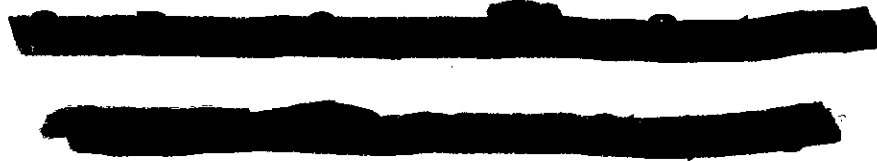

Appendix A – WDT425



Final Report

August 25, 2011

This study has been completed in coordination with Southern California Edison Generator Interconnection Procedures for Interconnection Requests in a Queue Cluster Window

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Attachments:

1. Generator Machine Dynamic Data
2. Dynamic Stability Plots-(see Appendix F of the Group Report)
3. SCE Interconnection Handbook
4. Short Circuit Calculation Study Results (see Appendix H of the Group Report)
5. Deliverability Assessment Results
6. Allocation of Network Upgrades for Cost Estimates

1. Executive Summary

[REDACTED] has submitted a completed Interconnection Request (IR) to the The Southern California Edison Company ("SCE") for their [REDACTED] under SCE's Wholesale Distribution Access Tariff (WDAT). The Project is a photovoltaic plant with an output of 37.5 MW with a requested Full Capacity Point of Interconnection (POI) on SCE's Borel – Isabella – Kern River 3 – Lakegen – Weldon 66 kV line. The requested In-Service date is May 1, 2012 and Commercial Operation Date is December 31, 2012.

Pursuant to the Generator Interconnection Procedures (GIP) Cluster Study process under the SCE Wholesale Distribution Access Tariff (WDAT), the Project was grouped with the [REDACTED] and [REDACTED] Phase II Study (Phase II) projects to determine the impacts of the group as well as impacts of the Project on SCE's distribution system and the CAISO Controlled Grid.

The Group Report has been prepared separately identifying the combined impacts of all projects in the Queue Cluster 1 and Queue Cluster 2 Phase II study (Phase II) group on the CAISO Controlled Grid. This report focuses only on the impacts of the Project.

The report provides the following:

1. Transmission and Distribution system impacts caused by the Project;
2. System reinforcements necessary to mitigate the adverse impacts caused by the Project under various system conditions and;
3. A list of required facilities and a non-binding, good faith estimate of the Project's cost responsibility and time to construct these facilities.

The Phase II study has determined that the Project contributes to various reliability and/or deliverability problems for which mitigation plans have been proposed. These mitigation plans are detailed in Section 11 of this report.

The non-binding SCE cost estimate of Interconnection Facilities¹ to interconnect the Project is approximately **\$1,994,000** including ITCC². The maximum cost responsibility for the SCE Network Upgrades³ to interconnect the Project is **\$0** and the cost of the Distribution Upgrades⁴ is **\$50,793,000**.

The non-binding construction schedule to engineer and construct the facilities is approximately 60 months from the signing of the Generator Interconnection Agreement (GIA).

¹ The transmission facilities necessary to physically and electrically interconnect the Project to the CAISO Controlled Grid at the point of interconnection.

² Income Tax Component of Contribution

³ The SCE transmission facilities, other than Interconnection Facilities, beyond the point of interconnection necessary to physically and electrically interconnect the Project safely and reliably to the CAISO Controlled Grid

⁴ These upgrades are not reimbursable.

2. Project and Interconnection Information

Table 2-1 provides general information about the Project as shown in the customer's IR.

Table 2-1: [REDACTED] Project General Information

Project Location	[REDACTED]
SCE Planning Area	[REDACTED]
Number and Type of Generators	[REDACTED]
Interconnection Voltage	[REDACTED]
Maximum Generator Output	[REDACTED]
Generator Auxiliary Load	[REDACTED]
Maximum Net Output to Grid	[REDACTED]
Power Factor Range	[REDACTED]
Step-up Transformer	[REDACTED]
Point of Interconnection	[REDACTED]
Commercial Operation Date	[REDACTED]

Figure 2-1 shows the conceptual single line diagram of the Project.

Figure 1-1: Proposed Single Line Diagram

3. Study Assumptions

For detailed assumptions, please refer to the Group Report. The following assumptions are only specific to the Project:

PHASE II STUDY ASSUMPTIONS

The following Facilities will be installed by SCE and are included in this Phase II Study:

- The segment of 66 kV generation tie inside of the WDT425 Substation property line.
- The required Retail Meters to meter the generating facility retail load.
NOTE: SCE installation does not include metering voltage and current transformers. The SCE meters will be connected to the generator – owned voltage and current transformers to be installed for their CAISO metering.
- The required Remote Terminal Unit (RTU) to be installed at the generating facility which will be installed by SCE.

The following facilities are to be installed by the Interconnection Customer and are not included in this Phase II Study:

- The 66 kV generation tie line with fiber optic cable from the generating facility to the last structure outside the WDT425 Substation property line.

- The required CAISO metering equipment (voltage and current transformers and CAISO meters).
NOTE: The metering voltage and current transformers installed for the CAISO metering will also be used for the SCE owned retail meters.

4. Power Flow Analysis

4.1 Overloaded Transmission Facilities

The group study indicated that the Phase II projects contribute to the following transmission facility overloads or non-convergence problems. The details of the analysis and overload levels are provided in the group study.

Category "A"

- None

Category "B"

- None

Category "C"

- None

4.2 Overloaded Sub Transmission Facilities

This Project contributed to the following overloads:

Category "A"

[REDACTED]

Category "B"

- None

Category "C"

- None

4.3 Power Flow Non-Convergence

This project contributed to the non-convergence issues under the following contingencies.

Category "C"

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

4.4 Recommended Mitigations

A combination of congestion management, power factor regulation, and SPS to trip projects under identified contingency outage conditions is required to mitigate the power flow impacts described above. See the group report for additional details.

The scope of the mitigations assigned to the Project are as follows:
(Refer to Section 11 for a brief description of the upgrades)

Power Factor Regulation Requirement

- The project is required to provide 0.95 leading/lagging power factor regulation at the POI.

Reliability Network Upgrades

- None

Delivery Network Upgrades

- None

Distribution Upgrades

- Reconfigure Isabella 66 kV Substation
- Reconductor 2.32 miles of Vestal – Kern River 3 66 kV line

5. Short Circuit Analysis

Short circuit studies were performed to determine the fault duty impact of adding the Phase II projects to the transmission system and to ensure system coordination. The fault duties were calculated with and without the projects to identify any equipment overstress conditions. Once overstressed circuit breakers are identified, the fault current contribution from each individual project in Phase II is determined. Each Project in Phase II will be responsible for its share of the upgrade cost based on the rules set forth in CAISO Tariff Appendix Y.

5.1 Short Circuit Study Input Data

The following input data provided by the Applicant of the Project was used in this study:

Short Circuit Data @ 38 MVA Base:

- Positive Sequence subtransient reactance ($X''1$) = 1.1962 p.u.
- Negative Sequence subtransient reactance ($X''2$) = 1.1962 p.u.
- Zero Sequence subtransient reactance ($X''0$) Infinity

Station Step-up Transformers (total of one)

- [REDACTED] three-phase transformers, rated for 66/34.5 kV, 24/32/40 MVA, with 7.5% impedance on 24 MVA base.
- [REDACTED] three-phase transformers, rated for 34.5/0.342kV, 1.5MVA, with 5.5%/5.5%/2.0% (H-X/H-Y/X-Y) impedance on 1.5 MVA base.

5.2 Results

All bus locations where the Phase II projects increase the short-circuit duty by 0.1 kA or more and where duty is in excess of 60% of the minimum breaker nameplate rating are listed in the Group Report Appendix H. These values have been used to determine if any equipment is overstressed as a result of the Phase II interconnections and corresponding network upgrades, if any.

The responsibility to finance short circuit related Reliability Network Upgrades identified through a Group Study shall be assigned to all Interconnection Requests in that Group Study pro rata on the basis of short circuit duty contribution of each Generating Facility. In addition, the SCD impact of the associated proposed Network Upgrades was allocated to each Generating Facility using the same percentage assigned for the triggered Network Upgrade.

As discussed in the Group Report, the Phase II breaker evaluation identified overstressed circuit breakers at the following buses. The pro-rata cost allocation for this project, based on SCD contribution at each location, is also provided:

- Upgrade [REDACTED] circuit breakers at Vincent Substation
- Upgrade [REDACTED] circuit breakers at Lugo Substation
- Split the 66 kV bus at Windhub Substation

Table 5.1 SCD Allocation

Project Name	Vincent		Lugo		Windhub (Reliability)		Total (x1,000)
	% Allocated	Cost (x1,000)	% Allocated	Cost (x1,000)	% Allocated	Cost (x1,000)	
WDT425	0	\$ -	0	\$ -	0	\$ -	\$ -

5.3 Preliminary Protection Requirements

Protection requirements are designed and intended to protect SCE's system only. The preliminary protection requirements were based upon the interconnection plan as shown in Figure 2-1.

The applicant is responsible for the protection of its own system and equipment and must meet the requirements in the SCE Interconnection Handbook provided in Attachment 3.

6. Reactive Power Deficiency Analysis

In the [REDACTED] the studies for the CAISO Transition Cluster projects have concluded that such interconnection projects will be required to provide 0.95 leading/lagging power factor correction at the POI due to system area export constraints.

This Phase II Study identified multiple non-convergence problems caused by reactive deficiency. In order to maintain the system area export capability and minimize the SPS requirement under identified contingency conditions, the [REDACTED] Phase II projects are required to provide 0.95 leading/lagging power factor correction at the POI.

7. Transient Stability and Post-Transient Evaluations

Transient stability studies were conducted using full loop base cases to ensure that the transmission system remains in operating equilibrium, as well as operating in a coordinated fashion, through abnormal operating conditions after the Phase II projects begin operation. The generator dynamic data used in the study for the Project is shown in Attachment 1.

7.1 Transient Stability Study Scenarios

Disturbance simulations were performed for a study period of 10 seconds to determine whether the Phase II projects will create any system instability during a variety of line and generator outages. The most critical single contingency and double contingency outage conditions in the [REDACTED] were evaluated. For the list of specific line and generator outages evaluated, see the group report.

7.2 Results

Stability analysis was performed for the [REDACTED] to identify "relative" as opposed to "absolute" conclusions regarding the stability impacts of this Phase II queued generation project. With all proposed system upgrades listed above and in Section 4.3, the Phase II Projects in SCE's [REDACTED] would not cause the transmission system to go unstable under Category B and Category C outages. Stability plots are shown in Appendix F of the Group Report.

8. Deliverability Assessment

There were no Delivery Upgrades identified.

9. Operational Studies

9.1 IC Proposed Project Timelines

The latest information provided by the IC states that the requested generator In-Service date is May 1, 2012.

9.2 System Upgrades Required for Energy Only Interconnection

The Operational Studies identified that the following facilities are required in order to provide for Energy Only interconnection:

9.2.1 PTO's Interconnection Facilities

See Section 11

9.2.2 Plan of Service Reliability Network Upgrades

See Section 11

9.2.3 Reliability Network Upgrades

9.2.3.1 Special Protection System (SPS)

None

9.2.3.2 Short-Circuit Duty (SCD) Mitigation

The circuit breaker upgrades that were triggered by queued-ahead projects are identified in Section 4.6 of the group report. The Operational Study undertaken as part of this Phase II Study identified the required timing for circuit breaker upgrades triggered by queued-ahead generation projects. Timing for breaker upgrades at each of the substations identified as queued ahead is shown below in Table 9.2.1:

**Table 9.2.1
Timing of Previously Triggered SCD Mitigation Requirements**

Substation	Breakers	Timing Need
		[REDACTED]

All of the above short-circuit duty impacts have an existing project or appropriate Operating Procedure identified that would address the duty impacts. As a result, these breaker upgrades will not adversely impact the operating date of this project for Energy Only Interconnection.

Timing for breaker upgrades at each of the substations identified as triggered with the inclusion of all Phase II Projects that are part of this Phase II Study is as follows:

**Table 9.2.2
Timing of Phase II Triggered SCD Mitigation Requirements**

Substation	
<div style="background-color: black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> [REDACTED] </div>	C C
<div style="background-color: black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> [REDACTED] </div>	C C
<div style="background-color: black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> [REDACTED] </div>	A
<div style="background-color: black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> [REDACTED] </div>	AI

The timing of need of the above short-circuit duty impacts triggered by the inclusion of the Phase II Projects and all corresponding upgrades is described in the table above. Because the timing of need for the mitigation is dependent on actual timing of generation projects and corresponding upgrades, these breaker upgrades will not adversely impact the operating date of this project for Energy Only Interconnection. Additional review of these circuit breakers will be performed three times a year to evaluate timing of these breaker replacements as projects execute Generation Interconnection Agreements.

9.2.4 Distribution Upgrades

See Section 11

9.2.5 Other Energy Only Operational Issues

None

9.3 System Upgrades Required for Full Capacity Service

In order to provide for Full Capacity service, the following facilities are required:

9.3.1 Triggered Deliverability Upgrades

None

9.3.2 Previously Triggered Deliverability Upgrades

To enable Full Deliverability of this project, the entire Tehachapi Renewable Transmission Project (TRTP) will need to be placed into service.

9.4 Conclusion

The requested generator In-Service date of May1, 2012 cannot be met due to anticipated duration of facilities needed for Energy Only interconnection. The in-service date is mostly impacted by the timing of the facilities needed for Energy Only Interconnection as identified in this Phase II Study. Based on this study, the in-service date identified is 2017. In addition, if the interconnection facilities can be accelerated to be completed prior to completion of TRTP, the project will not achieve the requested Full Delivery status until such time that TRTP is completed.

10. Environmental Evaluation/Permitting

Please see Section 12 of group report.

11. Upgrades, Cost Estimates and Construction schedule estimates

To determine the cost responsibility of each generation project in the Phase II study, the CAISO developed cost allocation factors based on the individual contribution of each project (Attachment 6). The cost allocation for the Interconnection Facilities and Network Upgrades for which the Project is solely responsible is as follows:

11.1 PTO's INTERCONNECTION FACILITIES

A. Sub-Transmission

WDT425 66kV Generation Tie Line

Install one structure and [REDACTED] of conductors from the dead end structure at WDT425 Substation to the customer – owned generation tie line.

B. Substation

WDT425 Substation

Install a 66 kV collector substation to terminate the new WDT425 66 kV generation tie line.

The interconnection facilities will be installed as follows:

- [REDACTED] dead-end structure
- [REDACTED] voltage transformers
- [REDACTED]

C. Telecommunications

Install circuit cross-connections supporting the SCADA (RTU) at the generation facility.

D. Metering Services Organization

Install revenue metering cabinet for the SCE revenue meters required to meter the retail load at the generating facility. The SCE meter will be installed in tandem with the ISO meter circuit.

The customer will provide the required metering equipment (voltage and current transformers and meter enclosure).

E. Power System Control

Install one RTU at the generating facility and at WDT425 Substation to monitor typical elements such as MW, MVAR, terminal voltage, and circuit breaker status at each generating unit and the plant auxiliary load and to transmit this information to the SCE grid control center.

F. Real Properties, Transmission Projects Licensing, Corporate Environmental Health & Safety Organization

Obtain easements and / or acquire land, obtain licensing and permits and perform all required environmental activities for the installation of the following project elements if applicable:

- WDT425 substation property
- Segment of [REDACTED] generation tie line within the WDT425 Substation property.

11.2 PLAN OF SERVICE NETWORK UPGRADES

No Plan of Service Network upgrades were identified.

11.3 RELIABILITY NETWORK UPGRADE

No Reliability Network upgrades were identified.

11.4 DELIVERY NETWORK UPGRADES

No Delivery Network upgrades were identified.

11.5 DISTRIBUTION UPGRADES

A. Sub-Transmission

WDT425 Tap Line

Install [REDACTED] engineered, bolted footing steel poles, [REDACTED] light weight steel poles, [REDACTED] automated pole switches, and approximately 500 circuit feet of conductor.

Borel – Isabella – Kern River 3 – Lakegen – Weldon 66 kV Line

Modify line at upgraded Isabella Substation.

B. Substation

WDT425 Substation

- [REDACTED] dead-end structures
- [REDACTED] circuit breaker
- [REDACTED] sets of disconnect switches
- MEER

Isabella Substation

- Re-build substation using an Operating/Transfer Bus configuration
- Equip three positions to terminate existing lines
 - [REDACTED] deadend structure
 - [REDACTED] sets of disconnect switches
 - [REDACTED] potential transformer
 - [REDACTED] circuit breaker
 - [REDACTED] pair of protection relays
- Equip one bus tie position
 - [REDACTED] circuit breaker
 - [REDACTED] sets of disconnect switches
 - [REDACTED] potential transformers
 - [REDACTED] protection relay
- Equip one bank position
 - [REDACTED] deadend structure
 - [REDACTED] circuit breaker
 - [REDACTED] sets of disconnect switches
 - [REDACTED] pair of protection relays

- MEER

C. Telecommunications

Install [REDACTED] of 48/SMF fiber optic cable between Isabella and WDT425 Substations and 72,500' of 48/SMF fiber optic cable between Isabella Substation and Kernville Service Center.

Install all the required light-wave, channel, and associated equipment at Isabella and WDT425 Substations and Kern River 3 Power House which support 66 kV line protection and SCADA.

D. Real Properties, Transmission Projects Licensing, and Corporate Environmental Health & Safety Organization

Obtain easements and / or acquire land, obtain licensing and permits and perform all required environmental activities for the installation of the following project elements if applicable:

- WDT425 Tap Substation Property
- Tap and Generation Tie Line
- Isabella Substation Upgrades
- Loop in lines to Isabella Substation

Re-Conductor 2.32 miles on the Vestal – Kern River 3 66 kV line

Note: This Distribution Upgrade is allocated by MW size to multiple projects.

Sub-Transmission:

Re-conductor approximately 2.32 miles from 2/0 cu to 954 SAC between the proposed WDT433 tap and Vestal Substation. Replace 24 existing wood poles and re-insulate a total of 48 poles.

Corporate Environmental Health and Safety, Licensing, and Real Properties

Perform all required activities to support the 66 kV line re-conductoring.

Table 11.1: Upgrades, Estimated Costs, and Estimated Time to Construct Summary

Each Upgrade category may contain multiple scope durations. The longest duration is shown under the Estimated Time to Construct.

Type of Upgrade	Upgrade (May include the following)	Description	Estimated Cost x 1000	Estimated Cost x 1,000 Constant Dollar (OD Year) (Note 4)	Estimated Time to Construct (Note 3)
PTO's Interconnection Facilities (Note 1)	See Section 11 - PTO'S Interconnection Facilities in the Appendix A Report	Non-network facilities needed to enable interconnection	\$1,994	\$2,362 (2017)	60 Months
Plan of Service Reliability Network Upgrades	None	Direct Assigned Network upgrades needed to enable interconnection.	\$0	\$0	
Reliability Network Upgrades	None	Allocated Network upgrades needed to maintain system Reliability	\$0	\$0	
Delivery Network Upgrades	None	Network upgrades needed to support Full Delivery, if requested	\$0	\$0	
Distribution Upgrades (Note 2)	See Section 11 in Appendix A	Non-CAISO SCE Distribution Facilities	50,793	\$60,178 (2017)	60 Months
Total			\$52,787		60 Months

Note 1: The Interconnection Customer is obligated to fund these upgrades and will not be reimbursed.

Note 2: These upgrades are not identified in ISO tariff, and are not reimbursable. Allocated costs may change if all projects responsible for these upgrades do not execute LGIAs.

Note 3: The estimated time to construct (ETC) is for a typical project; schedules duration may change due to number of projects approved and release dates. Stacked projects impact resources, system outage availability, and environmental windows of construction. Assumption is SCE will need to obtain CPUC licensing and regulatory approvals prior to design, procurement and construction of the proposed facilities required to serve the interconnection customer and prerequisite facilities are in service.

Note 4: SCE's Phase II cost estimating is done in 'constant' dollars 2011 and then escalated to the estimated O.D. year. For the Phase II study, the estimated O.D. is derived by assuming the duration of the work element will begin approximately in January 2012, which is roughly the CAISO tariff scheduled completion date of the Phase II study plus 90 days for the LGIA signing period. For instance, if a work element is estimated to take a total of 24 months (permitting, design, procurement, and construction), then the estimated O.D. would be January 2014. If an IC's requested O.D.(in-service) is beyond the estimated O.D. of a work element, the IC's requested O.D. is used.

WDT425		Cost Estimate Summary (2011 Dollars)			TOTAL CONSTANT \$ (ESTIMATED YEAR O.D.)***	
Scope: Interconnect 80MW of Generation by Tapping the new Isabella - Weldon 69kV Line.						
No.	ELEMENT	INTERCONNECTION FACILITIES (Subject to ITCC)**	ITCC ** (36%)	TOTAL		
SUB-TRANSMISSION						
1	Modification of (E) Borel-Isabella-Kern River 3- Lakegen Weldon 69kV at Isabella substation	\$ -	\$ -	\$ -		
2	From (E) line to the new IF and from (E) line to substation	\$ -	\$ -	\$ -		
3	Gen tie connections	\$ -	\$ -	\$ -		
SUBSTATION						
4	New 69kV WDT425 Substation - IF Portion	\$ 403,000	\$ 141,000	\$ 544,000		
5	New 69kV WDT425 Substation - Network Portion	\$ -	\$ -	\$ -		
6	Isabella Substation - equip 6 positions	\$ -	\$ -	\$ -		
7	Install a 69kV Operating Transfer Bus at Isabella Substation	\$ -	\$ -	\$ -		
POWER SYSTEM CONTROL						
8	RTU at the Generation Facility	\$ 93,000	\$ 33,000	\$ 126,000		
9	RTU at the new WDT425 Substation	\$ -	\$ -	\$ -		
10	Replace RTU at Isabella	\$ -	\$ -	\$ -		
CORPORATE ENVIRONMENTAL HEALTH AND SAFETY						
11	Activities related to the new WDT425 Substation	\$ -	\$ -	\$ -		
12	Activities related to equip 6 positions at Isabella Substation	\$ -	\$ -	\$ -		
13	Activities related to tap the new WDT425 Substation to the proposed Isabella-Weldon 69kV line	\$ -	\$ -	\$ -		
14	Activities related to loop the existing Kern River No. 3-Lakegen into the Isabella Substation to form the new Kern River No. 3-Lakegen-Isabella 69kV line	\$ -	\$ -	\$ -		
15	Activities related to loop the existing Borel leg into the Isabella Substation to form the new Borel-Isabella 69kV line	\$ -	\$ -	\$ -		
16	Activities related to loop the existing Weldon leg into the Isabella Substation to form the new Isabella-Weldon 69kV line	\$ -	\$ -	\$ -		
17	Activities related to install telecom line b/t Isabella sub and Kernville service center	\$ -	\$ -	\$ -		
18	Activities related to install telecom b/t Isabella sub and WDT 425 sub	\$ -	\$ -	\$ -		
TELECOMMUNICATIONS						
19	Install circuit cross-connections supporting SCADA for renewable Interconnection	\$ 13,000	\$ 5,000	\$ 18,000		
20	Install FO cable, lightwave, channel and associated equipment supporting SCADA	\$ 873,000	\$ 306,000	\$ 1,179,000		
21	Install 72,600' of 48/SMF FO cable, Isabella sub and Kernville service center	\$ -	\$ -	\$ -		
22	Install 81,100' of 48/SMF FO cable, Isabella to WDT425 sub, secondary route	\$ -	\$ -	\$ -		
23	Install 46/SMF FO cable, Isabella to Borel P.H. secondary route - N/A	\$ -	\$ -	\$ -		
LICENSING						
24	TPL - Activities related to the new WDT425 Substation	\$ -	\$ -	\$ -		
REAL PROPERTIES						
25	Activities related to the substation	\$ 69,000	\$ 23,000	\$ 88,000		
26	Activities related to telecom	\$ -	\$ -	\$ -		
METERING SERVICES						
27	Retail Meter at the Generation Facility	\$ 20,000	\$ 10,000	\$ 30,000		
		Totals	\$ 1,476,000	\$ 518,000	\$ 1,994,000	\$ 2,362,000

* Pursuant to FERC Order 2003A, ITCC is not collected on Reliability Upgrades and One Time Costs.
 ** ITCC cost may be adjusted with a letter of credit in accordance with the law provisions of the LGU.
 *** The ITCC included in this cost estimate was computed using a 36% rate. Because of recent enactment of H.R. 4853, the Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010, and upon final acceptance by the CPUC of SCE's advice letter (filed on December 27, 2010), this rate may change for electric CIAC recorded or received after September 8, 2010 through December 31, 2011.
 Cost estimate is only an estimate based on 2011 constant dollars and actual cost is subject to change depending on project construction date, and inflation.
 SCE's Phase II cost estimating is done in constant dollars 2011 and then escalated to the estimated O.D. year. For the Phase II study, the estimated O.D. is derived by assuming the duration of the work element will begin approximately in January 2012, which is roughly the CAISO tent scheduled completion date of the Phase II study plus 90 days for the LGU signing period. For instance, if a work element is estimated to take a total of 24 months (planning, design, procurement, and construction), then the estimated O.D. would be January 2014. If an IC's requested O.D. (in-force) is beyond the estimated O.D. of a work element, the IC's requested O.D. is used.
 This document includes confidential information and proprietary information of Southern California Edison, to be used only by the Interconnection Customer or 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 the Interconnection Customer preserve its confidentiality.

12. Items not covered in this study

11.1 Conceptual Plan of Service

The results provided in this study are based on conceptual engineering and a preliminary plan of service and are not sufficient for permitting of facilities. The Plan of Service is subject to change as part of the Phase II Interconnection Study.

11.2 Customer's Technical Data

Additional technical data related to the Project may be required as part of the Phase II Study. The study accuracy and results for the Phase I Study are contingent upon the accuracy of the technical data provided by the Interconnection Customer. Any changes from the data provided could void the study results.

11.3 Study Impacts on Neighboring Utilities

Results or consequences of this Phase I Study and/or to-be-performed Phase II Interconnection Study may require additional studies, facility additions, and/or operating procedures to address impacts to neighboring utilities and/or regional forums. For example, impacts may include but are not limited to WECC Path Ratings, short circuit duties outside of the CAISO Controlled Grid, and sub-synchronous resonance (SSR).

11.4 Use of SCE Facilities

The Interconnection Customer is responsible for acquiring all property rights necessary for the Interconnection Customer's Interconnection Facilities, including those required to cross SCE facilities and property. This Interconnection Study does not include the method or estimated cost to the Interconnection Customer of SCE mitigation measures that may be required to accommodate any proposed crossing of SCE facilities with Interconnection Customer's Interconnection Facilities. The use of SCE property rights shall only be permitted upon written agreement between SCE and the Interconnection Customer at SCE's sole determination. Any proposed use of SCE property rights may require a separate study and/or evaluation, at the Interconnection Customer's expense, to determine whether such use may be accommodated.

11.5 SCE Interconnection Handbook

The Interconnection Customer shall be required to adhere to all applicable requirements in the SCE Interconnection Handbook. These include, but are not limited to, all applicable protection, voltage regulation, VAR correction, harmonics, switching and tagging, and metering requirements.

11.6 Western Electricity Coordinating Council (WECC) Policies

The Interconnection Customer shall be required to adhere to all applicable WECC policies including, but not limited to, the WECC Generating Unit Model Validation Policy.

11.7 System Protection Coordination

Adequate Protection coordination will be required between SCE-owned protection and Interconnection Customer-owned protection. If adequate protection coordination cannot be achieved, then modifications to the Interconnection Customer-owned facilities (i.e., Generation-tie or Substation modifications) may be required to allow for ample protection coordination

11.8 Standby Power and Temporary Construction Power

The Phase II Study does not address any requirements for standby power or temporary construction power that the Project may require prior to the in-service date of the Interconnection Facilities. Should the Project require standby power or temporary construction power from SCE prior to the in-service date of the Interconnection Facilities, the IC is responsible to make appropriate arrangements with SCE to receive and pay for such retail.

11.9 Construction Schedule

The estimated time to construct (ETC) is for a typical project; schedules and duration may change due to number of projects approved and release dates. Stacked projects impact resources, system outage availability, and environmental windows of construction. The assumption is that SCE will need to obtain CPUC licensing and regulatory approvals prior to design, procurement and construction of the proposed facilities required to serve the interconnection customer and prerequisite facilities are in service.

12.1 11.10 Telecommunication Assumptions

The cost for telecommunication facilities that were identified as part of the IC's Interconnection Facilities was based on an assumption that these facilities would be sited, licensed, and constructed by SCE as opposed to the IC doing this work (IC may own,

operate, maintain, and construct diverse telecommunication paths associated with the IC's gen tie, excluding terminal equipment at both ends). In addition, the telecommunication requirements for SPS were assumed based on tripping of the generator breaker as opposed to tripping the circuit breakers at the SCE substation. Due to uncertainties related to telecommunication upgrades for the numerous projects in queue ahead of Phase II, telecommunication upgrades for higher queued projects were not considered in this study. Depending on the outcome of interconnection studies for higher queued projects, the telecommunication upgrades identified for Phase II may be reduced. Any changes in these assumptions may affect the cost and schedule for the identified telecommunication facilities.

Attachment 1

Generator Machine Dynamic Data

(not required)

Attachment 2

Dynamic Stability Plots

Please refer to Appendix F of the Group Report.

Attachment 3

SCE Interconnection Handbook

Preliminary Protection Requirements for Interconnection Facilities are outlined in the SCE Interconnection Handbook.

Attachment 4

Short Circuit Calculation Study Results

Please refer to Appendix H of the Group Report.

Attachment 5

Deliverability Assessment Results

There is no deliverability upgrade required for the Project.

Attachment 6

Allocation of Network Upgrades for Cost Estimates

No Network Upgrades allocated to this project. However the table below shows the allocation of Distribution Upgrades in this area.

Type	Upgrades	Cost Factor	Cost Share (\$1,000)
Distribution Upgrade	[REDACTED]	100%	\$45,096
Distribution Upgrade	[REDACTED]	48.4%	\$5,697