

WDT996QFC

Wholesale Distribution Access Tariff
INDEPENDENT STUDY

February 10, 2015



SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONALSM Company

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SOUTHERN CALIFORNIA EDISON COMPANY

EXECUTIVE SUMMARY

██████████ applied to Southern California Edison ("SCE") for interconnection and wholesale distribution service for its proposed ██████████ Facility Project pursuant to SCE's Wholesale Distribution Access Tariff ("WDAT") Small Generation Interconnection Procedures. SCE performed a high level Independent System Impact Study as requested by ██████████ to identify potential Distribution Upgrades and/or Interconnection Facilities needed to support the request for changing the customer's Point of Interconnection for the ██████████ Facility Project from SCE's ██████████ Substation. The interconnection is an applicant-owned ██████████ that will be located approximately ██████████. The request is for a WDAT steam turbine generating facility with a total capacity of ██████████. The initial request is for service to commence by December 31, 2015.¹

The study showed that, the addition of the ██████████ Facility Project

- Did not result in a violation of SCE's thermal loading criteria under both base case and N-1 conditions for the SCE distribution system for peak load and light load conditions.
- Did not result in a voltage rise exceeding allowable Rule 2 limits during minimum and peak load conditions.
- Did not result in additional protection requirements.
- Neither the three-phase and/or single line to ground short-circuit duties increased beyond the 0.1 kA threshold. Therefore no substation circuit breakers will need to be replaced as a result of the Project's interconnection.
- Resulted in the removal of existing customer's electrical facilities at both ██████████ and ██████████ Substations

¹ Date as requested in the application. Actual operating date depends on design and construction requirements.

Non-binding order of magnitude cost estimates for the required interconnection facilities and system upgrades are as follows:

Distribution Upgrades \$ 58.3 K

- Install a [REDACTED] to monitor reverse (MW/MVar) power flow

Interconnection Facilities \$ 2.0 K

- [REDACTED]

Telemetry Requirements \$ 156.9 K

- [REDACTED]

Removal of existing Customers' Electrical Facilities ([REDACTED] Substation) \$ 106.4 K

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Removal of existing Customers' Electrical Facilities ([REDACTED] Substation) \$ 15.0 K

- [REDACTED]

Environmental Health and Safety

- Cost associated with the removal of customer's electrical Facilities at both SCE's [REDACTED] Substation \$ 18.0 K

Subtotal	\$ 356.6 K
ITCC (35%)	\$ 124.8 K
Total non-binding order of magnitude cost estimate	\$ 481.4 K

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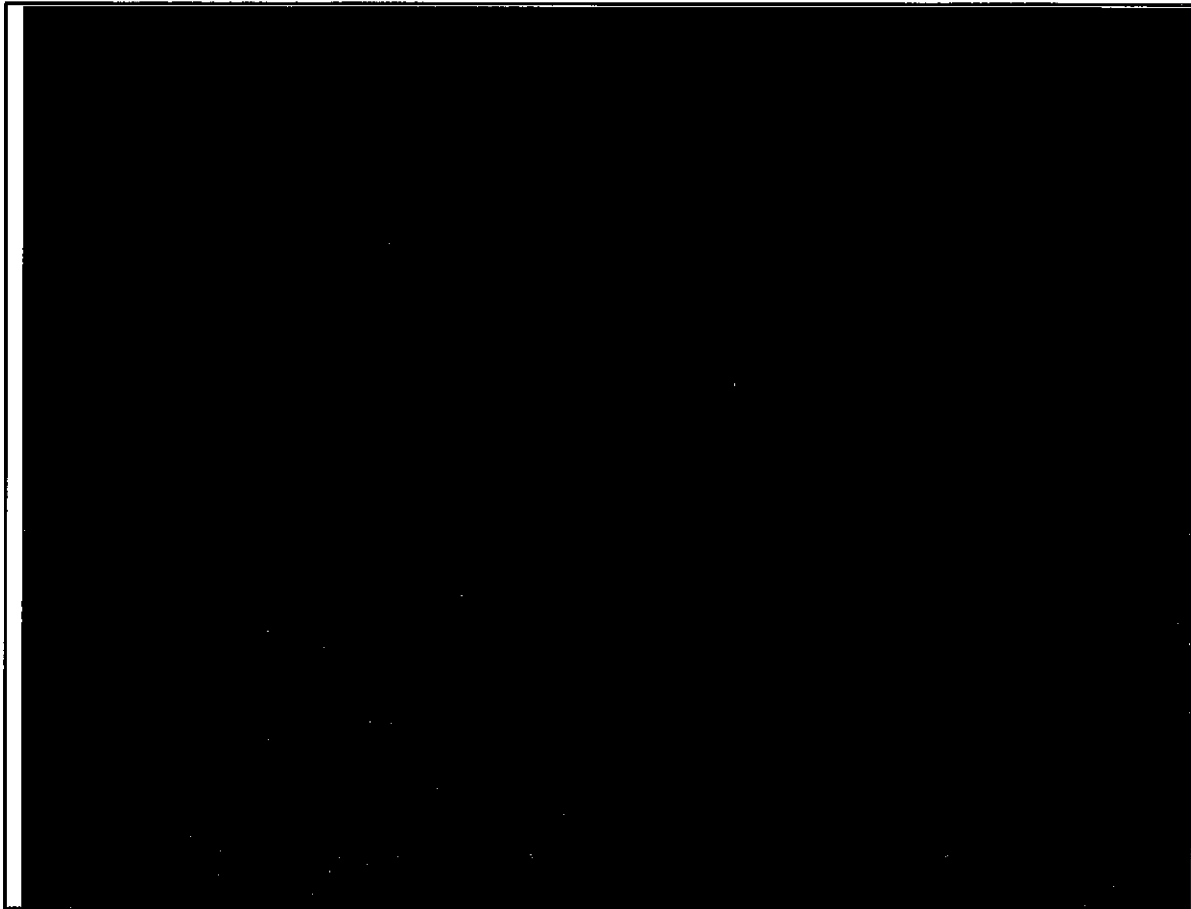
I. INTRODUCTION TO PART A

[REDACTED]) applied to Southern California Edison ("SCE") for interconnection and wholesale distribution service for its proposed [REDACTED] Facility Project pursuant to SCE's Wholesale Distribution Access Tariff ("WDAT") Small Generation Interconnection Procedures. SCE performed a high level Independent System Impact Study as requested by [REDACTED] to identify potential Distribution Upgrades and/or Interconnection Facilities needed to support the request for changing the customer's Point of Interconnection for the [REDACTED] Facility Project from SCE's [REDACTED] Substation to SCE's [REDACTED] Substation. The interconnection is an applicant-owned [REDACTED] that will be located [REDACTED]. The request is for a WDAT steam turbine generating facility with a total capacity of [REDACTED]. The initial request is for service to commence by December 31, 2015.¹

The new generation, consisting of [REDACTED] will receive interconnection service from SCE's existing [REDACTED]. To accomplish this, the Interconnection Customer will build a [REDACTED]. [REDACTED] The generated power would be delivered to the SCE system at the [REDACTED] point of interconnection.

The purpose of this study is to determine the impact of the proposed generation addition on the SCE distribution system and to identify in general additional Interconnection Facilities, Distribution Upgrades, additions or modifications, or other facilities required to provide the requested service. This study was performed for expected year 2015 through 2024 peak load conditions as well as low demand conditions.

¹ Date as requested in the application. Actual operating date depends on design and construction requirements.



II. PART A: SYSTEM IMPACT STUDY CONDITIONS & METHODOLOGY

Planning Criteria

The thermal rating of any conductor, connector, or apparatus should not exceed 100% of its normal rated capacity with all facilities in service (base case).

The thermal rating of any conductor, connector, or apparatus should not exceed 100% of its emergency rating under N-1 conditions.

Operational flexibility and reliability of the distribution system shall be maintained at all times.

Circuit voltage profiles should be maintained to comply within CPUC's Rule 2 requirements.

System Conditions

The power factor for the new generation facility was assumed to be improved to within WDAT requirements of [REDACTED] except as specifically enumerated herein

The generation system must be designed to accommodate a VAR Schedule provided by SCE if necessary by a re-arrangement of SCE's distribution system.

Expected loading on the distribution system as projected by the SCE 2015 - 2024 plan was used.

Distributed generation resources connected to the distribution system are analyzed offline and online during peak load and minimum load conditions during the day as to determine worst case scenario.

The short circuit contribution from the inverter systems was determined using inverter manufacturer datasheets.

III. PART A: SYSTEM IMPACT STUDY RESULTS

Short Circuit Analysis

Using the short circuit duty specification for the synchronous generating units being utilized for the [REDACTED] Facility, the short circuit contribution at the [REDACTED] bus was calculated. This resulted in an increase of three-phase and/or single-line-ground short-circuit duties that did not exceed the 0.1 kA threshold. The circuit breaker interrupting capabilities were reviewed at the [REDACTED] and it was determined that no circuit breakers are required to be upgraded as a result of the Project.

System Protection Considerations

With this proposed method of service, no changes to the protection system of the SCE electrical system are required.

Thermal Loading

Based on the technical data provided by the [REDACTED] Facility, which consisted of [REDACTED] [REDACTED] did not result in substantially changing the total capability and/or electrical characteristics of the electric generating facility. Consequently, the customer's request in changing the Point of Interconnection for the [REDACTED] Facility from SCE's [REDACTED] to SCE's [REDACTED] is not considered a substantial change to the to the total capability of the generating units from a flow impact standpoint as there would no adverse power flow impact at [REDACTED] Substation under normal conditions.

System Study

A Facilities Study can be performed at the customer's request to conclusively determine the detailed scope and cost of facilities required to interconnect the project.

V. NON-BINDING ORDER OF MAGNITUDE COST ESTIMATE

Non-binding order of magnitude cost estimates for the required interconnection facilities and system upgrades are as follows:

<u>Distribution Upgrades</u>	\$ 58.3 K
• [REDACTED]	
<u>Interconnection Facilities</u>	\$ 2.00 K
• [REDACTED]	
<u>Telemetry Requirements</u>	\$ 156.9 K
• [REDACTED]	
<u>Removal of existing Customers' Electrical Facilities</u> [REDACTED]	\$ 106.4 K
• [REDACTED]	
• [REDACTED]	
• [REDACTED]	
• [REDACTED]	
• [REDACTED]	
• [REDACTED]	
• [REDACTED]	
• [REDACTED]	
<u>Removal of existing Customers' Electrical Facilities</u> [REDACTED]	\$ 15.0 K
• [REDACTED]	
<u>Environmental Health and Safety</u>	
• Cost associated with the removal of customer's electrical Facilities at both SCE's [REDACTED] Substation	\$ 18.0 K
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Subtotal	\$ 356.6 K
ITCC (35%)	\$ 124.8 K
Total non-binding order of magnitude cost estimate	\$ 481.4 K

VI. PART A: SUMMARY

The System Impact Study showed:

1. Installation of a [REDACTED] Substation to monitor the reverse power flow caused by the [REDACTED] - [REDACTED] Facility.
2. [REDACTED]
3. Interconnection service pursuant to the WDAT Tariff would be expected to commence approximately 18 months from the execution of a Generator Interconnection Agreement (GIA). However, schedules and duration may change due to number of projects approved and release dates. Stacked projects may impact resources, system outage availability, and environmental windows of construction.
4. In order to provide the adequate telemetry requirements, a [REDACTED] will be required. The Interconnection Customer is also responsible to lease a [REDACTED] from the local phone company. In the event that this is not possible, additional telecommunication systems will be required and the cost estimate may increase significantly.
5. Upgrades identified are general and preliminary descriptions only. The costs indicated are non-binding order of magnitude only. The schedule is projected and preliminary.
6. A Facilities Study detailing required scope and cost of the identified upgrades for the project can be performed at the customer's request.
7. This System Impact Study is based on various technical data previously provided by the applicant. If any of that information changes significantly, as determined by SCE, the results of this study may no longer be appropriate and may necessitate a new study.
8. Current distribution standards are being updated to address generation interconnection systems. The final design of the proposed method of service in this report may change to comply with the updated distribution design standards.
9. A coordination study is required during final engineering. The coordination study may identify additional interconnection requirements such as reprogramming and/or relocating existing protection devices, installing new protective devices, etc. The additional scope of work may have an effect on the applicant's requested operating date. To minimize the risk, applicant and SCE may agree to conduct a complete coordination study during the Facility Study phase of this project in the distribution system topology, or other changes in the distribution system.