[redacted]

Feasibility Study

January 5, 2006

Sub Transmission System Analysis

SOUTHERN CALIFORNIA
EDISON
An *EDISON INTERNATIONAL*℠ Company

SOUTHERN CALIFORNIA EDISON COMPANY

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Approved By: Randy Smith

EXECUTIVE SUMMARY

[redacted] submitted an application to Southern California Edison ("SCE"), pursuant to SCE's Wholesale Distribution Access Tariff (WDAT) to interconnect a 49.9 MW Gas Turbine generating unit to the Alessandro-Highgrove-Maxwell-Tanker 115 kV subtransmission line on SCE's Vista 115 kV System, in Moreno Valley Ca. The [redacted] Company's requested in-service date of the proposed generation project is June 1, 2006.

[redacted] consists of the addition o[redacted] Gas Turbine Generator that has a maximum plant output of 49.9 MW. The generator will be looped into the Alessandro-Highgrove-[redacted] 115 kV subtransmission line with [redacted] 13.8 kV to 115 kV, 67.2 MVA step-up transformer. The net output from the project measured at the 115 kV bus at [redacted] is expected to be 49.9 MW. The looped line will become the Highgrove-Maxwell-[redacted] and the Alessandro-[redacted] 115 kV lines.

SCE performed a Feasibility Study for the [redacted] in accordance with SCE's WDAT process. The purpose of this study was to assess feasibility of this project and to preliminarily assess the impact on SCE's transmission and subtransmission system to determine if the proposed project requires transmission or subtransmission system modifications and/or possible congestion management or mitigation. This study is required to maintain system reliability in accordance with SCE's Planning Criteria. The study includes assessments of power flow and short-circuit duties.

The results of the Feasibility Study are in two sections.

- The impact of the proposed project on SCE's Vista 115 kV system.
- The impact of the proposed project on SCE's 220kV transmission system (see appendix).

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 0.1kA or more.

Based on the new rules that indicate that a project will not be responsible for any replacements or upgrades required for any pre-project condition, the evaluation concluded that with the [redacted] generation plant on-line:

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

- Review of circuit breaker interrupting capabilities on SCE's transmission and subtransmission system determine the following:

  CASE A: Identifies only the circuit breaker replacements and upgrades triggered by the [redacted] This case requires the replacement of [redacted] 115 kV circuit breakers and no 220 kV circuit breakers.

CASE B: Identifies all the circuit breaker replacements and upgrades required, including those triggered by Applicants placed ahead of the [redacted] in the application queue. This case requires the additional replacements of [redacted] 220 kV circuit breakers and [redacted] 115 kV circuit breakers.

In the event that any applicant presently placed ahead of the [redacted] in the application queue withdraws the application, the short circuit duties will be re-calculated and all circuit breakers will be re-evaluated. The new evaluation may conclude that the project would be responsible for some or all of the replacements and upgrades identified on CASE B.

SCE's Feasibility Study did not assess the impact on customer owned 115 kV circuit breakers where the [redacted] contribution to short circuit Duty resulted in an increase of 0.1 kA or more. Additional system studies may need to be performed.

Non-binding order of magnitude cost estimate for the required interconnection facilities and system upgrades, which includes 35% ITCC Tax, are as follows:

Three Element Ring Bus 115 kV interconnection facility	$6,075,000
Protection Upgrades (Three Substations)	$1,991,000
New 115 kV System Lines	$1,957,500
RTU (Installed by SCE at Generation Facility)	$115,000
115 kV Circuit Breaker Replacements	$6,622,000
Total non-binding order of magnitude cost estimate	$16,760,500

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[redacted]

SUBTRANSMISSION FEASIBILITY STUDY

1. INTRODUCTION

The [redacted] submitted an application to Southern California Edison ("SCE"), pursuant to the Wholesale Distribution Access Tariff ("WDAT") to interconnect a 49.9 MW Gas Turbine generating unit to the Alessandro – Highgrove – Maxwell – [redacted] 115 kV subtransmission line on SCE's Vista 115 kV system, in Moreno Valley Ca. The [redacted] requested in-service date of the proposed generation project is June 1, 2006.

The [redacted] consists of [redacted] Gas Turbine Generator that has a maximum plant output of 49.9 MW. The net output from the project measured at the 115 kV bus at [redacted] is expected to be 49.9 MW. [redacted] has requested that the new generating facility be located in the immediate proximity of [redacted] on the south side of Cactus Avenue in Moreno Valley, CA. The generator will be connected to the [redacted] 115 kV bus through one 13.8 kV to 115 kV, 67.2 MVA step-up transformer. This station will be loop fed from the existing 115kV 4-point line, the Alessandro-Highgrove-Maxwell [redacted]. The new [redacted] would form two new 115kV lines: the Highgrove-Maxwel [redacted] and the Alessandro- [redacted]

SCE performed a Feasibility Study in accordance with SCE's WDAT process. The purpose of this study is to assess the project's impact on SCE's transmission and subtransmission system, and to conduct other analyses to determine if the proposed project requires transmission and/or subtransmission system modifications and/or possible congestion management or mitigation. The study is required to maintain system reliability in accordance with SCE's Planning Criteria. The study includes assessments of power flow and short-circuit duties.

2. STUDY CONDITIONS AND METHODOLOGY

A. Planning Criteria

The study was conducted by applying SCE Transmission and Subtransmission Planning Criteria and Guidelines. Specifically, the main criteria applicable to this study are as follows:

Load Flow Criteria

For this system impact study, the base case and N-1 subtransmission loading criterion were considered for subtransmission lines and 220/115 kV transformer banks ("A Banks").

For this contingency, the following loading criteria were used:

Subtransmission lines (115kV):

Base Case	100%
N-1	130%

A Banks:

Base Case	100% of Planned Loading Limit (PLL)
N-1	130% of Planned Loading Limit (LTELL)

Short-Circuit Duty Criteria

The calculated Maximum Expected short-circuit duties shall not exceed the short-circuit duty rating of the 12 kV and 115 kV circuit breakers for system conditions that model maximum area generation on-line.

The calculated short-circuit duties shall not exceed the short-circuit duty rating of the 220 kV and 115 kV circuit breakers for system conditions that model maximum area generation on-line.

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 0.1kA or more.

B. *System Conditions* - Methodology

SCE performed studies to evaluate the impact of the [redacted]

- Base case and N-1 load flow and short-circuit duty studies were run on the Vista 115 kV System to establish base line conditions so that the impact of the [redacted] on the SCE system could be determined.

- Load flow and short-circuit duty studies were run on the Vista 115 kV System to evaluate the system impact associated with the addition of the [redacted]. Two scenarios were studied:
  1) the Vista 115 kV system as it is normally operated without the [redacted]
  2) the Vista 115 kV system as it is normally operated with the [redacted]

C. *Load Flow Study*

This study evaluated the impact of the [redacted] on 115 kV facilities for Base Case and N-1 conditions.

D. *Short-Circuit Duty Study*

This study evaluated the [redacted] impact on three-phase, [redacted] short-circuit duties seen on all of the 115kV buses in Vista System and the 220 kV bus at Vista Substation. [redacted] three -- phase fault currents were calculated both with and without the [redacted] to determine if the addition of the [redacted] causes any violations of SCE's short circuit duty criteria.

3. DISCUSSION OF STUDY RESULTS

A. *Load Flow Study*

Base case (N-0):
There were no base case system congestion problems on the Vista 115 kV system before or after the addition of the [redacted]

Contingency (N-1):
There were no N-1 system congestion problems on the Vista 115 kV system before or after the addition of the [redacted].

B. Short Circuit Duty Study

The results of short circuit duty studies are provided in Table 1. Following is a summary of the results:

- During normal operation the [redacted] increases three-phase short circuit duties by 0.1 kA or more on [redacted] buses within the Vista 115 kV system. Based on the new rules that indicate that a project will not be responsible for any replacements or upgrades required for any pre-project condition, a review of circuit breaker interrupting capabilities at these locations indicate the following:

  CASE A: Identifies only the circuit breaker replacements and upgrades triggered by the [redacted]. This case requires the replacement of [redacted] 115 kV CB's at Calectric Substation and [redacted] 115 kV CB's at Vista Substation. - $4,905,000 + ITCC Tax @ 35% or $1,717,000 = $6,622,000.

  CASE B: Identifies all the circuit breaker replacements and upgrades required, including those triggered by Applicants placed ahead of the [redacted] in the application queue. This case requires the additional replacement of [redacted] 220 kV CB's at Etiwanda Substation, [redacted] 115 kV CB's at Highgrove Substation and [redacted] 115 kV CB's at Vista Substation. - $18,165,000 + ITCC Tax @ 35% or $6,358,000 = $24,523,000.

  The Etiwanda 220 kV switchyard is not adequate to handle 220 kV circuit breakers with higher ratings. Engineering is developing standards that would identify the modifications required to upgrade the switchyard. Until such time when the standards are finalized there is no possible way to estimate the required upgrades. The cost estimate does not include the upgrade of the Etiwanda 220 kV switchyard.

  In the event that any applicant presently placed ahead of the [redacted] in the application queue withdraws the application, the short circuit duties will be re-calculated and all circuit breakers will be re-evaluated. The new evaluation may conclude that the project would be responsible for some or all of the replacements and upgrades identified on CASE B.

- The impact of the [redacted] on other 220 and 500 kV circuit breakers on the SCE system is in the appendix to this study.

The evaluation of the single line-to-ground duty increases for SCE's substransmission and transmission system buses will be conducted as part of the Facilities Study.

C. *Interconnection Facility – Preliminary Cost*

Non-binding Order-of-Magnitude cost for a Two-Line 115 kV Interconnection Facility to serve one customer owned transformer is estimated to be $10,138,500. Following is a summary of the estimate:

- One 115 kV Interconnection Facility (configured as a three-element ring bus with three 115 kV CB's). - $4,500,000 + ITCC Tax @ $1,575,000 = $6,075,000
- Upgrade line protection relays at three substations - $975,000 + ITCC Tax @ $341,000 = $1,316,000
- Relay Communications - $500,000 + ITCC Tax @ $175,000 = $675,000
- New 115 kV Lines (2900' of two new runs of 115 kV cable in a new duct bank) to loop the existing Alessandro – Highgrove – Maxwell – [redacted] 115 kV line into the new [redacted] ring bus, to create Highgrove – Maxwell – [redacted] and Alessandro – [redacted] 115 kV lines. = $1,450,000 + ITCC Tax @ $507,500 = $1,957,500
- RTU (Installed by SCE at the [redacted] - $85,000 + ITCC Tax @ $30,000 = $115,000

4. CONCLUSIONS AND RECOMMENDATIONS

SCE determines that a Facilities Study is required to determine the required facilities and associated costs of any interconnection facilities and system upgrades for the 115 kV, 220 kV and 500 kV.

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 0.1kA or more.

Based on the new rules that indicate that a project will not be responsible for any replacements or upgrades required for any pre-project condition, the evaluation concluded 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.
- Review of circuit breaker interrupting capabilities on SCE's transmission and subtransmission system determine the following:

  CASE A: Identifies only the circuit breaker replacements and upgrades triggered by the [redacted] This case requires the replacement of [redacted] 115 kV circuit breakers and no 220 kV circuit breakers.

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In the event that any applicant presently placed ahead of the [redacted] in the application queue withdraws the application, the short circuit duties will be re-calculated and all circuit breakers will be re-evaluated. The new evaluation may conclude that the project would be responsible for some or all of the replacements and upgrades identified on CASE B.

SCE's Feasibility Study did not assess the impact on customer owned 115 kV circuit breakers where the [redacted] contribution to short circuit Duty resulted in an increase of 0.1 kA or more. Additional system studies may need to be performed.

Non-binding order of magnitude cost estimate for the required interconnection facilities and system upgrades, which includes 35% ITCC Tax, are as follows:

Three Element Ring Bus 115 kV interconnection facility	$6,075,000
Protection Upgrades (Three Substations)	$1,991,000
New 115 kV System Lines	$1,957,500
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Total non-binding order of magnitude cost estimate	$16,760,500

TABLE 1

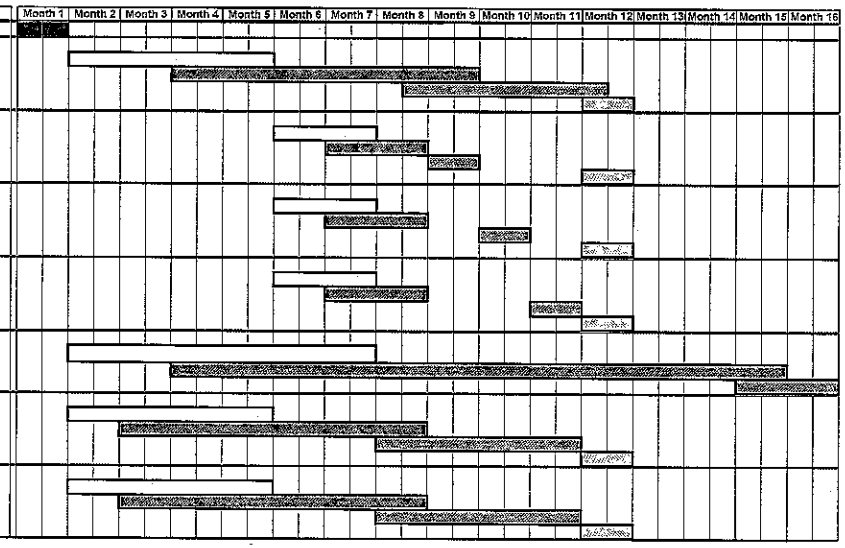
THREE-PHASE SHORT-CIRCUIT DUTY SUMMARY

Substation Bus	Before [redacted]			After [redacted]			Delta kA
	3-PH Duty (kA)	X/R Ratio	# of CB's to replace	3-PH Duty (kA)	X/R Ratio	# of CB's to replace	

[redacted] PROJECT SCHEDULE

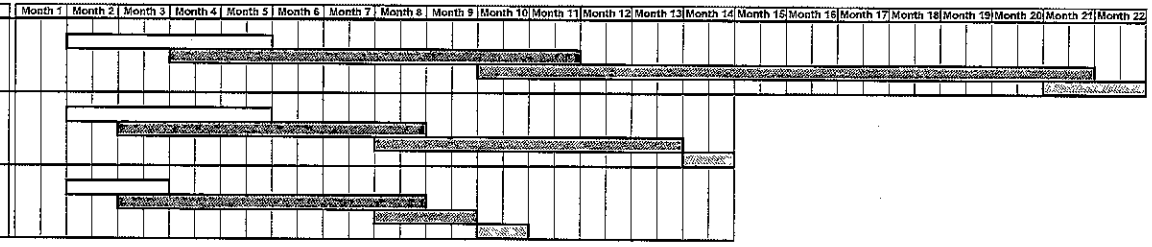
CASE A

ELEMENT	START	END
PROJECT APPROVAL	Initiate Work Orders	
[redacted] SUBSTATION	New 115kV Interconnection Facility	
Engineering & Design	Start of Mo.2	Start of Mo.6
Major Equipment Procure & Deliver	Start of Mo.4	Start of Mo.10
Construction	Middle of Mo.8	Middle of Mo.12
Testing	Start of Mo.12	End of Mo.12
ALESSANDRO SUB.	Protection Upgrades	
Engineering & Design	Start of Mo.6	Start of Mo.8
Relays & Panels	Start of Mo.7	Start of Mo.9
Construction	Start of Mo.9	Start of Mo.10
Testing	Start of Mo.12	End of Mo.12
HIGHGROVE 115kV SWITCHYARD	Protection Upgrades	
Engineering & Design	Start of Mo.6	Start of Mo.8
Relays & Panels	Start of Mo.7	Start of Mo.9
Construction	Start of Mo.10	Start of Mo.11
Testing	Start of Mo.12	End of Mo.12
MAXWELL SUB.	Protection Upgrades	
Engineering & Design	Start of Mo.6	Start of Mo.8
Relays & Panels	Start of Mo.7	Start of Mo.9
Construction	Start of Mo.11	Start of Mo.12
Testing	Start of Mo.12	End of Mo.12
SUB-TRANSMISSION LINE	Loop into Tanker Substation	
Engineering & Design	Start of Mo.2	Start of Mo.8
Major Equipment Procure & Deliver	Start of Mo.4	Start of Mo.16
Construction	Start of Mo.15	End of Mo.16
CALECTRIC SUB.	Replace 7 - 115kV CB's	
Engineering & Design	Start of Mo.2	Start of Mo.6
Major Equipment Procure & Deliver	Start of Mo.3	Start of Mo.9
Construction	Start of Mo.8	Start of Mo.12
Testing	Start of Mo.12	End of Mo.12
VISTA SUB.	Replace 8 - 115kV CB's	
Engineering & Design	Start of Mo.2	Start of Mo.6
Major Equipment Procure & Deliver	Start of Mo.3	Start of Mo.9
Construction	Start of Mo.8	Start of Mo.12
Testing	Start of Mo.12	End of Mo.12



ADDITIONAL ELEMENTS FOR CASE B - NOT INCLUDING THE UPGRADE OF THE ETIWANDA 220kV SWITCHYARD

ELEMENT	START	END
ETIWANDA GEN. STA. 220kV SITCHYARD	Replac[redacted] 220kV CB's	
Engineering & Design	Start of Mo.2	Start of Mo.6
Major Equipment Procure & Deliver	Start of Mo.4	Start of Mo.12
Construction	Start of Mo.10	Start of Mo.22
Testing	Start of Mo.2[redacted]	End of Mo.22
HIGHGROVE 115kV SWITCHYARD	Replac[redacted] 115kV CB's	
Engineering & Design	Start of Mo.2	Start of Mo.6
Major Equipment Procure & Deliver	Start of Mo.3	Start of Mo.9
Construction	Start of Mo.8	Start of Mo.14
Testing	Start of Mo.1[redacted]	End of Mo.14
VISTA SUB.	Replac[redacted] 115kV CB's	
Engineering & Design	Start of Mo.2	Start of Mo.4
Major Equipment Procure & Deliver	Start of Mo.3	Start of Mo.9
Construction	Start of Mo.8	Start of Mo.10
Testing	Start of Mo.10	End of Mo.10



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WHOLESALE DISTRIBUTION ACCESS TARIFF

FEASIBILITY STUDY
TRANSMISSION ASSESSMENT

December 23, 2005

SOUTHERN CALIFORNIA
EDISON®
An *EDISON INTERNATIONAL®* Company

Study by
Amos Ang

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] generating facility in Moreno Valley, California ("Project"), with a maximum operating rating of 49.9 MW. [redacted] proposed to connect the Project to SCE's Alessandro-Highgrove-Maxwell-[redacted] 115 kV line for the delivery of energy to the ISO Grid at SCE's Vista 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

There are two base case overloads that are attributed to previous projects and the Project contributed less than 1% of the loading of these lines. After the previous projects mitigate these base case overloads, the Project will not trigger additional overloads of these facilities.

- Valley-Serrano 500 kV is loaded to 3,352.4 Amps or 111.9% of normal and emergency rating.
  The base case overload is attributed to a higher queued generation project.

- Devers-Valley 500 kV is loaded to 3002.3 Amps or 100.2% of normal and emergency rating.
  The base case overload is attributed to a higher queued generation project.

Single Contingency

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

Double Contingency

Double contingency overload problem is found on one transmission line.

Under summer conditions, the Project increases the loading of the following line:

- Mira Loma – Vista 230 kV # 2 line overload was increased from 2955 Amps (128%) to 3014 Amps (131%).

Upon further engineering review of the limitation of the line, there is enough transmission capacity for 3014 Amps without further upgrades.

SHORT CIRCUIT DUTY STUDY

The data provided by [redacted] has been used to study the Short Circuit Duty contribution. The addition of the Project has impacted 3 substations with increases of >0.1 kA in the short circuit duty. The project does not trigger any circuit breaker upgrades in the initial engineering assessment but may change when further study is done to determine the need for circuit breaker upgrades.

SCOPE OF WORK

The scope of 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.

There are no associated upgrades with the Project on SCE's Bulk Power System.

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.

COST OF UPGRADES

There is no cost associated with the addition of the project.

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. 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 [redacted] GE LM6000 simple cycle gas turbine at [redacted] generating facility in Colton, California ("Project"), with a maximum operating rating at 49.9 MW. [redacted] proposed to connect the Project to SCE's Alessandro-Highgrove-Maxwell-[redacted] 115 kV line for the delivery of energy to the ISO Grid at SCE's Vista 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 eastern 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] in Moreno Valley, California

[redacted] proposed to connect the Project to SCE's Alessandro-Highgrove-Maxwell-[redacted] 115 kV line for the delivery of energy to the ISO Grid at SCE's Vista Substation. The in-service date proposed by [redacted] is June 1, 2006. Appendix A displays the equivalent one line diagram that Transmission & Interconnection Planning use to model the new generation.

Table 2.2 [redacted]

1 Single Generator	49.9 MW
Auxiliary Load	600 kW
Net Plant Output	49.3 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 [redacted] 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 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: Case 1 **without** the Project and Case 2 **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 Spring: Case 3 **without** the Project Case 4 **with** 2006 spring load (65% of summer peak for the total system) was used with 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	
	Case 1	Case 2	Case 3	Case 4
Generation				
Imports				
Load				
Losses				

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 and [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 Wellhead has impacted [redacted] substations with increases in the short circuit duty. These impacts require further study to determine the need for circuit breaker upgrades.

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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

Table 4.1
Short Circuit Duty Sheet

Bus Name	Bus KV	PRE CASE X/R	PRE CASE KA	POST CASE X/R	POST CASE KA	Increase KA
Etiw						
Miralo						
V						

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

There are two base case overloads that are attributed to previous projects and the Project contributed less than 1% of the loading of these lines. After the previous projects mitigate these base case overloads, the Project will not trigger additional overloads of these facilities.

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2 line to

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's 49.9 MW has impacted 3 substations with increases of >0.1 kA in the short circuit duty. The project does not trigger any circuit breaker upgrades in the initial engineering assessment but may change when further study is done to determine the need for circuit breaker upgrades.

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

SCOPE OF WORK FOR FACILITIES STUDY

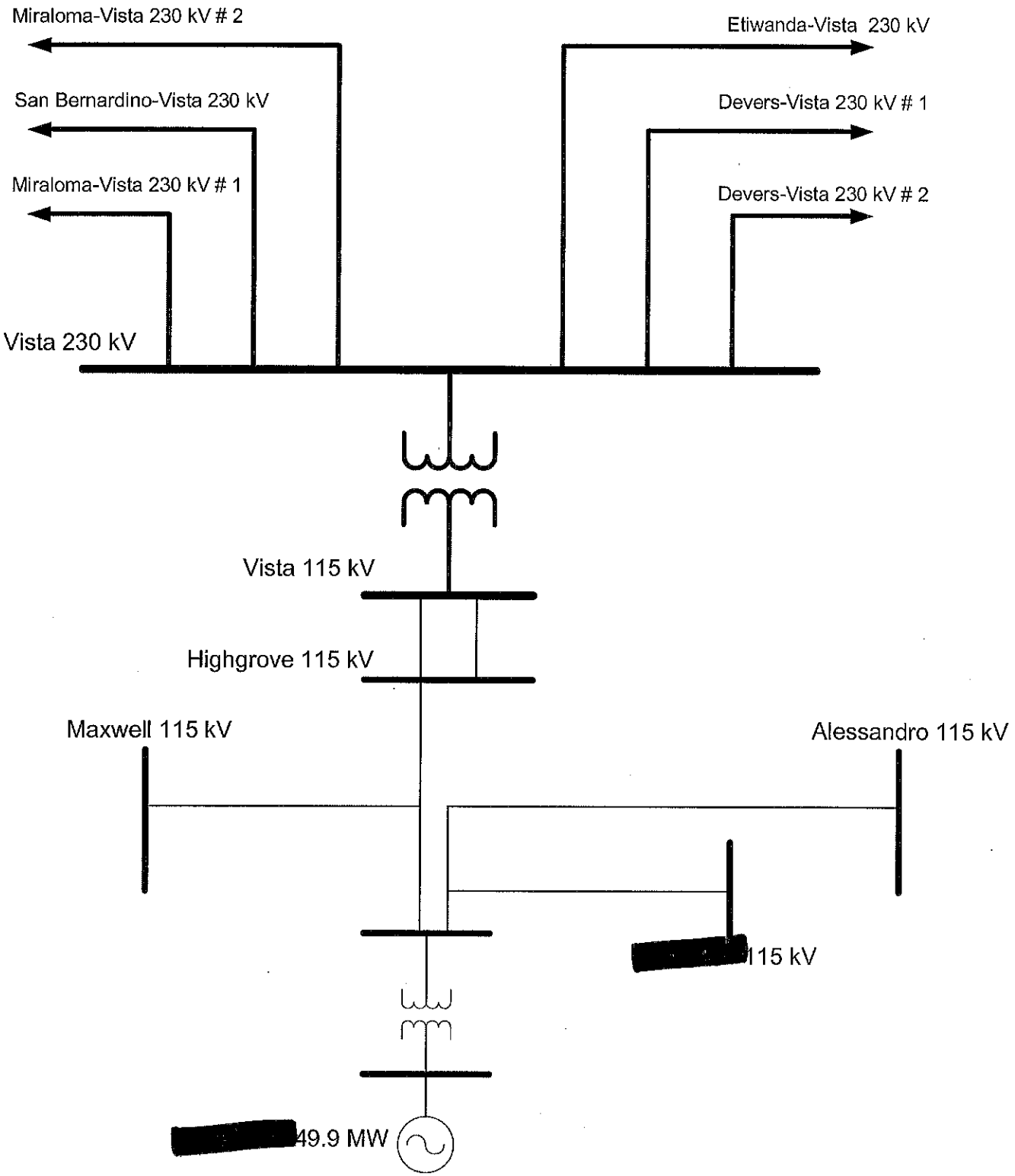
The scope of upgrades to accommodate the generation interconnection on the SCE network is listed below. This study has not assumed overload mitigation requirements for projects ahead of the queue.

There are no associated upgrades with the Project on SCE's Bulk Power System.

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 change due to other projects ahead of the queue in the area. A new study may be required if projects ahead of the queue are changed.

APPENDIX A
SINGLE LINE DIAGRAM



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APPENDIX C
LOAD FLOW DIAGRAMS

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