

[REDACTED]

SOUTHERN CALIFORNIA EDISON COMPANY

FACILITIES STUDY



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I. Executive Summary

[REDACTED] applied to Southern California Edison (SCE) for the interconnection of 47.2MW of generation from their [REDACTED] to the existing SCE Gonzales – Mandalay 66kV Line, within the Santa Clara 66kV System, under the terms of SCE's Wholesale Distribution Access Tariff (WDAT).

The Project will be connected to the SCE 66kV Line via a new 66kV Interconnection Facility to be owned, operated and maintained by SCE.

For the purpose of this study, the new facility will be referred to as [REDACTED]. [REDACTED] will be a single – line facility, equipped with one circuit breaker and all required protective relays, connected to the SCE Santa Clara 66kV System by tapping the Gonzales – Mandalay 66kV Line into it, and will serve [REDACTED] owned 66/13.8kV Transformer.

The [REDACTED] will be located approximately 150Ft. from the [REDACTED] Generating Facility and the two facilities will be connected by a new [REDACTED] – [REDACTED] 66kV Line.

The [REDACTED] will interconnect to the CAISO Grid at the Santa Clara Substation 220kV Bus.

The Project consists of [REDACTED] 13.8kV LM6000 Gas Turbine, with a Net Generation Capacity of 47.2MW, and [REDACTED] 45MVA 66/13.8kV step-up Transformer Bank to interconnect the generation to the SCE 66kV System.

[REDACTED] requested an interconnection date of July 1, 2007. SCE is currently performing Engineering and Design activities and ordering the necessary equipment to meet this date.

A Transmission System Impact Study (SIS), dated December 18, 2006, was prepared to address the impact of the new generation to the SCE Transmission System.

A Sub – Transmission System Impact Study (SIS) dated January 17, 2007, was prepared to address the impact of the new generation to the SCE Sub – Transmission System.

CAISO reviewed the SIS's and granted Preliminary Interconnection Approval for the Mira Loma Peaker on a letter to SCE (Robert Lugo) dated January 26, 2007.

SEE EXHIBIT A: [REDACTED] AND 66kV LINE ARRANGEMENT.

SEE EXHIBIT B: TRANSMISSION SIS – EXECUTIVE SUMMARY.

SEE EXHIBIT C: SUB-TRANSMISSION SIS – EXECUTIVE SUMMARY.

SEE EXHIBIT D: CAISO LETTER TO SCE (ROBERT LUGO) DATED 01/26/07.

II. Transmission System Impact Study Results.

The SIS analyzed the System including all interconnections placed ahead of the Project in the Application Queue on line and concluded that:

1. The Project does not trigger any Base Case, N – 1 or N – 2 overloads.
2. The Project aggravates one pre-existing N – 1 and one pre-existing N – 2 overloads.
1. The project does not impact the transient stability conditions on the Transmission System.
2. The project does not impact the post – transient conditions on the Transmission System.

3. The Project does increase the Three – Phase and / or Single Phase to Ground Short Circuit Duties by 0.1kA or more at the following [REDACTED] 220kV locations:

[REDACTED]

The Transmission SIS identified the following pre-project contingency overloads which are aggravated by the Project:

1. [REDACTED]

- 2.

Proposed Solution: Replace 3000A Wave Traps with new 4000A Rated elements at both Pardee Substation Line Positions to restore the line ratings to

N = 3230A, N – 1 = 3710A and N – 2 = 4165A

The Normal and N – 1 Ratings are limited by the 2-1590KCMIL ACSR Line Conductors and the N – 2 Rating by the existing 2500A Circuit Breakers (N – 2 Rating: $2500 / 0.6 = 4165A$).

The Transmission SIS considered [REDACTED] potential Generation Projects, presently ahead of the Project on the Interconnection Application Queue, as already interconnected to the SCE System.

SEE EXHIBIT E: EARLIER INTERCONNECTION – APPLICATION QUEUE.

The Transmission SIS concluded that a Facilities Study would be required to determine the scope of work and cost estimates for any required 500kV or 220kV Circuit Breaker replacements or upgrades.

III. Sub-Transmission System Impact Study Results

1. The Project triggers one Base Case overload.
2. The Project aggravates one pre-existing N – 1 overload.
3. The Project does increase the Three – Phase and / or Single Phase to Ground Short Circuit Duties by 0.1kA or more at the following [REDACTED] 66kV locations:

[REDACTED]

The SIS concluded that the project requires the replacement of thirty one 66kV CB's (three at Levy Sub. and twenty eight at Santa Clara Sub.)

The SIS identified the following overloads:

The Project causes a Base Case overload of 107% of Normal Rating on a 0.9-Mile segment of 336KCMIL ACSR Conductor (Rated 615A) on the Mandalay – San Miguel 66kV Line.

This overload, however, would be eliminated after 2007 when the loading in the area

increases. It has been agreed that, until that time, the [REDACTED] would curtail its generation.

IV. Additional Investigations during the Facilities Study

Additional investigations conducted during the Facilities Study concluded that the following upgrades are also required:

1. Upgrade the grounding grid at the Mandalay Generating Station 220kV and 66kV Switchyards to restore Grid Resistance, Step and Touch Potentials and Clearing Times to pre-project levels after the interconnection of the Project.
2. Upgrade the 66kV Bus Differential Protection Scheme at the Santa Clara Substation by replacing existing PDV21C Relays with new PDV21D relays with higher thermal rating to withstand the higher short circuit duty resulting from the interconnection of the Project.

V. Facilities Study Assumptions

- A. All required ISO metering equipment at the Generating Facility will be provided by GBU and is not included in the Facilities Study.
- B. The required RTU to be installed at the Generating Facility will be installed by SCE and it is included in the Facilities Study.
- C. The following line protection equipment, to be installed at the [REDACTED] Generating Facility termination point of the 66kV Line connecting to [REDACTED] will be specified by SCE and provided by [REDACTED] and is not included in the Facilities Study.
 - [REDACTED] Line Current Differential Relay.

VI. Facilities Study Scope and Cost Estimate

VI - A Facilities Study Scope

Pursuant to FERC's orders 2006-A (Small Generators) and 2003-A (Large Generators) all Facilities Studies are required to provide the customer with its "maximum possible funding exposure", which shall include the costs of upgrades that are reasonably allocable to the Interconnection Customer at the time the estimate is made, and the costs of any upgrades not yet constructed that were assumed in the interconnection studies for the Interconnection Customer but are, at the time of the estimate, an obligation of an entity other than the Interconnection Customer."

To comply with the FERC orders, the Scope of Work and Cost Estimate for all elements required for the interconnection are presented for the following two cases:

CASE A: All facilities required exclusively by the Project

And

CASE B: All additional facilities that may be required by the Project

The facilities included on Case B are those additional facilities required to remedy situations caused by earlier Projects, placed ahead of the Project in the Application Queue, and are expected to be implemented by them.

However, in the event that any of these earlier Projects withdraws their Application, the Project may become responsible for any or all of these additional facilities.

CASE A:

- [REDACTED] Install a new 66kV Interconnection Facility.
- Gonzales Substation Upgrade protection on Mandalay 66kV Line Position.
- Levy Substation Replace [REDACTED] 66kV Circuit Breakers.
- Mandalay Gen. Sta. Upgrade protection on Gonzales 66kV Line Position and upgrade the 220kV and 66kV Grounding Grids.
- Santa Clara Substation Upgrade the 66kV Bus Differential Protection Scheme and replace [REDACTED] 66kV Circuit Breakers.
- Gonzales-Mandalay 66kV Line Tap the line into McGrath Beach Substation.
- GBU-McGrath Beach 66kV Line Install new line connecting the two facilities.
- Telecommunications Install new circuits as required to support new Gonzales - Mandalay - McGrath Beach 66kV Line Protection Scheme and RTU.
- Power System Control Install new RTU's, at the Generating Facility and the new [REDACTED]

CASE B:

- Charmin Substation Replace [REDACTED] 66kV Circuit Breaker
- Pardee Substation Replace Wave Traps on both Sylmar No.1 and No.2 220kV Line Positions and upgrade [REDACTED] 220kV Circuit Breakers.

Circuit Breakers Evaluation

- The Facilities Study evaluated the circuit breakers short circuit capability at all locations where the Three-Phase and/or Single Phase to Ground SCD's were increased by 0.1kA or more as a result of the Project. The evaluation included a total of [REDACTED] 220kV CB's at [REDACTED] locations and [REDACTED] 66kV CB's at fourteen locations.

The required replacements and upgrades are shown on Case A and Case B above.

SEE EXHIBIT F: FACILITIES STUDY SCOPE – ADDITIONAL DETAILS.

VI – B Facilities Study Cost Estimate

CASE A Identifies the cost of all facilities that are required exclusively by the Project.

CASE B Identifies the cost of all upgrades required that were triggered by earlier Applicants placed ahead of the Project in the Application Queue.

In the event that any Applicant, presently placed ahead of the Project in the Application Queue, withdraws its Application, the system would need to be re-evaluated. The new

evaluation may conclude that the Project would now trigger any of these upgrades and would then become responsible for some or all of the upgrades identified on Case B.

The total estimated cost of all elements of the interconnection as identified above in the Facilities Study Scope is as follows:

CASE A:	\$10,265,000
CASE B (<u>May</u> be added to Case A):	<u>\$ 1,728,000</u>
POSSIBLE MAXIMUM COST EXPOSURE:	\$11,993,000

SEE EXHIBIT G: COST SUMMARY.

VII. Project Timeline

1. The Project is presently under Engineering and Design and major equipment has already been ordered.
2. The present Project Schedule shows an Interconnection Date of July 1, 2007.
3. At this time there is no definite schedule for the replacement of a 66kV CB and the upgrade of 220kV Circuit Breakers and replacement of 220kV Wave Traps addressed as Case B.
4. For the purpose of this Facilities Study the Case B upgrades are shown in 2008 Dollars but they may still be postponed beyond 2008 if the System does not require them until later.
5. Future Operational Studies for those interconnections placed ahead of the Project in the Application Queue, but after the Project in the Operational Queue, will determine the actual dates when these upgrades will be required.

VIII. Conclusions

- A. The estimated cost for the Interconnection is approximately \$10,265,000 for Case A with the potential additional cost of \$1,728,000 for Case B for a total Maximum Exposure of \$11,993,000.
- B. The costs indicated in the Cost Summary are shown 2007 Dollars, except for the cost of the 220kV Circuit Breaker replacements and upgrades identified under Case B, which are shown in 2008 Dollars due to the time required for these elements of the Project and the uncertainty as to the exact time when the SCE Transmission System would really require these upgrades.
 These costs are not firm and are subject to change based on the final design and actual material costs. This Facilities Study and cost estimates as presented are valid for a period of 90 days.
- C. [REDACTED] will pay SCE based on actual costs. The estimated Project Cost will be reconciled to actual costs upon closure of the subject work orders. The necessary billing adjustments will be made at that time.

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CEII REGULATIONS**