be able to generate at its maximum net GF output. Congestion management could happen whenever the amount of generating resources exceeds the available Transmission capability. The generating resources' output may be curtailed, regardless of their deliverability status, as the result of congestion management under the ISO market operation.

As stated in Attachment 7, studies indicate that as high amounts of resources in the East of Lugo area develop and are dispatched, the amount of available transmission capacity for the Northern Area resources is diminished. Such conclusions point to a potential need for congestion management, and generation resource curtailments. For additional

information on potential congestion under expected amounts of renewable generation development in 2021, please see Chapter 5 of the ISO 2015-2016 Transmission Plan report. <http://www.ISO.com/Documents/Board-Approved2015-2016TransmissionPlan.pdf>

F. Interconnection Facilities, Network Upgrades, and Distribution Upgrades

No additional Interconnection Facilities, Reliability Network Upgrades, or Distribution Upgrades were identified to be required to accommodate the Project under FCDS. Please refer to the latest Facilities Study for the Interconnection Facilities, Reliability Network Upgrades, and Distribution Upgrades required to interconnect the Project.

G. Cost and Construction Duration Estimates

To determine the cost responsibility of each generation project in QC8 Phase II, the ISO developed cost allocation factors (Attachment 3) for Reliability Network Upgrades, Local Delivery Network Upgrades and Area Delivery Network Upgrades. Attachment 2 provides the 'constant' 2016 dollars and their escalation to the estimated COD year for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades associated with the Full Capacity Deliverability Status.

H. SCE Technical Requirements

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

I. Environmental Evaluation, Permitting, and Licensing

Please refer to the latest Facilities Study for the results of environmental, permitting and licensing requirements.

J. Affected Systems Coordination

This Project was not identified to impact any affected systems. Please see Section H of the QC8 Phase II Area Report for additional details.

K. Items not covered in this study

For a list of items not covered in this study, see the Project ISP Interconnection Study report(s) and the QC8 Phase II Area Report.

Attachment 1

Interconnection Facilities, Network Upgrades and Distribution Upgrades

None as part of the QC8 Phase II Interconnection Study. Please reference the latest ISP Facilities Study report.

Attachment 2

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

None as part of the QC8 Phase II Interconnection Study. Please reference the latest ISP Facilities Study report.

Attachment 3

Allocation of Network Upgrades for Cost Estimates

There is no Network Upgrade cost assigned to the Project in addition to what has been identified in the Facilities Study.

Attachment 4

Distribution Provider Interconnection Handbook

Preliminary Protection Requirements for Interconnection Facilities are outlined in the Distribution Provider Interconnection Handbook.

Attachment 5

Short Circuit Calculation Study Results

Please refer to the Appendix H of the QC8 Phase II Area Report.

Attachment 6

Not Used.

Attachment 7
SCE Northern Hemisphere Import Nomogram
Please refer to separate document