
Appendix A – WDAT402

[REDACTED]
[REDACTED]

[REDACTED] **REPORT**

November 9, 2012

This study has been completed in coordination with Southern California Edison per CAISO Tariff Appendix Y for Interconnection Requests in a Queue Cluster Window

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Attachments:

1. Allocation of Network Upgrades for Cost Estimates
2. Not Used
3. Short Circuit Calculation Study Results (see Appendix H of the group report)
4. Not Used
5. Not Used
6. Not Used
7. SCE Northern Hemisphere Import Nomogram

A. Executive Summary

In accordance with the California Independent System Operator Corporation (CAISO) Tariff Appendix Y Section 8.1, [REDACTED] an Interconnection Customer (IC), has elected the one-time Full Capacity Deliverability Status option within the [REDACTED] Application Window for their proposed [REDACTED].

Previously, the IC submitted a completed Interconnection Request (IR) to Southern California Edison (SCE) for interconnection and distribution service under the terms of SCE's Wholesale Distribution Access Tariff (WDAT) for the Project with an Energy Only Deliverability Status request. The Project is a solar photovoltaic (PV) plant with an output of 10 MW. The proposed Point of Interconnection (POI) is at SCE's existing 12 kV distribution line ("Discovery 12 kV") at a location which is approximately 3.0 miles from SCE's Goldtown Substation in Mojave, California. The IC has requested an In-Service [REDACTED] project. The cost and schedule for the Interconnection Facilities, Distribution Upgrades and Reliability Network Upgrades required to interconnect the Project, under Energy Only Deliverability Status, have been addressed in SCE's System Impact Study (SIS) report dated May 25, 2011 and SCE's Facilities Studies (FS) dated September 14, 2012.

As requested, the Project was included in the [REDACTED] Phase II deliverability assessment for the Full Capacity Deliverability Status evaluation.

The report provides the following:

1. Identifies impacts on the CAISO Controlled Grid of the Project associated with the Full Capacity Deliverability Status;
2. Identifies all Delivery Network Upgrades required to provide the Project with Full Capacity Deliverability Status;
3. Identifies Reliability Network Upgrades required due to Full Capacity Deliverability Status;
4. Establishes the cost responsibility for Network Upgrades assigned to the IC due to Full Capacity Deliverability Status.

The non-binding cost estimates for the required facilities of the Project to achieve Full Capacity Deliverability Status are as follows:

Reliability Network Upgrades:	NA
Delivery Network Upgrades:	NA
Distribution Upgrades:	NA

As part of the [REDACTED] studies there were no additional costs allocated to the Project for its one-time Full Capacity Deliverability Status conversion beyond what has already been established in the interconnection studies for the Energy Only Deliverability status.

The non-binding schedule to license, engineer, and construct the required Distribution Upgrades and Reliability Network Upgrades are stated in the previously issued report(s) related to the "Energy Only" portion of the Project. The schedule is dependent upon the signing of the new/amended Generator Interconnection Agreement and receipt of: all required information, funding, and written authorization to proceed from the IC as specified in the new/amended Generator Interconnection Agreement to commence the work.

It is important to note that while no Delivery Network Upgrades were allocated to the Project as part of its one-time Full Capacity Deliverability Status conversion; this outcome does not mean that the Project will be able to generate at its maximum Generating Facility output.

Congestion 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 under the CAISO market operation.

As stated in Attachment 7, studies indicate that as high amounts of resources in the [REDACTED] area develop and are dispatched, the amount of available transmission capacity for the [REDACTED] Area resources is diminished. Such conclusions point to a potential need for congestion management, and generation resource curtailments. For additional information on expected amounts of renewable generation development in 2022, please see renewable portfolio assumptions for the ISO 2012-2013 Transmission Plan http://www.caiso.com/Documents/2012-2013-FinalRenewableGenerationPortfoliosRecommended_CPUC-CEC.pdf.

B. Project and Interconnection Information

For Project description and Project plan of service/point of interconnection discussion please refer to the previously issued report(s) related to the "Energy Only" portion of the Project.

C. Study Assumptions

For detailed assumptions, please refer to the [REDACTED] area group report. Project specific plan of service assumptions remain the same as in the previously issued report(s) related to the "Energy Only" portion of the Project.

D. Power Flow Analysis

Because the power flow reliability impacts of the project have been identified in the Energy Only interconnection study, there were no identified power flow reliability issues associated with the Project changing from Energy Only to Full Capacity Deliverability Status.

E. Short Circuit Analysis

The short circuit methodology for [REDACTED] is discussed in the group report. Based on this methodology there are no Short Circuit Duty (SCD) mitigation costs allocated to this project.

F. Reactive Power Deficiency Analysis

Because the post-transient voltage reliability impacts of the project have been identified in the Energy Only interconnection study, there were no identified post-transient voltage reliability issues associated with the Project changing from Energy Only to Full Capacity Deliverability Status.

G. Transient Stability Evaluation

Because the transient stability reliability impacts of the project have been identified in the Energy Only interconnection study, there were no identified transient stability reliability issues associated with the Project changing from Energy Only to Full Capacity Deliverability Status.

H. Deliverability Assessment

1. On Peak Deliverability Assessment

CAISO performed an On-Peak Deliverability Assessment. No overload was identified under the study assumptions.

2. Off- Peak Deliverability Assessment

CAISO performed an informational Off-Peak Deliverability Assessment. The Project does not contribute to any overload.

3. Required Mitigations

There is no Delivery Network Upgrade identified for the Project. The deliverability assessment was performed with all the transmission upgrades approved by the CAISO and the network upgrades required for the earlier queued generation interconnection projects. All these upgrades are required for the Project to achieve its Full Capacity Deliverability Status. For details of the deliverability assessment, refer to Section F of the group report.

I. Operational Deliverability Assessment

1. System Upgrades Required for Full Capacity Deliverability Status

In order to provide for Full Capacity Deliverability Status, the following facilities are required:

- (a) Tehachapi Renewable Transmission Project (TRTP) - the estimated completion date of the entire TRTP is 2015; however this date is subject to change pending on-going licensing activities at the California Public Utilities Commission (CPUC).
- (b) East Kern Wind Resource Area (EKWRA) reconfiguration project
- (c) Reliability Network Upgrades that must be in service before the Project could interconnect with Energy Only Deliverability Status as identified in the System Impact Study report for the Energy Only portion of the Project.

2. Interim Operational Deliverability Assessment for Information Only

The operational deliverability assessment was performed for study years 2013 and 2014 by modeling the transmission and generation in service in the corresponding study year. For details of the transmission and generation assumption, refer to Section F of the group report. There is no deliverability constraint identified and 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.

J. Environmental Evaluation/Permitting

Please see Section L of the [REDACTED] area group report.

K. Upgrades, Cost Estimates and Construction schedule estimates

To determine the cost responsibility of each generation project in Phase II, the CAISO developed cost allocation factors based on the individual contribution of each project (Attachment 1). The

costs are in addition to what have been established in the interconnection studies for the Energy Only Deliverability Status. The Network Upgrades are listed below:

RELIABILITY NETWORK UPGRADES

No Reliability Network Upgrades were identified as part of this [REDACTED] study for the Project.

DELIVERY NETWORK UPGRADES

No Delivery Network Upgrades were identified as part of this [REDACTED] for the Project.

DISTRIBUTION UPGRADES

No Distribution Upgrades were identified as part of this [REDACTED] study for the Project.

Table K.1: Upgrades, Estimated Costs, and Estimated Time to Construct Summary

Each Upgrade category may contain multiple scope durations. The longest duration is shown under the Estimated Time to Construct.

Type of Upgrade	Upgrade (May include the following)	Description	Estimated Cost x 1,000 Constant Dollar (2012) (Note 3)	Estimated Cost x 1,000 Constant Dollar (OD Year) (Note 3)	Estimated Time to Construct (Months) (Note 2)
Reliability Network Upgrades	Reliability Network Upgrades for SCD mitigation in the group report	Allocated Network Upgrades needed to maintain system Reliability	NA	NA	NA
Delivery Network Upgrades	Delivery Network Upgrades in the group report	Network Upgrades needed to support Full/Partial Capacity deliverability status	NA	NA	NA
Distribution Upgrades (Note 1)	Distribution Upgrades for SCD Mitigation	Non-CAISO SCE Distribution Facilities	NA	NA	NA
Total Cost			NA	NA	NA

Note 1: The Interconnection Customer is obligated to fund these upgrades and will not be reimbursed. Allocated costs may change if all projects responsible for these upgrades do not execute an Interconnection Agreement.

Note 2: The estimated licensing cost and durations applied to this project are based on the project scope details presented in this study. These estimates are subject to change as project environmental and real-estate elements are further defined. Upon execution of the Interconnection Agreement, 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.

Note 3: SCE's Phase II cost estimating is done in 'constant' dollars 2012 and then escalated to the estimated O.D. year. For the Phase II Study, the estimated O.D. is derived by assuming the duration of the work element will begin in March 2013, which is the CAISO tariff scheduled completion date of the QC3&4 Phase II Study plus 90 days for the Interconnection Agreement negotiations/execution. For instance, if a work element is estimated to take a total of 24 months (permitting, design, procurement, and construction), then the estimated O.D. would be March 2015. If an IC's requested O.D. (In-Service Date) is beyond the estimated O.D. of a work element, the IC's requested O.D. is used. However, should the Generator Interconnection Agreement not be executed, or the necessary information, funding, and written authorization to proceed is not be provided by the IC, in time for the Distribution Provider to perform the work within these time frames, the information provided in Table D.1 may be subject to change.

Note 4: Income Tax Component of Contribution. The ITCC included in this cost estimate was computed using a 35% rate.

L. Items Not Covered In This Study

For a list of items not covered in this study, see the [REDACTED] area group report.

Attachment 1
Allocation of Network Upgrades for Cost Estimates

NA

Attachment 2
Not Used

Attachment 3

Short Circuit Calculation Study Results

Please refer to the Appendix H of the group report.

Attachment 4
Not Used

Attachment 5
Not Used

Attachment 6
Not Used

Attachment 7

SCE Northern Hemisphere Import Nomogram

Please refer to separate document.