[redacted]

FEASIBILITY STUDY

January 16, 2006
Prepared by:

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SOUTHERN CALIFORNIA
EDISON
An *EDISON INTERNATIONAL*[SM] Company

SOUTHERN CALIFORNIA EDISON COMPANY

Approved by:

Randy R. Smith
Engineering Manager

EXECUTIVE SUMMARY

[redacted] applied to Southern California Edison ("SCE") for distribution service under the terms of SCE's Wholesale Distribution Access Tariff ("WDAT"). [redacted] will own and operate a 49.9 MW generating facility [redacted] to be interconnected at a new interconnection facility, [redacted], to be constructed [redacted] will be served by looping in an existing SCE's 66kV 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 230 kV Walnut Substation. The proposed in-service date of the [redacted] is May 1, 2006.

The [redacted] is a generation system consisting of one (1) 13.8 kV, 71.2 KVA LM6000 Gas Turbine in simple cycle mode of operation with a net generation export of 49.9 MW. The generation facility will utilize one (1) 45 MVA, 13.8 kV/66 kV step-up transformer to interconnect the generator to the SCE's system. As requested by [redacted] SCE performed a Feasibility Study 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 non-binding order of magnitude cost estimates for these mitigation measures.

The Feasibility Study consisted of a power flow analysis and a three-phase short circuit duty analysis to determine whether the energy associated with the [redacted] can be transmitted through SCE's system to the ISO grid at Walnut Substation, without creating the need for modifications to SCE's system and/or the ISO grid. The study showed that, with the [redacted] Plant on-line:

- Thermal loadings on the SCE subtransmission facilities used to provide the requested WDAT service were all within criteria limits.

- Under light load conditions, the study identified [redacted] single contingency overloads which were aggravated, but not triggered by the [redacted] After the previous projects mitigate the single line contingency overloads, the [redacted] project will not trigger any additional overloads. Appendix B provides more information on these overloads.

- No 66 kV circuit breakers and no 230 kV circuit breakers will need to be upgraded due to the Proctor Wellhead project.

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

[redacted] interconnection facility - Amount includes 35% ITCC tax	$4.185M
Protection Upgrades (Three Substations) – Amount includes 35% ITCC tax	$1.316M
New I.T. facilities (Three Substation) - Amount includes 35% ITCC tax	$0.675M
RTU installed at [redacted] – Amount Includes 35% ITCC tax	$0.115M
66 kV system line upgrades	$0.0M
ISO transmission system upgrades	$0.0M
Circuit breaker replacements (66 kV, 230 kV) - Amount includes 35% ITCC tax	$0.0M
Total non-binding order of magnitude cost estimate	$5.616M

Additional system studies (i.e., single line-to-ground short circuit duty, transient stability, post-transient stability) will be performed and refined cost estimates will be developed in a subsequent System Impact Study and/or Facilities Study if requested by the customer.

CONTENTS

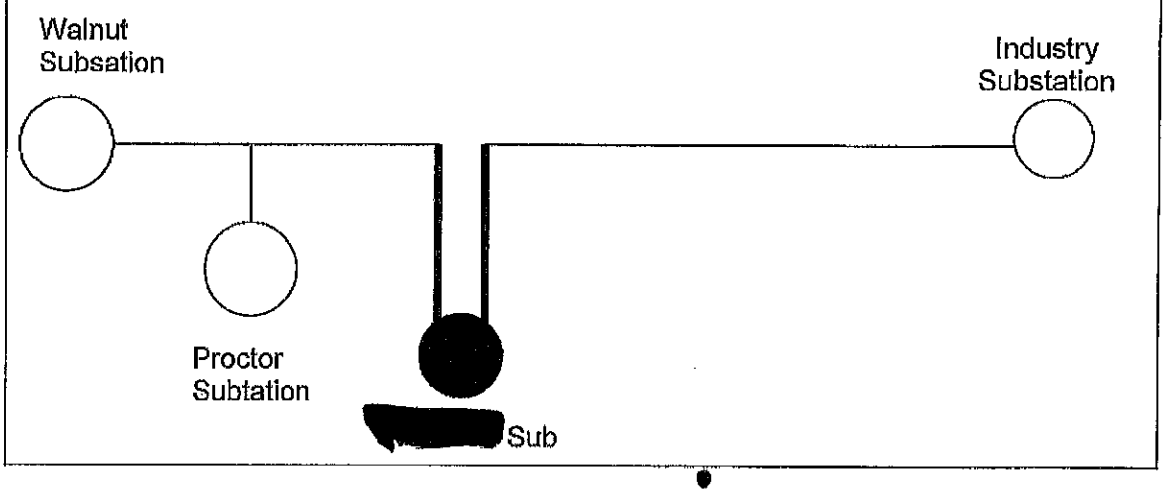
[redacted] **FEASIBILITY STUDY**

August 14, 2005

1. INTRODUCTION

[redacted] applied to Southern California Edison ("SCE") for distribution service under the terms of SCE's Wholesale Distribution Access Tariff ("WDAT"). Wellhead will own and operate a 49.9 MW generating facility [redacted] to be interconnected at a new interconnection facility [redacted] to be constructed by SCE. The [redacted] will be served by looping in an existing SCE's 66kV line as shown in figure 1.

Figure 1 – Proposed 66 kV Method of Service to [redacted] - 2006



Distribution service pursuant to the WDAT is proposed to be from [redacted] the California Independent System Operator ("ISO") grid at SCE's 230 kV Walnut Substation. The proposed in-service date of the [redacted] is May 1, 2006.

The [redacted] is a generation system consisting of one (1) 13.8 kV, 71.2 KVA LM6000 Gas Turbine in simple cycle mode of operation with a net generation export of 49.9 MW. The generation facility will utilize one (1) 45 MVA, 13.8 kV/66 kV step-up transformer to interconnect the generator to the SCE's system. As requested by [redacted] SCE performed a Feasibility Study to identify the general electrical impacts of the [redacted] Plant, possible mitigation measures to maintain conformance with SCE, ISO or

other applicable reliability planning criteria, and non-binding order cost estimate for these mitigation measures.

The Feasibility Study consisted of a power flow analysis and a three-phase short-circuit duty analysis to determine whether the energy associated with the [redacted] can be transmitted through SCE's distribution system to the ISO grid at Chino Substation, without creating the need for modifications to SCE's distribution system and/or the ISO grid. This report describes the study conditions and assumptions and presents the results of the power flow and short-circuit duty analyses on SCE's Padua 66 kV subtransmission system. Appendix B details study results for the ISO-controlled transmission grid.

2. STUDY CONDITIONS AND METHODOLOGY

A. *Planning Criteria*

The study was conducted by applying SCE's planning criteria to the SCE facilities used to provide the requested WDAT service. Specifically, the main criteria applicable to this study are as follows:

Power Flow Criteria

Line loading should not exceed 100% of a conductor's thermal rating with all facilities in service (base case).

Line loading should not exceed 100% of a conductor's emergency rating with one line out of service (N-1).

Short-Circuit Duty Criteria

Short-circuit duty should not exceed a circuit breaker's interrupting capability with maximum area generation on-line.

B. *System Load Conditions*

The study considered two system load conditions: peak loads and light loads. The peak load forecast was based on SCE's 2005-2014 Distribution Substation Plan. The light load forecast was assumed to be 65% of the peak load forecast.

C. *Power Flow Study*

This study evaluated the [redacted] impact on line loadings for base case and N-1 conditions. Both peak load and light load conditions were modeled. Line loadings were monitored both with and without the [redacted] to determine if the addition of the [redacted] caused any violations of SCE's thermal loading criteria.

D. *Short-Circuit Duty Study*

This study evaluated the [redacted] impact on three-phase short-circuit duties seen by substation circuit breakers at the 66 kV level. Symmetrical three-phase fault currents and

X/R ratios were calculated both with and without the [redacted] to determine if the addition of the [redacted] caused any violations of SCE's short-circuit duty criteria.

The dataset used for the short-circuit study represented all existing generation and all projects in the queue (up to and including th[redacted] as on-line. Substations where the Wellhead Plant increased three-phase short-circuit duties by 0.1 kA or more were flagged, and circuit breaker interrupting capabilities were reviewed at these substations to determine if any circuit breakers required replacement as a result of the[redacted]

3. DISCUSSION OF STUDY RESULTS

A. *Power Flow Study*

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 N-1 conditions.

B. *Short-Circuit Duty Study*

Table 1 below summarizes the impact of the [redacted] on symmetrical three-phase short-circuit duties and X/R ratios at various 66 kV buses on the SCE system. [redacted] buses were flagged where the [redacted] increased three-phase short-circuit duties by 0.1 kA or more. A review of circuit breaker interrupting capabilities at these locations determined that a no 66 kV circuit breakers will need to be replaced as a result of the [redacted]

Table 1: Three-Phase Short-Circuit Duty Summary

Bus Names	Vo (I	g ent
Bassett	(	
Cortez	(	
Cryco	(	
Industry	(	
Merced	(	
Nogales	(	
Proctor	(	
Puente	(	
Railroad	(	
Reno	(	
Santee	(	

4. NON-BINDING ORDER OF MAGNITUDE COST ESTIMATES

Non-binding order of magnitude cost estimates for the required interconnection facilities and 66 kV system upgrades are as follows:

[redacted] interconnection facility – Includes 35% ITCC tax	$4.185M
Protection upgrades (Three Substations) – Includes 35% ITCC tax	$1.316M
New I.T. Facilities (Three Substations) – Includes 35% ITCC tax	$ 0.675M
RTU installed at [redacted] – Includes 35% ITCC tax	$0.115M
66 kV system line upgrades	$0.0M
66 kV circuit breaker replacements: Amount includes 35% ITCC tax	$0.0M
Total non-binding order of magnitude cost estimate – 66 kV system	$5.616M

5. CONCLUSIONS

The results of this Feasibility Study showed that, with the [redacted] on-line:

- Thermal loadings on approximately 1.0 miles of existing SCE subtransmission facilities used to provide the requested WDAT service exceeded criteria limits.
- Under light load conditions, the study identified two single contingency overloads which were aggravated, but not triggered by the [redacted] After the previous projects mitigate the single line contingency overloads, the [redacted] project will not trigger any additional overloads. Appendix B provides more information on these overloads.
- No 66 kV circuit breakers will need to be upgraded due to the [redacted].

Non-binding order of magnitude cost estimates for the required interconnection facilities and 66 kV system upgrades are as follows:

[redacted] nterconnection facility – Includes 35% ITCC tax	$4.185M
Protection Requirements (Three substations) – Includes 35% ITCC tax	$1.316M
New I.T. Facilities (Three Substations) – Includes 35% ITCC tax	$ 0.675M
RTU installed at [redacted] – Includes 35% ITCC tax	$0.115M
66 kV system line upgrades	$0.0M
66 kV circuit breaker replacements: Amount includes 35% ITCC tax	$0.0M
Total non-binding order of magnitude cost estimate – 66 kV system	$5.618M

Additional system studies (i.e., single line-to-ground short circuit duty, transient stability, post-transient stability) will be performed and refined cost estimates will be developed in a subsequent System Impact Study and/or Facilities Study if requested by the customer

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WHOLESALE DISTRIBUTION ACCESS TARIFF

FEASIBILITY STUDY
TRANSMISSION ASSESSMENT

January 12, 2005

SOUTHERN CALIFORNIA
EDISON®
An *EDISON INTERNATIONAL®* Company

Prepared by:
Grace Rodriguez

Southern California Edison Company

for Patricia L Arons

[redacted]

FEASIBILITY STUDY - TRANSMISSION ASSESSMENT

EXECUTIVE SUMMARY

[redacted] applied to Southern California Edison ("SCE") for Distribution Service under the terms of SCE's Wholesale Distribution Access Tariff ("WDAT"). [redacted] proposed to connect a single GE LM6000 simple cycle gas turbine at [redacted] new generating facility in the City of Industry, California ("Project"), with a maximum operating rating of 49.9 MW. [redacted] proposed to connect the Project to an existing SCE 66 kV line for the delivery of energy to the ISO Grid at SCE's 230 kV Walnut Substation. The in-service date proposed by [redacted] is June 1, 2006.

Southern California Edison's (SCE's) Transmission and Interconnection Planning (TIP) department has performed a Feasibility Study to determine the adequacy of SCE's transmission system to accommodate the Project. The study indicates that the system is not adequate to accommodate the 49.9 MW of generation without modifications. A System Impact Study and a Facility Study will be required for the Project.

The results of the Feasibility Study is a precursor to the more complete System Impact Study which will be used as the basis to determine project cost allocation 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 the*** [redacted]. Any changes from the attached data could void the study results.

SCE's Field Engineering department has performed a Feasibility Study on the SCE affected distribution network.

POWER FLOW STUDY RESULTS

The power flow study results show that overloading problems are found on several transmission lines for single and double contingencies. Specifically:

Base case

Under light spring and heavy summer conditions, there were no base case overloads attributed to the Project.

Single (N-1) Contingencies

Under light spring conditions, the study identified [redacted] single contingency overloads which were aggravated, but not triggered by the [redacted] These pre-project overloads were

triggered by projects in queue ahead of the [redacted]. The identification of the projects triggering the pre-project overloads and the mitigation of the pre-project overloads will be addressed in the System Impact Study for the Project.

Under heavy summer conditions, there were no overloads attributed to the Project.

Double (N-2) Contingencies

Under light spring conditions, the study identified one single contingency overload which was aggravated, but not triggered by the [redacted]. This pre-project overload was triggered by projects in queue ahead of the [redacted]. The identification of the projects triggering the pre-project overloads and the mitigation of the pre-project overloads will be addressed in the System Impact Study for the Project.

Under heavy summer conditions, there were no overloads attributed to the Project.

SHORT CIRCUIT DUTY STUDY

The data provided b[redacted] has been used to study the Short Circuit Duty contribution. The addition of the Project has impacted 12 substations with short circuit duty increases greater than 0.1 kA. Engineering evaluated circuit breakers at all transmission and sub-transmission buses where the [redacted] contribution to the Short Circuit Duty resulted in an increase of 0.1 kA or more.

The initial engineering assessment concluded that there are circuit breaker replacements and upgrades required that were triggered by projects in queue ahead of th[redacted]. No additional circuit breaker replacements or upgrades are triggered by this Project.

SCOPE OF WORK

The scope of circuit breaker replacements and upgrades to accommodate the generation interconnection on the SCE network is listed below. This study has not assumed overload mitigation requirements for projects ahead of the queue.

1. Mesa Substation: Repla[redacted]50 kA 220 kV circuit breakers with new 63 kA.
2. Mira Loma Substation[redacted]e 63 kA 220 kV circuit breakers with new 80 kA.
3. Vista Substation: Replace t[redacted]50 kA 220 kV circuit breakers to 63 kA rating by installing twelve sets of TRV capacitors.

An Operational Study will also need to be performed based on in-service-year, as opposed to interconnection application queue order. The Operational Study will evaluate the need for having circuit breaker upgrades and mitigation of overloaded facilities in-service prior to Project interconnection, even if these upgrades are assigned to earlier-queued projects that may have later in-service dates.

Note:
Study results may be affected by changes in other projects ahead of the queue in the area. A re-study may be required if there are changes in the project queue or the scope of projects ahead in the queue.

COST OF UPGRADES

The following costs are given in Year 2007 Level Dollars and do not include 35 % ITCC Tax.

1. Mesa Substation: Replac[redacted] 50 kA 220 kV circuit breakers with new 63 kA-
   Cost of 2 x $460,000 = $920,000

2. Mira Loma Substation: Replace[redacted]63 kA 220 kV circuit breakers with new 80 kA-
   Cost of 12 x $607,000 = $7,284,000

   This cost estimate does not include the upgrade of the Mira Loma 220 kV switchyard to withstand a Short Circuit duty of 80 kA.

3. Vista Substation: Replace[redacted]50 kA 220 kV circuit breakers to 63 kA rating by installing twelve sets of TRV capacitors-
   Cost of 12 x $139,000 = $1,668,000

Note:
The estimates are rough order of magnitude and are non binding cost estimates only.

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WHOLESALE DISTRIBUTION ACCESS TARIFF

FEASABILITY STUDY
TRANSMISSION ASSESSMENT

INTRODUCTION

[redacted] applied to Southern California Edison ("SCE") for Distribution Service under the terms of SCE's Wholesale Distribution Access Tariff ("WDAT"). [redacted] proposed to connect a single GE LM6000 simple cycle gas turbine at [redacted] new generating facility in the City of Industry, California ("Project"), with a maximum operating rating of 49.9 MW. [redacted] proposed to connect the Project to an existing SCE 66 kV line for the delivery of energy to the ISO Grid at SCE's 230 kV Walnut Substation. The in-service date proposed by [redacted] is June 1, 2006.

Southern California Edison's (SCE's) Transmission and Interconnection Planning (TIP) department has performed a System Impact Study to determine the adequacy of SCE's transmission system to accommodate the Project. The study indicates that the system is not adequate to accommodate the 49.9 MW of generation without modifications. A System Impact Study and a Facility Study will be required for the Project.

The results of the Feasibility Study is a precursor to the more complete System Impact Study which will be used as the basis to determine project cost allocation 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 the*** [redacted] Any changes from the attached data could void the study results.

SCE's Field Engineering department has performed a Feasibility Study on the SCE affected distribution network.

The study was performed for two system conditions representing: (a) 2006 heavy summer load (once in-ten-year heat wave assumption) with maximum study area generation, and (b) spring load (65% of 2006 heavy summer peak load) for the total transmission system. These conditions reflected the most critical expected loading condition for the transmission system in SCE's eastern area.

STUDY CONDITIONS AND ASSUMPTIONS

A. Planning Criteria

The study was conducted by applying the California Independent System Operator (CAISO) Reliability Criteria. More specifically, the main criteria applicable to this study are as follows:

Power Flow Assessment

The following contingencies are considered for transmission or sub-transmission lines and 500/230 kV transformer banks ("AA-Bank"):

Assuming both San Onofre Units 2 and 3 in service and then:

- Single Contingencies (N-1 Line or N-1 AA-Bank)
- Double Contingencies (N-2 Two Lines, N-1 Line and N-1 AA-Bank) (Outages of two AA-Banks are beyond the Planning Criteria)

The following criteria are used:

Table 2.1

Transmission Lines	Base Case	Limiting Component Normal Rating
	N-1	Limiting Component A-Rating
	N-2	Limiting Component B-Rating
500-230 kV Transformer Banks	Base Case	Normal Loading Rating
	Long & Short Term	As Defined by SCE Operating Bulletins

System upgrades or Special Protection Systems for transmission lines are generally recommended only for base case overloads, single contingency overloads in excess of the A-Rating, and common mode failure double contingencies in excess of the B-Rating.

Congestion Assessment

The following principles, outlined below, were used for interconnecting generation into the SCE transmission system, which fall under CAISO jurisdiction (these principles may be subject to change for future interconnection projects).

- Congestion management, as a means to mitigate base case overloads, can be used if it is determined to be manageable and the CAISO concurs with the implementation.

- Facility upgrades will be required if it is determined that the use of congestion management is unmanageable as defined in the congestion management section that follows.

- Special protection schemes (SPS), in lieu of facility upgrades, will be recommended if the scheme is effective, does not jeopardize system integrity, does not exceed the current CAISO single and double contingency tripping limitations, does not adversely effect existing or proposed special protection schemes in the area, and can be readily implemented.

- Facility upgrades will be required if use of protection schemes is determined to be ineffective, the amount of tripping exceeds the current CAISO single and double contingency tripping limitations, adverse impacts are identified on existing or currently proposed special protection schemes, or the scheme cannot be readily implemented.

- Congestion management in preparation for the next contingency will be required, with CAISO concurrence, if no facility upgrades or special protection schemes are implemented.

The following study method was implemented to assess the extent of possible congestion:

a) Under Base Case with all transmission facilities in service, the system was evaluated with all existing interconnected generation and all generation requests in the area that have a queue position ahead of this request (pre-project).

b) Under Base Case with all transmission facilities in service, the system was reevaluated with the inclusion of the Project (post-project).

If the normal loading limits of facilities are exceeded in (a), the overload is identified as an existing overload that was triggered by a project in queue ahead of the Project. If the normal loading limits of facilities are exceeded in (b) and were not exceeded in (a), the overload is identified as triggered by the addition of the Project. The Project, assuming it is a market participant, and other market participants in the area may be subjected to congestion management, potential upgrade cost and/or participation of any proposed special protection scheme if the project addition aggravates or triggers the overload. Additionally, the Project may have to participate in mitigation of overloads triggered by subsequent projects in queue, subject to FERC protocols and policies.

In order for congestion management to be a feasible alternative to system facilities, all of the following factors need to be satisfied:

- Time requirements for necessary coordination and communication between the CAISO operators, scheduling operators and SCE operators.

- Distinct Path/Corridor rating should be well defined so monitoring and detecting congestion and implementing congestion of the contributing generation resources can be performed when limits are exceeded.

- Sufficient amount of market generation in either side of the congested path/corridor should be available to eliminate market power.
- Manageable generation in the affected area is necessary so that operators can implement congestion management if required (i.e. the dispatch schedule is known and controllable).

The results of these studies should identify:

a. if capacity is available to accommodate the proposed Project and all projects ahead in queue without the need for congestion management, special protection schemes, or facility upgrades

b. if overloads exist in the area after the addition of all projects in queue ahead of the Project and all facilities in service

c. if congestion exists in the area with the addition of the Project and all projects ahead in queue under single and double element outage conditions assuming no new special protection schemes are in place

d. if sufficient capacity is maintained to accommodate all Must-Run and Regulatory Must-Take generation resources with all facilities in service

e. if sufficient capacity is maintained to accommodate the total output of any one generation resource which is not classified as Must-Run.

B. [redacted]y in the City of Industry, California

[redacted] proposed to connect the Project to an existing SCE 66 kV line for the delivery of energy to the ISO Grid at SCE's 230 kV Walnut Substation. The in-service date proposed by [redacted] is June 1, 2006. Appendix A displays the equivalent one line diagram that Transmission & Interconnection Planning used to model the new generation.

Table 2.[redacted]

1 Single Generator	49.9 MW
Auxiliary Load	1000 kW
Net Plant Output	48.9 MW

C. System Conditions

To simulate the SCE transmission system for analysis, the study selected the databases that were used to conduct the CAISO Controlled Transmission 2004-2008 Assessment. Load flow studies considered the existing system arrangement without the SDGE proposed Rainbow-Valley 500 kV transmission project and to reflect other transmission projects.

For example:

- Palo Verde – Devers 500 kV Line #2 was in service.
- All four West of Devers 230 kV Lines have been upgraded.
- The Etiwanda – San Bernardino 230 kV line #1 rating will be increased to 2480 Amps / 988 MVA after the current wave trap removal project is completed.

The bulk power study considered scenarios that evaluated maximum EOR/WOR imports and maximum generation from Qualified Facilities in the eastern area. These conditions were evaluated to identify critical case scenarios that would stress the SCE 500-kV transmission system network in the eastern area. In addition, the study considered two system load conditions: 2006 heavy summer and light spring. The summer peak load forecast was based on SCE's 2005 Transmission Substation Transformer Capacity Assessment, and reflects a one-in-ten-year heat wave assumption. The 2005 – 2009 heavy summer load forecast is shown in Table 2.2. The 2005 - 2009 spring forecast assumed 65% of summer load forecast.

D. Power Flow Study

Power flow studies were conducted under 2006 heavy summer and 2006 spring load conditions with and without the Project for a total of 4 base cases. Further descriptions of the base case assumptions are as follows:

a) 2006 Heavy Summer: The Pre-Project case is **without** the Proctor Project and Post-Project case is **with** the Proctor Project. Each case scenario was studied with maximum generation in SCE's eastern area electrical system and maximum EOR/WOR power flow. Generation included: all market and all regulatory must-take units. Generation patterns were maximized in the eastern area to fully stress the system in order to identify extent of potential congestion on the bulk power system with the addition of the Project. A power flow plot is provided in Appendix C.

b) 2006 Light Spring: The Pre-Project case is **without** the Proctor Project and Post-Project case is **with** the Proctor Project. Each case scenario was studied with 2006 spring load (65% of summer peak for the total system) and maximum generation in SCE's eastern area and maximum EOR/WOR power flow. Generation included: all market and all regulatory must-take units. Generation patterns were maximized in the eastern area to fully stress the system in order to identify the extent of potential congestion on the bulk power system with the addition of the Project. A power flow plot is provided in Appendix C.

With the addition of the Project, SCE's area total generation, imports, loads, and losses for each case are summarized in table below:

Table 2.2

SCE AREA TOTAL GENERATION, IMPORT, LOAD AND LOSSES (MW)				
	2006 Heavy Summer		2006 Light Spring	
	Pre-Project	Post-Project	Pre-Project	Post-Project

Simulations

For each of the four cases, load flow simulations of the bulk power system were conducted for the base case, single contingencies and double contingencies for lines and 500-230 kV transformer banks to determine impacts to the SCE system. A total of [redacted] single an[redacted] double contingencies in the SCE system were studied with system performance monitored for criteria violations on the SCE 500-kV and 230-kV systems.

E. Short Circuit Duty

The data provided by [redacted] has impacte[redacted] substations with increases in the short circuit duty. These impacts require an initial engineering assessment to determine the need for circuit breaker replacements and upgrades.

POWER FLOW STUDY RESULTS

A. 2006 Light Spring Results

The power flow study identified N-1 and N-2 overloads in the 2006 Light Spring case.

Base Case

There were no base case overloads attributed to the Project.

Light Spring Single (N-1) and Double (N-2) Contingencies

The study identified that the Project aggravated pre-project overloads but did not trigger the violation of criteria on SCE's bulk power system. The identification of the projects triggering the pre-project overloads and the mitigation of the pre-project overloads will be addressed in the System Impact Study for the Project.

See Appendix B, Table 1 and 2 for detailed results.

B. 2006 Heavy Summer Results

Base Case

There were no base case overloads attributed to the Project.

Heavy Summer Single (N-1) and Double (N-2) Contingencies

The study identified that the Project aggravated pre-project overloads by less than 1%, but did not trigger the violation of criteria on SCE's bulk power system. The identification of the projects triggering the pre-project overloads and the mitigation of the pre-project overloads will be addressed in the System Impact Study for the Project.

SHORT CURCUIT DUTY STUDY RESULTS

Short Circuit Duty Study

The results of the maximum symmetrical three-phase short circuit duty at the critical buses in the SCE bulk transmission system are summarized in Table 4.1 (the short circuit duty sheet).

The additional 49.9 MW Project has increased the short circuit duty at the substation facilities listed below for future review. However, study results may change due to other projects ahead of the queue in the area. A new study may be required when those projects are revised.

Three Phase (3PH) Short Circuit Duty Study Results

	ge KA
	1
	1
	1
	1
	1
	1
	1
	2
	1
	1
	1
	4

CONCLUSIONS

A. Power Flow Study Conclusions

Load flow studies were conducted under conditions representing 2006 heavy summer and 2006 light spring load with and without the Project for a total of 4 cases.

Palo Verde – Devers 500 kV Line #2 was assumed to be in service and all four West of Devers 230 kV Lines were assumed had been upgraded.

Base case

Under spring and summer conditions, there were no base case overloads attributed to the Project.

Single (N-1) and Double (N-2) contingencies

Under spring and summer conditions, the Project aggravates pre project overloads but did not trigger any upgrades.

See Appendix B, Table 1 and 2 for detailed results.

B. Short Circuit Duty Study Conclusions

The data provided by [redacted] has been used to study the Short Circuit Duty contribution. The addition of the Project has impacted [redacted] substations with short circuit duty increases greater than 0.1 kA. Engineering evaluated circuit breakers at all transmission and sub-transmission buses

where the [redacted] contribution to the Short Circuit Duty resulted in an increase of 0.1 kA or more.

The initial engineering assessment concluded that there are circuit breaker replacements and upgrades required that were triggered by projects in queue ahead of the [redacted] Project. No additional circuit breaker replacements or upgrades are triggered by this Project.

Refer to table 4.1 – Short Circuit Duty Sheet for details.

SCOPE OF WORK FOR FACILITIES STUDY

The scope of circuit breaker replacements and upgrades to accommodate the generation interconnection on the SCE network is listed below. This study has not assumed overload mitigation requirements for projects ahead of the queue.

1. Mesa Substation: Replace [redacted] 50 kA 220 kV circuit breakers with new 63 kA.

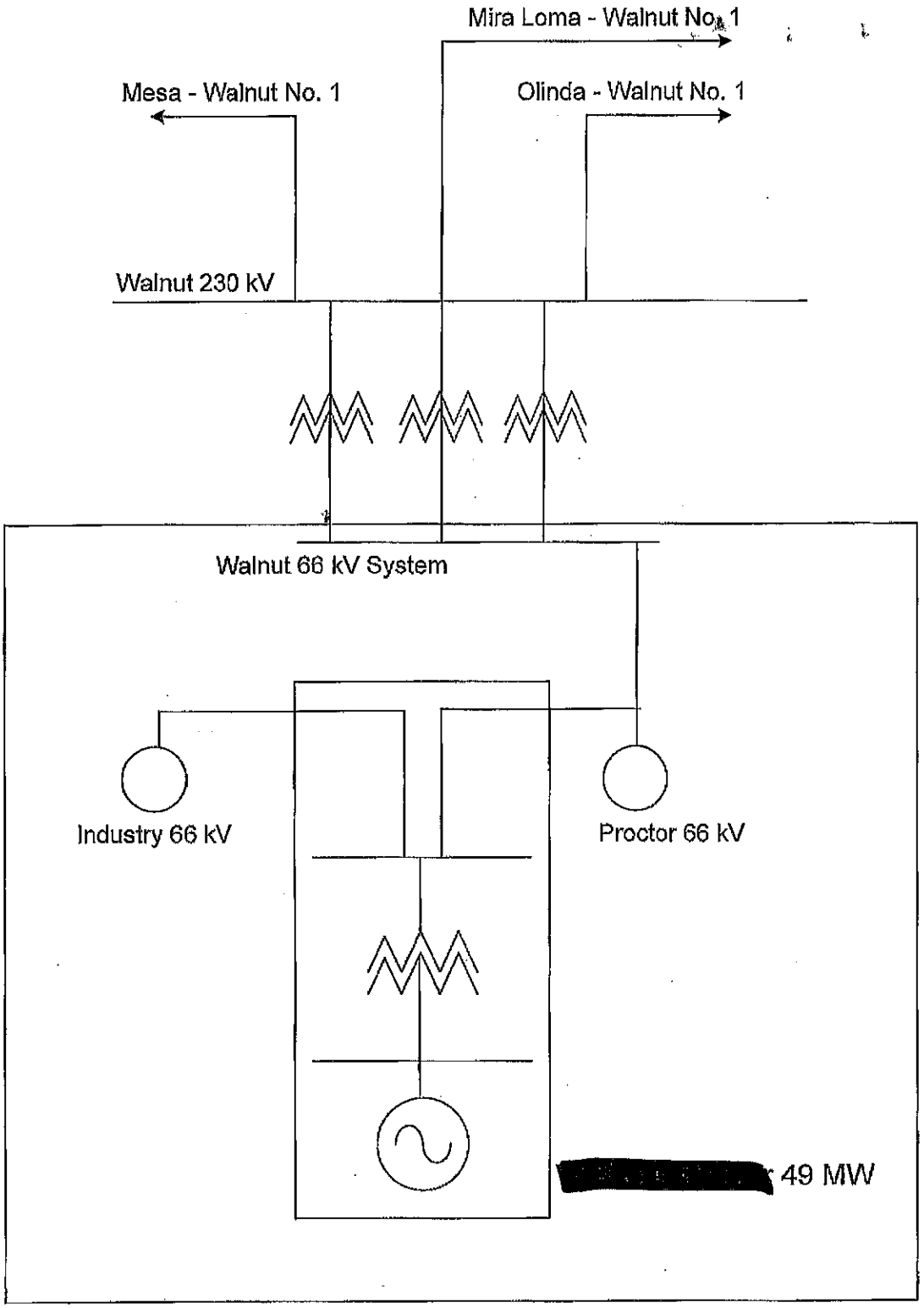
2. Mira Loma Substation: Replace [redacted] 63 kA 220 kV circuit breakers with new 80 kA.

3. Vista Substation: Replace [redacted] 50 kA 220 kV circuit breakers to 63 kA rating by installing twelve sets of TRV capacitors.

An Operational Study will also need to be performed based on in-service-year, as opposed to interconnection application queue order. The Operational Study will evaluate the need for having circuit breaker upgrades and mitigation of overloaded facilities in-service prior to Project interconnection, even if these upgrades are assigned to earlier-queued projects that may have later in-service dates.

Note:
Study results may be affected by changes in other projects ahead of the queue in the area. A re-study may be required if there are changes in the project queue or the scope of projects ahead in the queue.

APPENDIX A
SINGLE LINE DIAGRAM



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APPENDIX C
LOAD FLOW DIAGRAMS

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