

SOUTHERN CALIFORNIA EDISON COMPANY
FACILITIES STUDY




February 06, 2008

Prepared by:

Lindsey A. Sayers

Lindsey A. Sayers

Approved by:

Charles E. Nieto 

Charles E. Nieto



Southern California Edison

Table of Contents

Description	Page
I. Executive Summary.....	3
II. System Impact Study Results.....	3
III. Facilities Study Assumptions.....	5
IV. Facilities Study Scope and Cost Estimate.....	6
IV – A Facilities Study Scope.....	6
IV – B Facilities Study Cost Estimate.....	8
V. Conclusions.....	9
VI. Exhibits	
Exhibit A	Transmission SIS – Executive Summary
Exhibit B	Sub-Transmission/Distribution SIS – Executive Summary
Exhibit C	Restudy Results and CAISO Letter dated [REDACTED]
Exhibit D	[REDACTED] and Plot Plan
Exhibit E	Equipment and Relays
Exhibit F	Cost Summary

I. Executive Summary

[REDACTED] applied to Southern California Edison Company (SCE) for interconnection and distribution service under the terms of SCE's Wholesale Distribution Access Tariff (WDAT). [REDACTED] will own and operate a 190 MW (182 MW net) generating facility [REDACTED] to be interconnected via a new 115kV substation looped-in to [REDACTED] within the Valley 115kV Sub – Transmission/Distribution System.

The [REDACTED] consists of [REDACTED] simple cycle gas engine generators with a net generation export of 182 MW.

Originally the project consisted of [REDACTED] gas engine generators but because of stability issues identified in the System Impact Study [REDACTED] prior to execution of the Facilities Study as allowed under the Large Generator Interconnection Procedures (LGIP), [REDACTED] elected to modify the Project's configuration and changed the generators to [REDACTED] simple cycle gas engine machines. The net export of 182 MW was not changed as a result of the machine modification. The point of delivery to the California Independent System Operator (CAISO) grid is the Valley Substation 500kV Bus.

[REDACTED] has requested an interconnection date of [REDACTED]

A Sub-Transmission/Distribution System Impact Study dated [REDACTED] and a Transmission System Impact Study dated [REDACTED] (together the SIS) was performed by SCE and transmitted to [REDACTED] on [REDACTED]. The SIS identified the impact of the Project to SCE's sub-transmission/distribution system and the CAISO Grid. The CAISO reviewed the Transmission System Impact Study and provided its preliminary approval for interconnection on [REDACTED]. As a result of the Project modification as described above, it was necessary for SCE to restudy the stability and short circuit duty impacts for the Project. The restudy results are included in this report under Exhibit C. SCE provided the transmission level restudy results to the CAISO for review and comment on [REDACTED]. The CAISO reviewed the restudy results and provided its approval of the interconnection in accordance with its letter dated [REDACTED].

FOR ADDITIONAL DETAIL REFER TO THE FOLLOWING EXHIBITS:

- EXHIBIT A: TRANSMISSION SYSTEM IMPACT STUDY – EXECUTIVE SUMMARY
- EXHIBIT B: SUB-TRANSMISSION/DISTRIBUTION SYSTEM IMPACT STUDY – EXECUTIVE SUMMARY
- EXHIBIT C: Restudy Results and CAISO Letter dated [REDACTED]

II. Transmission System Impact Study Results

The Transmission System Impact Study analyzed the System under the following conditions:

1. Palo Verde – Devers No. 2 500kV Transmission Line in service.
2. All [REDACTED] West of Devers 230kV lines have been upgraded.
3. Rancho Vista 500/230kV Substation in service.
4. Devers – Mirage 115kV System [REDACTED] separate systems.
5. Alberhill Substation in service.

[REDACTED]

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The Transmission System Impact Study concluded that the existing SCE transmission system is not adequate to support the additional generation and identified upgrades required the 182MW generation addition.

The Transmission System Impact Study determined that the Project would aggravate two pre-existing single contingencies and [REDACTED] double contingencies caused by interconnection projects placed ahead of the [REDACTED] in the present application queue as follows:

Power Flow:

The Transmission System Impact Study identified the following contingency overloads:

Single Contingencies (N-1) Overloads:

Two p

1. [REDACTED] Pr [REDACTED] ct under
the [REDACTED]

2. [REDACTED] Pr [REDACTED] ct under
the [REDACTED]

Double

Two p

1. [REDACTED] Pr [REDACTED] ct under
the [REDACTED] as

2. [REDACTED] Pr [REDACTED] ct under
the [REDACTED] sion
Li [REDACTED]

The transient stability study results from the transmission system impact study showed significant high frequency [REDACTED] oscillation under local (115kV system) fault with clearing time of more than [REDACTED] cycles with the original Wartsila 20V34SG generators. A transient stability restudy using the LM6000 generators showed the system as stable.

SUB – TRANSMISSION/DISTRIBUTION SYSTEM IMPACT STUDY RESULTS:

The Sub – Transmission/Distribution System Impact Study concluded that the existing SCE Sub – Transmission/Distribution System is not adequate to support the additional generation.

The Sub – Transmission System Impact Study conclusions are:

1. There are [REDACTED] 115kV buses where the three – phase short circuit duty increases by 0.1kA or more.
2. There are no new overloads created by the Project
3. There are no pre-project overloads aggravated by the Project

Short Circuit Restudy:

A short circuit duty (SCD) restudy was performed subsequent to the SIS due to a

[REDACTED]
[REDACTED]
FACILITIES STUDY

modification of the Project's configuration as described above. The SCD restudy concluded that the Project increases the three – phase SCD by 0.1kA or more at the following [REDACTED] 500kV, [REDACTED] 230kV and [REDACTED] 115kV locations:

500kV:
[REDACTED]

230kV:
[REDACTED]

115kV:
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The SCD re-study concluded that the Project increases the single phase to ground SCD by 0.1kA or more at the following [REDACTED] 500kV, [REDACTED] 230kV and [REDACTED] 115kV locations:

500kV:
[REDACTED]

230kV:
[REDACTED]

115kV:
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The SIS concluded that a Facilities Study would be required to determine the scope of work and cost estimates for all elements required for Project Interconnection and System Upgrades.

III. Facilities Study Assumptions

- A. All required ISO metering equipment at the Generating Facility will be provided by Ramco and is not included in the Facilities Study.
- B. Any required upgrades at facilities not owned by SCE are not included in the Facilities Study.
- C. If the generation data cannot be obtained at the [REDACTED] RTU, a second RTU at the generating facilities would also be needed to monitor generation data. The possible RTU to be installed at the Generating Facility will be installed by SCE and it is not included in the Facilities Study.
- D. The schedule for the Environmental Impact Statement and/or Environmental Impact Report and all other regulatory filings required for the Project are included in the Facilities Study. The cost for the Environmental Impact Statement and/or

[REDACTED]
FACILITIES STUDY

Environmental Impact Report and all other regulatory filings required for the Project are not included in the Facilities Study.

IV. Facilities Study Scope and Cost Estimate

IV – A Facilities Study Scope

Pursuant to FERC's orders [REDACTED] (Small Generators) and [REDACTED] (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 Facilities: All facilities required exclusively by the Project

And

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

The facilities included in Case B are those additional facilities required to mitigate overloads caused by projects placed ahead of the [REDACTED] in the application queue, and are expected to be implemented by such projects. However, in the event that any of the earlier queued projects withdraws or modifies their interconnection request in accordance with applicable tariff allowances, the [REDACTED] may become responsible for some or all of these additional facilities and the associated costs.

SCE will install an 115kV Interconnection Facility to loop the [REDACTED] No. 2 115kV sub-transmission line to form the [REDACTED] 115kV sub-transmission lines and provide two points of service to the Project. For the purpose of this study, the new 115kV Interconnection Facility will be referred to as [REDACTED].

SCE will design, install, own, operate and maintain the new SCE [REDACTED] and the new segments of 115kV lines required to loop the existing [REDACTED] line into [REDACTED].

[REDACTED] will design, install, own, operate and maintain any section of new 115kV lines between SCE's [REDACTED] and the [REDACTED] owned [REDACTED].

CASE A Facilities:

[REDACTED] will install [REDACTED] new SCE owned 115kV interconnection facility configured as a modified three element ring bus with [REDACTED] 115kV circuit breakers, [REDACTED] incoming 115kV lines and [REDACTED] 115kV overhead feed to the first pole outside of [REDACTED] to connect with the customer's gentle line. For the purpose of this facility study, the new substation will be named [REDACTED]. [REDACTED] Station One Line and Plot Plan Diagrams are attached for reference as Exhibit D.

Install Protection Relays as follows:

[REDACTED]

FACILITIES STUDY

- 115kV Bus Differential
 - [REDACTED] SEL-587Z
- 115kV Underfrequency/Voltage/Overcurrent/Reclosing (Interconnection)
 - [REDACTED] GE F60
 - [REDACTED] SEL-351
- Auld 115kV Line
 - [REDACTED] SEL-311L Line Current Differential Relay
 - GE D60 Line Distance Relay
- Moraga 115kV Line
 - [REDACTED] SEL-311L Line Current Differential Relay
 - GE D60 Line Distance Relay

Auld Substation:

Replace [REDACTED] existing 115kV, 20kA circuit breakers with [REDACTED] 115kV, 40kA circuit breakers.

Sub-Transmission:

The proposed [REDACTED] 115kV line and [REDACTED] 115kV line will be formed by looping into the existing [REDACTED] #2 115kV line approximately 1 mile south of Auld Road. The new 115kV lines will be constructed using engineered steel poles and approximately 6000' of 954 SAC conductor.

Corporate Real Estate:

Corporate real estate will provide mapping, survey, title work and land acquisition labor for the new looped portion of the lines and telecommunications.

Telecommunication:

Construct [REDACTED] diverse fiber optic routes into the new [REDACTED]. Design, construct, splice and terminate two taps into [REDACTED] from an existing fiber optic cable. Install [REDACTED] new GE JungleMUX® SONET terminals at [REDACTED]. Install [REDACTED] new [REDACTED] terminal at both [REDACTED].

Power Systems Control:

In order to maintain the integrity and the reliability of the SCE system, a full size real-time Remote Terminal Unit (RTU) is required at [REDACTED] to monitor the 115kV lines MW, MVAR, phase amps, 115kV CB status/control and generation data such as 115kV tie line net MW, net MVAR, kV, CB status, units MW, MVAR, terminal voltage, auxiliary load MW, MVAR and relay protection status alarm. If the generation data cannot be obtained at the [REDACTED] RTU, a second RTU will need to be installed at the [REDACTED] to monitor the generation data.

Additional details are provided on Exhibit E.

CASE B Facilities:

Substation:

[REDACTED] Replace [REDACTED] 230kV CBs and upgrade [REDACTED] 230kV CBs.
Upgrade 1900A series capacitor to 3000A capability.
Replace [REDACTED] 2000A wave trap on 230kV Pos. 5E with one

[REDACTED]

FACILITIES STUDY

- [REDACTED] 3000A wave trap.
- [REDACTED] Upgrade [REDACTED] 500kV CBs.
- [REDACTED] Replace [REDACTED] 230kV CBs and upgrade 230kV switchyard to 80kA Rating.
- [REDACTED] Upgrade [REDACTED] 230kV CBs.
- [REDACTED] Replace [REDACTED] 115kV CBs and upgrade [REDACTED] 115kV GIS CB.

Transmission:

- [REDACTED] No. 3 230kV line Raise line to remove existing ground clearance limitations by replacing one structure.

Circuit Breakers Evaluation:

An engineering study evaluated the circuit breakers short circuit capability at all locations where the Three-Phase and Single Phase to Ground SCD's were increased by 0.1kA or more as a result of the Project.

The study concluded that a total of [REDACTED] 500kV CB's at one location, [REDACTED] 230kV CB's at [REDACTED] locations and [REDACTED] 115kV CB's at [REDACTED] locations were impacted by the project.

The replacement of all 230kV circuit breakers at [REDACTED] are needed due to the SCD at each location increasing above the present 63kA standard. This requires the switchyard to be upgraded to a new 80kA standard.

The installation of one 500/115kV spare transformer bank at [REDACTED] (a proposed SCE-sponsored project in year 2011) will mitigate the need to upgrade the existing [REDACTED] 115kV switchrack to 80kA under N-1 conditions. The spare bank will alleviate the need to place [REDACTED] 500/115kV transformers in parallel during the outage of [REDACTED] 500/115kV transformer for either emergency or maintenance situations. Having [REDACTED] 500/115kV transformers in parallel at [REDACTED] results in an increase of the SCD and a need to upgrade the 115kV switchrack to 80kA. An operational study will need to be performed for year 2011 to determine if there is an interim special protection scheme that can be implemented to allow the [REDACTED] to come on line in the event installation of the additional 500/115kV transformer bank at [REDACTED] delayed beyond the year 2011.

FOR ADDITIONAL DETAIL REFER TO THE FOLLOWING EXHIBITS:

- EXHIBIT D: [REDACTED] ONE LINE AND PLOT PLAN
- EXHIBIT E: EQUIPMENT AND RELAYS

IV – 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 additional upgrades required that were triggered by projects placed ahead of the [REDACTED] in the application queue.

In the event that any project placed ahead of the [REDACTED] in the application queue is withdrawn or modified in accordance with applicable tariff allowances, a restudy would be required. Such restudy may conclude that the [REDACTED] would then trigger and have cost responsibility for some or all of the additional upgrades identified in 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:	\$ 10,983,500
CASE B (<u>May</u> be added to Case A):	<u>\$ 55,827,000</u>
POSSIBLE MAXIMUM COST EXPOSURE:	\$ 66,810,500

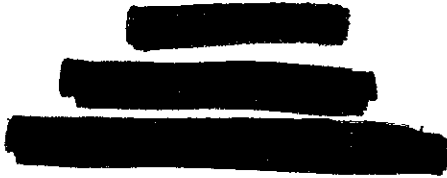
SEE EXHIBIT F: COST SUMMARY.

V. Conclusions

- A. The estimated cost to interconnect the Project is approximately \$10,983,500 for Case A with the potential additional cost of \$55,827,000 for Case B for a total Maximum Cost Exposure of \$66,810,500.
- B. The time required to complete the proposed project will be approximately 48 months (of which approximately 24 months is allocated to permitting activities and 24 months is allocated to engineering, material/equipment procurement, and construction) after execution of the interconnection agreement and receipt of project funding. Permitting activities include preparation of the Environmental Impact Statement and/or Environmental Impact Report as required per CEQA and NEPA, if required, as well as any other approvals and permits to be provided by the CPUC or other regulatory agencies. This 48 month time estimate is subject to final verification by SCE of available resources at the time the interconnection agreement is executed.
A detailed Project Schedule will be provided during the Engineering and Design Phase of the Project.
- C. The costs indicated in the attached tables are shown 2011 Dollars and are not firm. These are only preliminary estimates based on conceptual engineering and system unit costs, 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.
- D. The estimated Project cost will be reconciled to actual costs upon closure of the associated work orders. The necessary billing adjustments will be made in accordance with the terms of the interconnection agreement.
- E. Study results may be affected by changes to projects queued ahead of the [REDACTED].
[REDACTED] Such changes would require a restudy to be performed.

EXHIBIT A

TRANSMISSION SYSTEM IMPACT STUDY EXECUTIVE SUMMARY



SYSTEM IMPACT STUDY

May 24, 2007



SOUTHERN CALIFORNIA
EDISON[®]
An EDISON INTERNATIONAL[®] Company

Prepared by

Chuck-yan Wu / Diana Pinal

Southern California Edison Company

Steven E. Mavis
Manager, Generation
Interconnection Planning

EXECUTIVE SUMMARY

INTRODUCTION

[REDACTED] applied to Southern California Edison ("SCE") for Interconnection pursuant to the Wholesale Distribution Access Tariff (WDAT). [REDACTED] proposed to interconnect the [REDACTED], a new 190 MW large generating facility ("Project") to SCE's subtransmission system by looping into the [REDACTED] 115 kV No. 2 Transmission line. The in-service date proposed by [REDACTED] is [REDACTED].

SCE's Transmission and Interconnection Planning (TIP) and Field Engineering departments have jointly performed a System Impact Study (SIS) to determine the adequacy of SCE's electric system to accommodate the Project. More specifically TIP has studied the impact of the Project on the Transmission portion of the grid, while Field Engineering has performed a System Impact Study that identifies the impact of the Project on SCE's distribution system. The study indicated that the system is not adequate to accommodate the 190 MW of generation without modifications. A Facilities Study will be required for the Project.

The results of the System Impact Study will be used as the basis to determine the Project's cost responsibility for facility upgrades in the Facilities Study. *The study accuracy and the results for the assessment of the system adequacy are contingent on the accuracy of the technical data provided by [REDACTED].* Any changes from the attached data could void the study results.

LOAD FLOW STUDY RESULTS

The study results show that the existing system is not adequate to accommodate [REDACTED] without system upgrades.

A. Power Flow Study

Power Flow study results show several pre-existing overload problems on various transmission lines for base-case (N-0), single (N-1) and double (N-2) contingencies (see Appendix A for details). Only one Transmission line overload was found, during peak condition, to be attributed by the addition of the Project.

Base Case (N-0)

No base case overloads triggered by the Project were found with the addition of the Project.

Single Contingencies (N-1)

[REDACTED] 230 kV No. 1

The line above was triggered by the Project during peak conditions

Double Contingency (N-2)

[REDACTED] 230 kV No. 1

The line above was triggered by the Project during peak conditions

*Disconnects on this Transmission line are scheduled to be upgraded as part of SCE's Expansion plan.

B. Post-Transient Voltage Stability Study

No post transient stability voltage violations were found with the addition of the Project.

C. Transient Stability Study

Based on the transient stability study results, with dynamic models representing the Project, the Project has no negative impact on the Bulk System performance or reliability criteria violation for all contingencies on the CAISO controlled Bulk System.

The transient stability study results showed significant high frequency (2 ~ 4 Hz) oscillation under local (115kV system) fault with clearing time of more than 4 cycles. At this time, dynamic model tuning has not completely resolved the issue; further dynamic model and performance tuning of the Project may resolve this issue.

In order to protect the power grid, a Special Protective Scheme (SPS) should be designed and implemented. Study results showed that if the Project can be tripped within the [REDACTED] cycles of the fault initiation, there will be insignificant impact to the power grid. A rough estimate of the SPS cost is included in this report. The SPS design will be addressed in the Facility Study and the associated cost estimate will be revised accordingly.

D. Short Circuit Study

3-PHASE FAULT DUTY

The addition of the Project has aggravated, but not triggered, [REDACTED] 00 kV substations and [REDACTED] 230 kV substation with short circuit duty increases greater than 0.1 kA

SINGLE – LINE TO GROUND FAULT DUTY

The addition of the Project has aggravated, but not triggered, [REDACTED] 500 kV substations and [REDACTED] 230 kV substation with short circuit duty increases greater than 0.1 kA.

EXHIBIT B

**SUB-TRANSMISSION/DISTRIBUTION
SYSTEM IMPACT EXECUTIVE SUMMARY**

WDT 243

SYSTEM IMPACT STUDY

May 15, 2007

Prepared by:

Robert Buniatyan – Distribution Engineering



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Approved by:

Randy R. Smith
Engineering Manager

EXECUTIVE SUMMARY

[REDACTED] applied to Southern California Edison (SCE) for interconnection and distribution service under the terms of SCE's Wholesale Distribution Access Tariff (WDAT). [REDACTED] will own and operate a 190 megawatt (MW) generating facility [REDACTED] to be interconnected at a new interconnection facility to be constructed by SCE. The [REDACTED] would be served by a new 115 kV substation looped-in to SCE's [REDACTED] 2 115 kV subtransmission line. Distribution service pursuant to the WDAT is proposed to be from the [REDACTED] to the California Independent System Operator (ISO) grid at SCE's [REDACTED] 500 kV substation. The proposed in-service date is [REDACTED].

The [REDACTED] is a generation facility consisting of [REDACTED] gas engine generators with a [REDACTED] generation export of 182 MW. As requested by [REDACTED] SCE performed a System Impact Study (comprised of a transmission system assessment and a subtransmission/distribution system assessment) to identify the general electrical system impacts of the [REDACTED], possible mitigation measures to maintain conformance with SCE, ISO, or other applicable reliability planning criteria, and to provide non-binding order-of-magnitude cost estimates for these mitigation measures. This portion of the System Impact Study report performed by SCE's Field Engineering Department describes the study conditions and assumptions and presents the results of the power flow and short circuit duty analyses on SCE's 115 kV subtransmission system/distribution system. Appendix A, which is attached hereto and was performed by SCE's Transmission and Interconnection Planning Department, details the study results for the ISO-controlled transmission grid.

The System Impact Study (subtransmission/distribution system) consists of a power flow analysis and a three-phase short circuit duty analysis to determine any impacts that would be associated with the [REDACTED] transmitting energy through SCE's distribution system to the ISO grid at SCE's [REDACTED] 500 kV substation. The study showed that with the [REDACTED] on-line:

- For both peak-load and light-load conditions, the addition of the [REDACTED] caused no violations of SCE's thermal loading criteria under base-case conditions.
- For both peak-load and light-load conditions, the addition of the [REDACTED] caused no violations of SCE's thermal loading criteria under abnormal (N-1) conditions.
- There are [REDACTED] substations on the subtransmission/distribution system where the [REDACTED] increased three-phase short circuit duties by 0.1 kilo-Amperes (kA) or more. The circuit breaker interrupting capabilities were reviewed at these substations and it was determined that no circuit breakers would be required to be upgraded as a result of the [REDACTED].

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

CASE A

CASE A reflects those facilities that are required exclusively by the [REDACTED] (e.g., interconnection facilities and subtransmission/distribution system upgrades required to mitigate planning criteria violations triggered by the [REDACTED] is responsible for all costs associated with CASE A.

Interconnection Facilities (substation and 115 kV line construction)	\$ 5.83M
RTU & protection relay upgrade	\$ 0.17M
Circuit breaker replacements (115 kV)	\$ 0.00M
35% ITCC Tax	\$ 2.10M
Total non-binding order-of-magnitude cost estimate	\$ 8.10M

Note: The 115 kV Interconnection Facilities do not include California Public Utilities Commission (CPUC) General Order 131D costs.

CASE B

CASE B reflects those additional facilities that have been identified to mitigate planning criteria violations triggered by projects queued ahead of the [REDACTED] and which are expected to be implemented by such earlier queued projects. However, in the event of a change in the queue ahead of the [REDACTED] such additional facilities may then be triggered by the [REDACTED] (as determined by a restudy). In that event, [REDACTED] would have cost responsibility for those additional CASE B facilities (some or all depending on restudy conclusions) that have been triggered by the [REDACTED] as a result of such change in queue. CASE B (together with CASE A) is intended to provide [REDACTED] an estimate of the [REDACTED] maximum cost exposure for subtransmission/distribution system upgrades.

Circuit breaker replacements (115 kV)	\$1.85M
---------------------------------------	---------

The estimated time for engineering, design, procurement, construction and installation of the interconnection Facilities is approximately [REDACTED] months. The estimate does not include the time required for the preparation of any required environmental impact reports, regulatory approvals and right-of-way acquisition. This estimate will be reviewed again as part of the Facilities Study work scope.

EXHIBIT C

**RESTUDY RESULTS AND CAISO
LETTER DATED JANUARY 18, 2008**

[REDACTED]

January 18, 2008

[REDACTED]

Mr. Robert Lugo
Manager of Grid Interconnection & Contract Development
Southern California Edison
PO Box 800
Rosemead, CA 91770

Subject: [REDACTED] Re-Evaluation

Dear Mr. Lugo:

The California ISO (CAISO) has reviewed SCE's Re-Evaluation of Transient Stability Analysis and Short Circuit Duty ("the Re-Evaluation") for the [REDACTED] ("the Project") proposed by [REDACTED] pursuant to SCE's Wholesale Distribution Access Tariff (WDAT). The Project's maximum net output is [REDACTED] and the proposed in-service date is [REDACTED]. The interconnection point is a new 115 kV substation looped-in to SCE's [REDACTED] No. 2 115 kV sub-transmission line. The delivery point to the ISO Controlled Grid is at Valley 500 kV bus.

CAISO has previously reviewed the System Impact Study (SIS) performed by SCE dated [REDACTED] and granted preliminary interconnection approval to the Project. Prior to proceeding with the Facilities Study, the Project, in accordance with and as allowed under the WDAT, changed its machines which resulted in the need for a re-evaluation of the Transient Stability Analysis and Short Circuit Duty. The Project output remained at [REDACTED] net after the machine change. Therefore, the Power Flow Analysis did not require re-evaluation. Based on our review of the Re-Evaluation, the CAISO is granting interconnection approval to the [REDACTED] provided that the Project meets the conditions outlined in the attachment.

Please note that this letter approving the interconnection of the Project allows the Project to be eligible to deliver the Project's output to the CAISO Controlled Grid using available transmission. However, it does not establish the Project's level of deliverability for purposes of determining its Net Qualifying Capacity under the CAISO Tariff and in accordance with CPUC-adopted Resource Adequacy Rules. Therefore, this letter makes no representation, and [REDACTED] cannot rely on any statements herein, regarding the ability, or amount, of the output of the Project to be eligible to sell Resource Adequacy Capacity. We encourage the Ramco to continue to follow the baseline deliverability studies ongoing at the CAISO. For

Mr. Robert Lugo
[REDACTED]

Page 2 of 6

more information on generation deliverability, please reference the web link:
<http://www.caiso.com/1c44/1c44b5c31cce0.html>

If you have questions about the CAISO review of this study, please contact
[REDACTED] or [REDACTED]

Sincerely,

(original signed [REDACTED]

ALL AGENCIES/STAKEHOLDERS: D&D

com)

Attachment
Summary Information about the [REDACTED]

1 General Background

[REDACTED] applied to Southern California Edison (SCE) for interconnection and distribution service under the terms of SCE's Wholesale Distribution Access Tariff (WDAT) of the [REDACTED]. The Project's maximum net output is [REDACTED] MW. The in-service date proposed by [REDACTED] is [REDACTED]. The interconnection point is a new 115 kV substation looped-in to SCE's [REDACTED] 2 115 kV sub-transmission line. The delivery point to the ISO Controlled Grid is at Valley 500 kV bus. Figure 1 shows the single line diagram for the project.

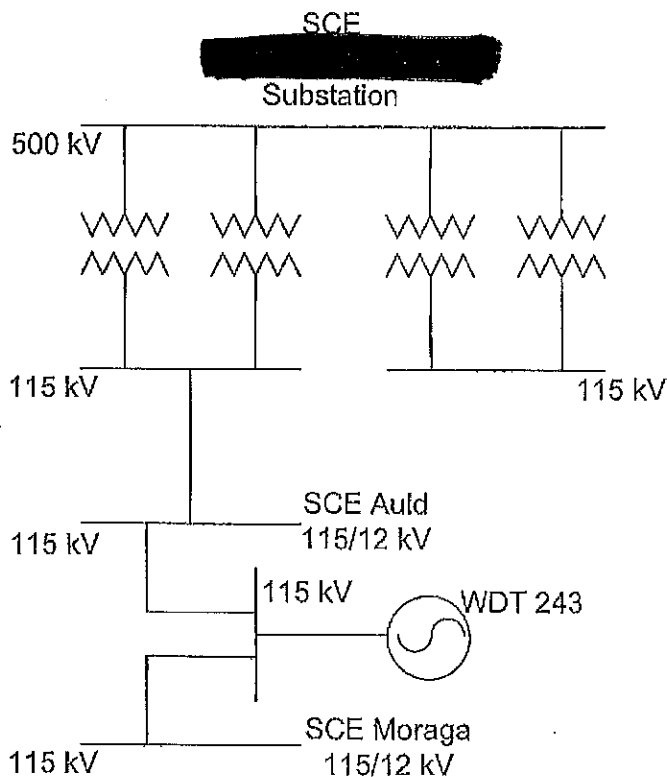


Figure 1. Single Line Diagram of the [REDACTED] Project

2 Study Conclusions

The Re-Evaluation concluded that the system is not adequate to accommodate the Project without modifications.

2.1 Power Flow Study Results

Since the Project output remained at [REDACTED] MW net after the machine change, the Power Flow Analysis did not require re-evaluation. The Power Flow Study results in the SIS are as follows:

Base case

Under both peak and off-peak conditions, the

... .. project.

Mr. Robert Lugo
January 18, 2008
Page 6 of 6

SINGLE – LINE TO GROUND FAULT DUTY

The addition of the Project has aggravated, but not triggered, [REDACTED] 500 kV substations and [REDACTED] 230 kV substation with short circuit duty increases greater than 0.1 kA

3 CAISO Comments and Conclusions

Based on the results from the SIS, the CAISO is granting interconnection approval to the [REDACTED] to connect to the grid, provided that the Project meets the conditions outlined in this attachment.



Re-Evaluation of Transient Stability Analysis and Short Circuit Duty

INTRODUCTION

[REDACTED] applied to Southern California Edison ("SCE") for Interconnection pursuant to the Wholesale Distribution Access Tariff (WDAT). [REDACTED] proposed to interconnect the [REDACTED] a new [REDACTED] MW large generating facility ("Project") to SCE's subtransmission system by looping into the [REDACTED] No. 2 Transmission line. The in-service date proposed by [REDACTED] is [REDACTED].

SCE's Transmission and Interconnection Planning (TIP) performed a System Impact Study (SIS) to determine the adequacy of SCE's Transmission electric system to accommodate the Project. The results of that SIS indicated that the system was not adequate to accommodate the [REDACTED] of generation without modifications. Also, the results indicated Transient Stability problems within the SCE's electric system.

As a result of change in machinery from [REDACTED] evaluation of Transient Stability analysis and Short Circuit Duty analysis was required to determine the adequacy of SCE's electric system to accommodate the Project. The study results indicated that there was no Transient Stability problems associated with the addition of the Project; however the system is not adequate to accommodate the [REDACTED] of generation without Circuit Breaker modifications.

The results of this re-evaluation will be used as the basis to determine the Project's cost responsibility for facility upgrades in the Facilities Study. *The study accuracy and the results for the assessment of the system adequacy are contingent on the accuracy of the technical data provided by [REDACTED].* Any changes from the attached data could void the study results.

STUDY CONDITIONS AND ASSUMPTIONS

A. Transient Stability Study

WECC currently is in the process of adopting Generator Electrical Grid Fault Ride Through Capability Criteria. SCE currently supports a Low Voltage Ride-Through Criteria to ensure continued reliable service. A proposed Criteria that SCE supports, is as follows:

1. Generator is to remain in-service during system faults (three phase faults with normal clearing and single-line-to-ground with delayed clearing) unless clearing the fault effectively disconnects the generator from the system.
2. During the transient period, generator is required to remain in-service for the low voltage and frequency excursions specified in WECC Table W-1 (provided below) as applied to load bus constraint. These performance criteria are applied to the generator interconnection point, not the generator terminals.
3. Generators may be tripped after the fault period if this action is intended as part of a special protection scheme.
4. This Standard will not apply to individual units or to a site where the sum of the installed capabilities of all machines is less than [REDACTED] unless it can be proven that reliability concerns exist.
5. The performance criteria of this Standard may be satisfied with performance of the generators or by installing equipment to satisfy the performance criteria.
6. The performance criterion of this Standard applies to any generation independent of the interconnected voltage level.
7. No exemption from this Standard will be given because of minor impact to the interconnected system.
8. Existing generators that go through any refurbishments or any replacements are then required to meet this Standard.

**PAGES OMITTED FOR
CEII REGULATIONS**

COST OF UPGRADES

CASE A reflects those facilities that are required exclusively by the Project (e.g., interconnection facilities and system upgrades required to mitigate planning criteria violations triggered by the Project. [REDACTED] is responsible for all costs associated with CASE A.

CASE B reflects those additional facilities that have been identified to mitigate planning criteria violations triggered by projects queued ahead of the [REDACTED] and which are expected to be implemented by such earlier queued projects. However, in the event of a change in the queue ahead of the [REDACTED] such additional facilities may then be triggered by the [REDACTED] (as determined by a restudy). In that event, [REDACTED] would have cost responsibility for those additional Case B facilities (some or all depending on restudy conclusions) that have been triggered by the [REDACTED] as a result of such change in queue. Case B (together with CASE A) is intended to provide [REDACTED] an estimate of the Project's maximum cost exposure.

The scope and the cost responsibility of the upgrades required to accommodate the Project are listed below. These upgrades are required to be in-service by the proposed interconnection date of [REDACTED]. *All cost estimates are rough, order of magnitude estimates and are non-binding.*

CASE A:

All circuit breakers are adequate. No replacements or upgrades are required.

CASE B:

Triggered by earlier Projects ahead of [REDACTED] in the Application Queue

[REDACTED]									
[REDACTED]	500kV		3	6	\$ 280,000	\$ -	\$ 1,880,000	\$ -	\$ 1,680,000
[REDACTED]	220kV	10	7	10	\$ 563,000	\$ 164,000	\$ 5,630,000	\$ 1,640,000	\$ 7,270,000
[REDACTED]	220kV	12			\$ 703,000		\$ 8,436,000	\$ -	\$ 8,436,000
[REDACTED]	220kV		2	3	\$ -	\$ 164,000	\$ -	\$ 492,000	\$ 492,000
[REDACTED]		22	12	19			\$ 14,066,000	\$ 3,812,000	\$ 17,878,000

* Requires upgrade of 220 kV Switchyard to 80 kA Rating

Additional Costs (Not Included on Table above)

[REDACTED]	Upgrade 220kV Switchyard to 80kA Rating	\$ 16,631,000	
SUB-TOTAL		\$ 16,631,000	GRAND TOTAL: \$ 34,509,000

EXHIBIT D

 ONE LINE AND
PLOT PLAN

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CEII REGULATIONS**

EXHIBIT E

EQUIPMENT AND RELAYS

[REDACTED]

MAJOR EQUIPMENT AND RELAYS - CASE A

[REDACTED]

- 115kV, 1200A circuit breakers
- 115kV buses
- 115kV, 1200A, group operated, horizontally mounted disconnect switches
- Bus support structures
- Surge arrestors
- 115kV voltage transformers
- MEER building
- SEL-587Z bus differential relay
- GE F60 underfrequency/voltage/overcurrent/reclosing relay
- SEL-351 underfrequency/voltage/overcurrent/reclosing relay
- SEL-311L line current differential relay
- GE D60 line distance relay
- [REDACTED] terminals
- Remote Terminal Unit (RTU)

AULD SUBSTATION:

[REDACTED]

- 115kV, 40kA circuit breakers
- [REDACTED] terminal

[REDACTED] SUBSTATION:

[REDACTED] terminal

SUB-TRANSMISSION:

[REDACTED]

- Engineered steel poles
- Feet of 954 SAC conductor

SCE equipment at [REDACTED]

Remote Terminal Unit (RTU)

ADDITIONAL MAJOR EQUIPMENT FOR CASE B

SUBSTATION:

[REDACTED]

- 220kV circuit breakers
- 115kV circuit breakers
- 500kV TRV line to ground capacitors with individual steel pedestals
- 220kV TRV line to ground capacitors with individual steel pedestals
- 3000A wave traps
- 3000A series capacitor
- 500/115kV transformer bank

TRANSMISSION:

[REDACTED] 220kV transmission tower

L. A. Sayers
2/1/08

EXHIBIT F
COST SUMMARY

Cost Estimate Summary (2011 Dollars)

Scope:
Interconnect 190MW of generation to the Auld Substation 115KV Bus by looping the
The interconnection requires the installation of a new 115KV looped substation

CASE A - ELEMENTS REQUIRED EXCLUSIVELY FOR THE PROJECT

ELEMENT	INTERCONNECTION FACILITIES	RELIABILITY NETWORK UPGRADES	DISTRIBUTION UPGRADES	One time cost	Income Tax Component of Contribution *	ONE TIME PAYMENT
Substation New [REDACTED] 115KV Interconnection Facility - [REDACTED]	\$ 3,680,000	\$ -	\$ -	\$ 2,316,000	\$ 1,288,000	\$ 7,284,000
Sub-transmission lines - Loop Auld-Mira [REDACTED] 2-line	\$ -	\$ -	\$ 920,000	\$ 20,000	\$ 322,000	\$ 1,262,000
Power System Control - Install RTU at [REDACTED]	\$ 50,000	\$ -	\$ -	\$ -	\$ 17,500	\$ 67,500
Telecommunications	\$ 840,000	\$ -	\$ -	\$ -	\$ 294,000	\$ 1,134,000
Corporate Real Estate	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$ 20,000
Auld Substation - Replace 115KV circuit breakers	\$ -	\$ -	\$ 1,216,000	\$ -	\$ 425,600	\$ 1,641,600
TOTAL	\$ 4,570,000	\$ -	\$ 1,216,000	\$ 2,356,000	\$ 2,347,100	\$ 11,409,100

CASE B - ELEMENTS REQUIRED BY EARLIER INTERCONNECTIONS (May become the responsibility of the Project)

Cost Estimate Summary (2011 Dollars)

ELEMENT	INTERCONNECTION FACILITIES	RELIABILITY NETWORK UPGRADES	DISTRIBUTION UPGRADES	One time cost	Income Tax Component of Contribution *	ONE TIME PAYMENT
Transmission Chino-Mira Loma No. 3 220KV Line remove ground clearance limitation	\$ -	\$ 500,000	\$ -	\$ -	\$ -	\$ 500,000
Substations	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Devers Substation 220KV - 10 CB Replacements, Install [REDACTED] sets of TRVs to upgrade 7 CBs	\$ -	\$ 7,270,000	\$ -	\$ -	\$ -	\$ 7,270,000
Eldorado Substation - Replace existing 19000A series capacitor bank with a 22000A bank	\$ -	\$ 15,000,000	\$ -	\$ -	\$ -	\$ 15,000,000
Etiwanda Substation - Replace 2000A wave trap with 3000A wave trap	\$ -	\$ 65,000	\$ -	\$ -	\$ -	\$ 65,000
Lugo Substation 500KV - Install [REDACTED] sets of TRVs to upgrade [REDACTED] CBs	\$ -	\$ 1,680,000	\$ -	\$ -	\$ -	\$ 1,680,000
Mira Loma Substation - Replace [REDACTED] CBs, upgrade switchrack to 80KA	\$ -	\$ 25,067,000	\$ -	\$ -	\$ -	\$ 25,067,000
Villa Park Substation - Install [REDACTED] sets of TRVs to upgrade [REDACTED] CBs	\$ -	\$ 1,680,000	\$ -	\$ -	\$ -	\$ 1,680,000
Valley Substation 115KV - [REDACTED] CB replacements, [REDACTED] CB upgrade transformer	\$ -	\$ -	\$ 19,565,000	\$ -	\$ 6,847,750	\$ 26,412,750
TOTAL	\$ -	\$ 51,262,000	\$ 19,565,000	\$ -	\$ 6,847,750	\$ 77,674,750

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