



**SOUTHERN CALIFORNIA EDISON COMPANY
FACILITIES STUDY**

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I. Executive Summary

[REDACTED] applied to the California Independent System Operator (CAISO) for the interconnection of 49.9MW of generation from their generating facility in [REDACTED] to the CAISO Grid at the existing SCE Captive – [REDACTED] – Mariposa 66kV Line under the terms of SCE’s Wholesale Distribution Access Tariff (WDAT).

The Project consists of [REDACTED] simple-cycle GE LM6000 gas turbine generator with a net output of 49.9 MW. The [REDACTED] will connect the 49.9MW of gas turbine generation to the new SCE 66kV Energy Substation and will interconnect to the CAISO Grid at the Vestal Substation 220kV Bus.

The [REDACTED] 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 Energy Substation.

Energy Substation will be served by looping the 66kV Captive – [REDACTED] – Mariposa line to form the Captive – [REDACTED] – Energy – Mariposa 66kV lines and will connect the lines to a [REDACTED] owned 66kV Transformer.

[REDACTED] requested an interconnection date of June 1, 2006. However, due to the time required for the installation of the new Energy Substation and related 66kV Lines, SCE estimates that the earliest possible interconnection date would be approximately June 1, 2008.

A Transmission System Impact Study (SIS) dated March 6, 2006, was prepared to address the impact of the new generation to the SCE Transmission System.

A Sub – Transmission System Impact Study (SIS) dated July 19, 2006, was prepared to address the impact of the new generation to the SCE Sub – Transmission System

II. System Impact Study Results

The sub-transmission SIS concluded that the sub-transmission system is adequate to support the new generation. However, the transmission SIS concluded that the transmission system is not adequate to support the new generation

The SIS analyzed the SCE System under the following conditions:

1. South of Pastoria Infrastructure Replacement Project in service.
2. Segments 1, 2 and 3 of Antelope Transmission Project in service.
3. Antelope – Vincent – Rio Hondo – Mesa 220kV T/L upgrades in service.
4. Antelope – Cottonwind 220kV upgrades in service.

The Study found the following overloaded elements:

BASE CASE:

Pardee- Pastoria-Warne 220kV T/L Normal Rating 1240A Loaded to 1276A (103%)
This is a pre-project overload that is overloaded to 1251A (101%) before the [REDACTED] interconnection.

[REDACTED]

...the following solutions to eliminate the overloads:

1. For the base case overload: Congestion Management if approved by CAISO or replace the existing 1-1033ACSR with 1-666ACSS conductor.
2. All other overloads are mitigated by the existing Big Creek Remedial Action Scheme (RAS) and Pastoria Energy Facility (PEF) Special Protection Scheme (SPS). The [REDACTED] does not need to be added to the tripping of generation presently on the Big Creek RAS and/or the PEF SPS.

The System Impact Study also identified [REDACTED] locations where the system fault duty will increase by 0.1kA or more as a result of the new generation, and recommended that the circuit breakers be investigated to determine whether replacements or upgrades are required.

III. Facilities Study Assumptions

- a. All required ISO metering equipment at the generation facility will be provided by [REDACTED] and is not included in the Facilities Study.
- b. The required RTU and associated equipment to be placed at the [REDACTED] [REDACTED] will be installed by SCE and it is included in the Facilities Study.

IV. Facilities Study Scope

The Facilities Study shows the scope of work and the cost estimate for the following work required for the interconnection:

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 Facilities Study will include:

CASE A: All facilities required exclusively by the [REDACTED]

And

CASE B: All additional facilities that may be required by the [REDACTED]

The facilities included on Case B are those additional facilities required to remedy situations caused by earlier Projects, placed ahead of the [REDACTED] 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 [REDACTED] may become responsible for any or all of these additional facilities.

The [REDACTED] potential "maximum costs exposure" is identified by all the elements listed under both Case A and Case B combined.

CASE A:

- Install one interconnection facility with [REDACTED] 66kV CB Positions arranged in a Ring-Bus Configuration equipped with [REDACTED] 66kV Lines. For the purpose of this facility study, the new interconnection facility will be named Energy Substation.
- Install new segment of 66kV Line from the Energy 66kV ring bus to the substation fence to provide interconnection to the new [REDACTED] generation transformer.
- Install new RTU at Energy Substation to transmit generation information to the Rector Regional Control Center.
- Evaluate circuit breakers short circuit capability at [REDACTED] 220kV stations. The evaluation determined that circuit breaker replacements and/or upgrades are required for [REDACTED] different conditions as follows:

For this case which identifies only the circuit breaker replacements and upgrades triggered by the [REDACTED] the evaluation concluded that no circuit breaker upgrades or replacements are needed for this case.

CASE B:

- This case identifies all the circuit breaker replacements and upgrades required, including those triggered by Applicants placed ahead of the Project in the Application Queue. Under this case, no circuit breaker replacements are needed and [REDACTED] 220kV circuit breaker upgrade is required at Vincent Substation.

V – A. Facilities Study Results – CASE A

The following Interconnection Facilities are required:

A. Sub-Transmission:

1. Captive – [REDACTED] – Mariposa 66kV Line:
Loop the existing line into the new Energy Substation and form the two new Captive – [REDACTED] – Energy – Mariposa 66kV Lines.

This work requires the installation of [REDACTED] tubular steel poles, [REDACTED] wood poles, and approximately 160 feet of double circuit 954 SAC.

2. Temporary service during the outages to connect Energy Substation to the Captive – [REDACTED] – Mariposa 66kV Line is necessary to accommodate the prison which is fed from Captive Substation. The order of magnitude cost for either option is \$450,000 and is included in the estimated project cost.

Option 1: Upgrade and install a shoe-fly on an existing 12kV line to provide power to the single source customer currently being served from Captive Substation.

Option 2: Install approximately 7MW of diesel generators at Captive Substation to provide power to the customer.

B. Substation:

- 1A. Energy Substation – Scope of Work by [REDACTED]
Engineer and construct a 66kV interconnection facility, arranged in a three-element ring-bus configuration to provide two-line service to serve one generator owned transformer bank. Also install a Mechanical-Electrical Equipment Room (MEER) and one RTU.

All work to be performed according to SCE Engineering, Design, Materials and Construction Standards.

- 1B. Energy Substation – Scope of Work by SCE
Review the complete engineering and design drawings, and bill of materials submitted by [REDACTED] to verify their compliance with the SCE Engineering and design Standards.

Inspect the site during construction to verify compliance with SCE Materials and Construction Standards.

Test the substation prior to energization.

[REDACTED] will deed Energy Substation to Edison including a 10' easement around each side of the new substation.

C. Telecommunications:

Install approximately three miles of overhead fiber optic cable to link the new Energy Substation to the existing [REDACTED] Substation. Install a SONET optical multiplexor at both [REDACTED] and Energy Substation. Also, modify the

digital channel banks at [REDACTED], Vestal and Rector Substations.

D. Power System Controls:

Install a new smart multi-ported Remote Terminal Unit (RTU) at Energy Substation with a full duplex fiber optic data link to the customer's generating facilities or a second RTU installed at the customer site to provide generation data to the SCE Grid Control Center.

E. Estimated cost: \$ 2,754,300

See Exhibit C for cost breakdown

V – B. Facilities Study Results – Case B

The following additional System Upgrades are required to support the new interconnection under Case B:

A. Transmission:

Re-conductor the 20.8 mile Pardee leg of the Pardee – Pastoria – Warne 220kV transmission line from 1-1033 KCMIL to 1-666 ACSS. Replace [REDACTED] towers and intersect [REDACTED] new suspension structures. Replace [REDACTED] dead-end and [REDACTED] suspension insulators with new polymer insulators. Lower one distribution line five feet.

This will only be necessary if Congestion Management is not approved by the California Independent System Operator.

B. Substation:

Install [REDACTED] sets of TRV's to upgrade [REDACTED] CB at Vincent Substation.

Additional Estimated costs: \$22,388,000

See Exhibit C for cost breakdown

VI. Conclusions

- a. The estimated cost for the Interconnection is approximately \$2,754,300 for Case A with the potential additional cost of \$22,388,000 for a total of \$25,142,300 for Case B.
- b. Generally, the completion of the proposed project requires approximately 12 months, which includes engineering, material procurement, and construction. An Interconnection Facility Agreement must be in place by 12/1/2006 in order to terminate the 66kV Line at the Energy Substation dead-end by 5/15/07 and energize the station by 6/15/07. Two weeks of acceptance testing and pre-operations validation are necessary before releasing the substation to grid operations and the CASIO.
- c. The costs indicated in the attached tables are 2007 dollars and are not firm, these are preliminary estimates only. These cost estimates are 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 subject work orders. The necessary billing adjustments will be made at that time.

EXHIBIT A
SUBSTATION

PAGES OMITTED FOR
CEII REGULATIONS

PAGES OMITTED FOR
CEII REGULATIONS

EXHIBIT B

**MAJOR EQUIPMENT
AND RELAYS**

[REDACTED]

MAJOR EQUIPMENT AND RELAYS - CASE A

NEW [REDACTED] SUB – TO BE DESIGNED AND CONSTRUCTED BY [REDACTED]

- 1 66kV Ring Bus Rack
- 3 66kV Circuit Breakers
- 24 66kV Group Operated - Vertically Mounted Disconnect Switches
- 4 66kV Potential Transformers
- 1 66kV Dead End Rack
- 2 Schweitzer SEL-2030 Communications Processor Relays
- 2 Schweitzer SEL-311C relays
- 1 Remote Terminal Unit (RTU)

TRANSMISSION:

- 3 Tubular Steel Poles
- 2 Wood Poles
- 160 Feet of double circuit 954 SAC

POWER SYSTEM CONTROL

SCE equipment at [REDACTED]

- 1 Remote Terminal Unit (RTU)

ADDITIONAL MAJOR EQUIPMENT FOR CASE B

- 6 220kV TRV Line to Ground Capacitors with individual steel pedestals
- 29 220kV Transmission Towers
- 126 220kV Deadend Insulators
- 291 220kV Suspension Insulators

EXHIBIT C
COST SUMMARY

- Case A

Cost Estimate Summary (2007 Dollars)

Interconnect 49.9MW of generation to the Substation 66kV Bus.
 The interconnection requires the installation of a new 66kV Switching Station - Energy Substation
 will design and construct the Substation. Edison will review the design, inspect construction and test equipment
 It also requires telecommunication facilities for the line protection and a new RTU at the plus
 upgrades of the existing RTU's at Vestal and Rector Substations.

ELEMENT	INTERCONNECTION FACILITIES		RELIABILITY UPGRADES		Income Tax Component of Contribution *	ONE TIME PAYMENT
	Subject to O&M	Not Subject to O&M	Subject to O&M	Not Subject to O&M		
Energy Sub. - SCE Scope of Work	\$ -	\$ -	650,000	\$ -	\$ -	\$ 650,000
Transmission Line	\$ 611,000	\$ -	2,300	\$ -	213,850	\$ 827,150
Distribution Upgrade to serve Captive Sub.	\$ -	\$ -	450,000	\$ -	\$ -	\$ 450,000
Telecommunications (Line Protection)	\$ 532,000	\$ -	-	\$ -	186,200	\$ 718,200
Power Systems Control - RTU	\$ 77,000	\$ -	-	\$ -	26,950	\$ 103,950
Power Systems Control - Upgrades	\$ -	\$ -	5,000	\$ -	\$ -	\$ 5,000
TOTAL	\$ 1,220,000	\$ -	1,107,300	\$ -	427,000	\$ 2,754,300

Additional Elements for Case B

Reconductor the Pardee Leg of the Pardee-Pastoria-Warne 220kV T/L
 Install two sets of TRV's to upgrade one CB at Vincent Substation

ELEMENT	INTERCONNECTION FACILITIES		RELIABILITY UPGRADES		Income Tax Component of Contribution *	ONE TIME PAYMENT
	Subject to O&M	Not Subject to O&M	Subject to O&M	Not Subject to O&M		
Pardee-Pastoria-Warne 220kV T/L Upgrades	\$ -	\$ -	22,100,000	\$ -	\$ -	\$ 22,100,000
Vincent Sub. - Upgrade 1 CB	\$ -	\$ -	288,000	\$ -	\$ -	\$ 288,000
TOTAL	\$ -	\$ -	22,388,000	\$ -	\$ -	\$ 22,388,000

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. Southern California Edison retains all rights to maintain the confidentiality of this information and requests that [redacted] preserve 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.

EXHIBIT D
PROJECT SCHEDULE

