

[REDACTED]

SOUTHERN CALIFORNIA EDISON COMPANY

FACILITIES STUDY



MARCH 16, 2007

Prepared by:

Edgardo A. Romero

Approved by:

Charles E. Nieto

Table of Contents

| Description | Page |
|--|------|
| I. Executive Summary..... | 3 |
| II. Transmission System Impact Study Results..... | 3 |
| III. Sub-Transmission System Impact Study Results..... | 4 |
| IV. Facilities Study Assumptions..... | 4 |
| V. Facilities Study Scope and Cost Estimate..... | 4 |
| V – A. Facilities Study Scope..... | 4 |
| V – B. Facilities Study Cost Estimate..... | 6 |
| VI. Project Timeline..... | 6 |
| VII. Conclusions..... | 6 |
| VIII. ADDENDUM – Operational Studies Results | |
| IX. Exhibits | |
| Exhibit A [REDACTED] and 66kV Gen. Transformer Bank Leads | |
| Exhibit B Transmission SIS Executive Summary | |
| Exhibit C Sub-Transmission SIS Executive Summary | |
| Exhibit D CAISO Letter to SCE (Robert Lugo) dated 01/29/07 | |
| Exhibit E Earlier Interconnections – Application Queue | |
| Exhibit F Facilities Study Scope – Additional Details | |
| Exhibit G Cost Summary | |

I. Executive Summary

[REDACTED] applied to Southern California Edison (SCE) for the interconnection of 45MW of generation from their [REDACTED] to the [REDACTED] 66kV Bus under the terms of SCE's Wholesale Distribution Access Tariff (WDAT).

The Mira Loma Peaker will interconnect to the CAISO Grid at the [REDACTED] 220kV Bus.

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

The [REDACTED] will be installed inside the [REDACTED] perimeter fence and it will be connected to a dedicated 66kV Line Position via new 66kV Generation Transformer Bank Leads to be constructed entirely inside the station.

[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 15, 2006, was prepared to address the impact of the new generation to the SCE Transmission System.

A Sub – Transmission System Impact Study (SIS) dated December 22, 2006, 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 29, 2007.

SEE EXHIBIT A: [REDACTED] and 66kV GEN. TR. BK. LEADS.

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 01/29/07.

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 does not aggravate any pre-existing Base Case, N – 1 or N – 2 overloads.
3. The project does not impact the transient stability conditions on the Transmission System.
4. The project does not impact the post – transient conditions on the Transmission System.
5. 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] 500kV and [REDACTED] 220kV locations:

500kV: [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

220kV: [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

The Transmission SIS considered a total of one hundred and fifty four potential Generation Projects, presently ahead of the Project on the Interconnection Application Queue, as already interconnected to the SCE System.

SEE EXHIBIT E: EARLIER INTERCONNECTIONS – APPLICATION QUEUE.

The SIS concluded that a Facilities Study would be required to determine the scope of work and cost estimates for the 66kV Interconnection Facilities at [REDACTED] and any required Circuit Breaker replacements or upgrades within the Transmission System.

III. Sub-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 does not aggravate any pre-existing Base Case, N – 1 or N – 2 overloads.
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]
[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

The SIS concluded that all Circuit Breakers at the locations identified above were adequate and no replacements or upgrades would be required.

IV. Facilities Study Assumptions

- A. All required ISO metering equipment at the [REDACTED] will be provided by [REDACTED] and is not included in the Facilities Study.
- B. The required RTU to be installed at the [REDACTED] 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] termination point of the 66kV Generation Tie Lines will be specified by SCE and provided by GBU and is not included in the Facilities Study.
 - [REDACTED] SEL-311L Line Current Differential Relay.

V. Facilities Study Scope and Cost Estimate

V – 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 Double – Breaker 66kV Line Position at the existing Switchrack Position 12 to terminate the [REDACTED] 66kV Generation Transformer Bank Leads.
- [REDACTED] Tr. Bk. Leads Install 1,200 Circuit Ft. of new 66kV Line with 336.4KCMIL ACSR Conductors from the [REDACTED] Generating Facility to the [REDACTED] 66kV Switchyard [REDACTED]
- Telecommunications Install two telecommunication channels on diverse paths from the GBU Generating Facility to [REDACTED] Substation to support new 66kV [REDACTED] Tie Line protection scheme and the RTU.
- Power System Control Install new RTU at the Generating Facility and modify Existing RTU at [REDACTED]

CASE B:

- No facilities required except for the Circuit Breakers addressed below.

Circuit Breakers Evaluation

- Evaluate circuit breakers (CB's) 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 forty five 500kV CB's at [REDACTED] locations, [REDACTED] 220kV CB's at [REDACTED] locations and [REDACTED] 66kV CB's at [REDACTED] locations.

The circuit breaker evaluation results are as follows:

CASE A: All circuit breakers are adequate – No replacements or upgrades required.

CASE B: The following replacements and upgrades are required:

| | |
|--------------------|--|
| Vincent Substation | Replace [REDACTED] and upgrade [REDACTED] 500kV CB's |
| Chino Substation | Upgrade [REDACTED] 220kV CB |
| Etiwanda Gen. Sta. | Replace [REDACTED] 220kV CB's – See Note 1 |
| Hinson Substation | Replace [REDACTED] and upgrade [REDACTED] 220kV CB's |
| Mesa Substation | Replace [REDACTED] 220kV CB's – See Note 1 |
| [REDACTED] | Replace [REDACTED] 220kV CB's – See Note 1 |
| Vincent Substation | Upgrade [REDACTED] 220kV CB |

NOTE 1: The Short Circuit Duties (SCD) at the Etiwanda Gen. Sta. and the Mesa and [REDACTED] is higher than the present design standard of 63kA.

This increase in SCD requires that, in addition to the CB replacement, the 220kV Switchyard at each location be upgraded to 80kA Rating.

SEE EXHIBIT F: FACILITIES STUDY SCOPE – ADDITIONAL DETAILS.

V – 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: | \$ 2,411,000 |
| CASE B (May be added to Case A): | <u>\$85,455,000</u> |
| POSSIBLE MAXIMUM COST EXPOSURE: | \$87,866,000 |

SEE EXHIBIT G: COST SUMMARY.

VI. 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 and upgrades of 220kV Circuit Breakers at all locations addressed as Case B.
4. For the purpose of this Facilities Study these 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.

VII. Conclusions

- A. The estimated cost for the Interconnection is approximately \$2,411,000 for Case A with the potential additional cost of \$85,455,000 for Case B for a total Maximum Exposure of \$87,866,000.
- B. The costs indicated in the Cost Summary are shown 2007 Dollars except for the cost of the 220kV Circuit Breaker replacements and upgrades shown under Case B, which are shown in 2008 Dollars due to the time required 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.

[REDACTED] - Elements for Case A

Cost Estimate Summary (2007 Dollars)

Scope:

Interconnect 47.21MW of Net Generation to the SCE [REDACTED] 66kV Bus.

| ELEMENT | INTERCONNECTION FACILITIES | DISTRIBUTION SYSTEM UPGRADES | RELIABILITY UPGRADES | Income Tax Component of Contribution * | ONE TIME PAYMENT |
|---|----------------------------|------------------------------|----------------------|--|---------------------|
| Mira Loma Sub. - 66kV Line Position | \$ 150,000 | \$ 1,129,000 | \$ - | \$ 447,000 | \$ 1,726,000 |
| Mira Loma Sub. - 66kV Gen. Transformer Bank Leads | \$ 105,000 | \$ - | \$ - | \$ 37,000 | \$ 142,000 |
| Telecommunications - Line Protection | \$ 363,000 | \$ - | \$ - | \$ 127,000 | \$ 490,000 |
| Power Systems Control - RTU | \$ 33,000 | \$ - | \$ - | \$ 12,000 | \$ 45,000 |
| Power Systems Control - Upgrades | \$ - | \$ 6,000 | \$ - | \$ 2,000 | \$ 8,000 |
| TOTAL | \$ 501,000 | \$ 1,135,000 | \$ - | \$ 625,000 | \$ 2,411,000 |

Additional Elements for Case B

Cost Estimate Summary (2008 Dollars)

Scope:

Replace [REDACTED] and upgrade [REDACTED] Circuit Breakers at [REDACTED] locations and upgrade [REDACTED] 220kV Switchyards to 80kA Rating.

| ELEMENT | INTERCONNECTION FACILITIES | DISTRIBUTION SYSTEM UPGRADES | RELIABILITY UPGRADES | Income Tax Component of Contribution * | ONE TIME PAYMENT |
|---|----------------------------|------------------------------|----------------------|--|----------------------|
| Vincent Sub. - Replace [REDACTED] & Upgrade [REDACTED] 500kV CB's | \$ - | \$ - | \$ 8,812,000 | \$ - | \$ 8,812,000 |
| Chino Sub. - Upgrade [REDACTED] 220kV CB | \$ - | \$ - | \$ 144,000 | \$ - | \$ 144,000 |
| Etiwanda Gen. Sta. - Replace [REDACTED] 220kV CB's | \$ - | \$ - | \$ 15,096,000 | \$ - | \$ 15,096,000 |
| Hinon Sub. - Replace [REDACTED] & Upgrade [REDACTED] 220kV CB's | \$ - | \$ - | \$ 3,056,000 | \$ - | \$ 3,056,000 |
| Mesa Sub. - Replace [REDACTED] 220kV CB's | \$ - | \$ - | \$ 14,467,000 | \$ - | \$ 14,467,000 |
| [REDACTED] - Replace [REDACTED] 220kV CB's | \$ - | \$ - | \$ 7,548,000 | \$ - | \$ 7,548,000 |
| Vincent Sub. - Upgrade [REDACTED] 220kV CB | \$ - | \$ - | \$ 288,000 | \$ - | \$ 288,000 |
| Etiwanda Gen. Sta. - Upgrade 220kV Switchyard to 80kA Rating ** | \$ - | \$ - | \$ 15,000,000 | \$ - | \$ 15,000,000 |
| Mesa Sub. - Upgrade 220kV Switchyard to 80kA Rating ** | \$ - | \$ - | \$ 15,000,000 | \$ - | \$ 15,000,000 |
| [REDACTED] - Upgrade 220kV Switchyard to 80kA Rating ** | \$ - | \$ - | \$ 15,000,000 | \$ - | \$ 15,000,000 |
| TOTAL | \$ - | \$ - | \$ 85,455,000 | \$ - | \$ 85,455,000 |

This document includes confidential trade secrets and proprietary information of Southern California Edison, to be used only by the [REDACTED] in connection with its evaluation of this Facility Study Proposal. Southern California Edison retains all rights to maintain the confidentiality of this information and requests that [REDACTED] maintain its confidentiality.

* ITCC tax (calculated at 35%) is collected via Letter of Credit.
 * Pursuant to FERC Order 2003A, there will be no ITCC collected on Reliability Upgrades.