[redacted]

REVISED SYSTEM IMPACT RESTUDY

May 1, 2014

SOUTHERN CALIFORNIA
EDISON
An *EDISON INTERNATIONAL*℠ Company

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SOUTHERN CALIFORNIA EDISON COMPANY

EXECUTIVE SUMMARY

[redacted] applied to Southern California Edison ("SCE") for interconnection and wholesale distribution service for its proposed [redacted] pursuant to SCE's Wholesale Distribution Access Tariff ("WDAT") Generator Interconnection Procedures. SCE performed a System Impact Study as requested by [redacted], for a [redacted] interconnection from an existing [redacted] Interconnection will take place at applicant-owned [redacted] located approximately 1.0 miles from Redman Substation on the [redacted] out of SCE's Redman [redacted] Substation. The request is for a WDAT photovoltaic ("PV") generating facility with a total capacity of [redacted] The initial request is for service to commence by October 15, 2015.[1]

The new generation, consisting of [redacted] will receive interconnection service from SCE's existing [redacted] on the Roosevelt [redacted] out of Redman Substation. To accomplish this, an underground line extension from an SCE switch to the applicant-owned [redacted] will be installed. The generated power would be delivered to the SCE system at the [redacted] of interconnection.

This revised System Impact Restudy Report was triggered by a reduction of project size from [redacted], as requested by the applicant. This report supersedes all previous reports.

The purpose of this study is to determine the effect(s) of the proposed generation on the SCE distribution system and to identify the Interconnection Facilities, Distribution Upgrades, additions or modifications, and/or other facilities required to provide the requested service. The study was performed in two parts: Part A (performed by SCE's Distribution Field Engineering department) examines impacts related to the SCE distribution system and also briefly summarizes the results of Part B, while Part B (performed by SCE's Generation Interconnection Planning department) examines impacts and facilities related to the bulk power system. This is the Part A study report; a detailed report of the Part B study results is included as Attachment B.

The Part A study was performed for expected year 2013 through 2022 projected peak load conditions as well as 2013 through 2022 minimum load conditions.

The Part A System Impact Study consisted of a power flow analysis, [redacted] to ground short circuit duty analysis and circuit Voltage profile analysis. The analyses were performed to determine whether the energy associated with the [redacted] can be transmitted through SCE's distribution system to the load without creating the need for modifications to SCE's distribution system. The study showed that, with the [redacted] Project on-line:

- For light load conditions, the addition of the [redacted] did not result in a violation of SCE's thermal loading criteria under base case or N-1 conditions for the SCE distribution system.

[1] Date as requested in the application. Actual operating date depends on design and construction requirements.

- The addition of the [redacted] did not result in a Voltage rise exceeding allowable Rule 2 limits.

- The addition of the [redacted] did not result in additional protection requirements.

- The addition of the [redacted] resulted in increases in three-phase and/or single line to ground short-circuit duties by [redacted] or more at one (1) distribution substation.

- The [redacted] interrupting capabilities were reviewed at this substation, and it was determined that [redacted] will be required to be upgraded as a result of the [redacted]

- The addition of the [redacted] Project did not result in any significant impacts to short circuit duty of the subtransmission or transmission systems.

- The addition of the [redacted] did not trigger the need for, nor is it dependent upon, system upgrades as a result of changes in power flow in the subtransmission or transmission systems.

- The addition of the [redacted] may operationally be subject to generation curtailment due to constraints on the transmission system.

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

Distribution Upgrades	$ 58.3 k
○ [redacted]	
Interconnection Facilities	$129.8 k
○ [redacted]	
○ [redacted]	
○ [redacted]	
○ [redacted]	
○ [redacted]	
Telemetry	$ 14.5 k[1]
Corporate Environmental Services	$ 92.6 k
○ Support for Interconnection Facilities	
Subtotal	$295.2 k
ITCC (35%)	$103.3 k
Total non-binding order of magnitude cost estimate	$398.5 k

[1]Cost Estimate based on centralized RTU method; the cost and scope of telemetry may significantly increase to include a dedicated RTU as required by SCE's Interconnection Handbook with an approximate cost of $155,000 in the event that Centralized RTU method is not feasible for this project.

CONTENTS

I. INTRODUCTION TO PART A

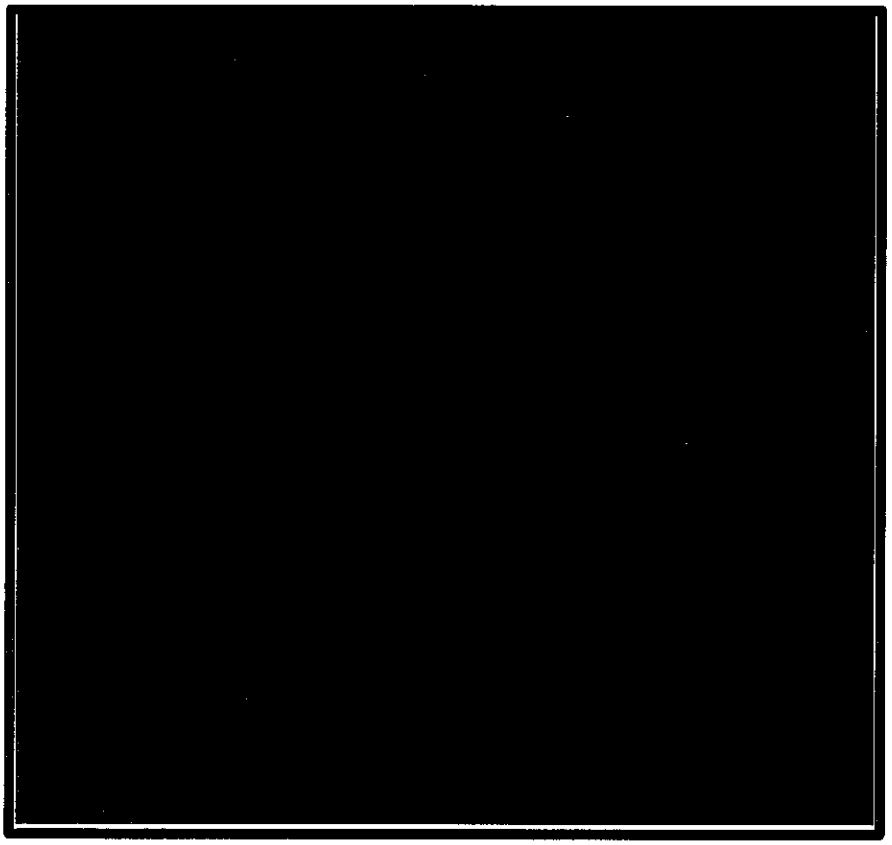
[redacted] applied to Southern California Edison ("SCE") for interconnection and wholesale distribution service for its proposed [redacted] pursuant to SCE's Wholesale Distribution Access Tariff ("WDAT") Generator Interconnection Procedures. SCE performed a System Impact Study as requested by [redacted] for a [redacted] interconnection from an existing [redacted] ("Roosevelt [redacted]"). Interconnection will take place at applicant-owned [redacted] located approximately 1.0 miles from Redman Substation on the [redacted] out of SCE's Redman [redacted] Substation. The request is for a WDAT photovoltaic ("PV") generating facility with a total capacity of [redacted]. The initial request is for service to commence by October 15, 2015.[1]

The new generation, consisting of [redacted] will receive interconnection service from SCE's existing [redacted] on the Roosevelt [redacted] out of Redman Substation. To accomplish this, an [redacted] from an SCE [redacted] to the applicant-owned [redacted] will be installed. The generated power would be delivered to the SCE system at the [redacted] point of interconnection.

This revised System Impact Restudy Report was triggered by a reduction of project size from [redacted], as requested by the applicant. This report supersedes all previous reports.

The purpose of this study is to determine the impact of the proposed generation addition on the SCE distribution system and to identify in general additional Interconnection Facilities, Distribution Upgrades, additions or modifications, or other facilities required to provide the requested service. This study was performed for expected year 2013 through 2022 peak load conditions as well as minimum demand conditions.

[1] Date as requested in the application. Actual operating date depends on design and construction requirements.



II. PART A: SYSTEM IMPACT STUDY CONDITIONS & METHODOLOGY

Planning Criteria

The thermal rating of any [redacted] shall not exceed 100% of its normal rated capacity with all facilities in service (base case).

The thermal rating of any [redacted] shall not exceed 100% of its emergency rating under N-1 conditions.

Operational flexibility and reliability of the distribution system shall be maintained at all times.

Circuit Voltage profiles should be maintained to comply within CPUC's Rule 2 requirements.

System Conditions

The power factor for the new generation facility was assumed to be controllable within WDAT tariff limits of 0.95 lagging or leading, except as specifically enumerated herein.

The generation system must be designed to accommodate a VAR schedule provided by SCE. SCE will determine if the VAR schedule is necessary based on future re-arrangements of SCE's distribution system.

Expected loading on the distribution system as projected by the SCE 2013 - 2022 plan was used.

Distributed generation resources connected to the distribution system are analyzed offline and online during peak load and minimum load conditions during the day as to determine worst case scenario.

The short circuit contribution from the inverter systems was determined using inverter manufacturer datasheets.

III. PART A: SYSTEM IMPACT STUDY RESULTS

Short Circuit Analysis
Using the short circuit models from the inverter systems being utilized in this solar generation system it was calculated that the short circuit contribution at the [redacted] substation bus resulted in increases in [redacted] by [redacted] or more at one (1) distribution substation. The circuit breaker interrupting capabilities were reviewed at this substation and it was determined tha[redacted] will be required to be upgraded as a result of the [redacted]

System Protection Considerations
With this proposed method of service, only revisions to the settings of SCE's existing electrical protection systems are required.

Thermal Loading
The line section between the customer's facility and the [redacted] Point of Interconnection is expected to experience a reverse power flow of approximately [redacted] during minimum loading. In aggregate to existing generation projects ahead in the queue, approximately [redacted] of generation will flow from the Roosevelt [redacted] line into the [redacted] at Redman Substation. No thermal overloads were identified as a result of the addition of the [redacted]. As a result of the reverse power flow back to the [redacted] at Redman Substation, the installation of one [redacted] at Redman Substation will be required.[1]

Distribution Voltage Control
The section of [redacted] distribution line near the project area is expected to be within CPUC Rule 2 requirements with the addition of the [redacted]

Harmonic impact
The harmonic impact of the subject inverter based generation was not part of this System Impact Study. Despite the relatively low THD (<3%) of the equipment, impacts on voltage distortion levels may be significant due to the penetration level of the generation facility with respect to the local distribution grid strength. As with all equipment connected to the SCE distribution system, the generation project will be subject to the provisions of CPUC Rule 2.E, allowing SCE to require customer mitigation of interference with SCE service, including harmonic impacts, if harmonic interference is caused by the customer. Given the amount of generation and the strength of the distribution system, SCE will not require a harmonic study but encourages that

[1] This requirement will not prevent the project for being interconnected to the distribution system if adequate arrangements are made in the interconnection agreement to fund this scope of work.

the applicant completes a harmonic study during the Facility Study Phase to insure that the generation facility complies with the harmonic studies outlined in CPUC Rule 2.E. If the applicant chooses to complete a harmonic study, SCE will then provide the required SCE distribution system data that are to be used as part of the harmonic study.

IV. PART A: GENERAL DESCRIPTION OF IDENTIFIED UPGRADES

Distribution Upgrades

Distribution upgrades include the installation of [redacted] at Redman Substation. The cost estimate for the required distribution upgrades is $58.3 k.[1]

Interconnection Facilities

Electrical Systems

Interconnection facilities include the installation of [redacted] The cost estimate for the required interconnection facilities is $129.8 k.[1]

Corporate Environment, Health, and Safety

Obtain licensing and permits and perform all required environmental activities for the construction of the interconnection facilities. The cost estimate for the EH&S Assessment is $92.6 k.[1]

For SCE facilities and scope of work not subject to CPUC's GO 131-D, SCE will follow the requirements of all applicable environmental laws and regulations and issue an in-house Environmental Clearance before commencement of construction activities. The cost estimates provided assume that the Interconnection Customer would include SCE facilities and scope of work in the IC's environmental studies and resulting documents to streamline the environmental process and avoid unnecessary delays in commencing construction. SCE would provide oversight of these activities, such that the IC would submit all environmental study reports pertaining to SCE facilities for CES review and approval prior to submittal to its lead agency. The responsibilities for performing certain environmental activities may be negotiated during or after the Interconnection Agreement process.

Telemetry Requirements

Real-time telemetry will be required. Utilizing SCE's centralized RTU method of telemetry, the cost estimate required by PSC and Telecom is $14.5 k.[1] Additional information on the proposed method of telemetry will be provided during the results meeting. In the event that the centralized RTU method is not feasible for this project, the cost and scope of telemetry may increase significantly to include a dedicated RTU as required by SCE's Interconnection Handbook. This alternate method of telemetry has an approximate cost of $155.0 k, including ITCC.

[1] Cost estimate does not include 35% ITCC.

Customer Equipment

The [redacted] will be provided by the applicant and will include a [redacted] which is to be installed in the applicant-owned [redacted]. The applicant's protection must be coordinated with SCE's Redman Substation[redacted] to provide adequate protection for the distribution system. The relay settings are subject to SCE approval prior to setting. Certified timed-trip testing report results using primary injection will need to be provided to SCE to verify relay and [redacted] performance prior to energizing.

The [redacted] must meet SCE's published Electrical Service Requirements ("ESR") to the extent applicable. Drawings required by the ESR shall be submitted, reviewed, modified, and approved by SCE prior to release for fabrication/purchase of the equipment. Each medium voltage service is an individually engineered application at SCE.

Applicant generation interconnection equipment must comply with SCE's Interconnection Handbook in regards to generation protection, and lockable-visible disconnecting means at the point of interconnection.

Additionally, the applicant will be responsible for the installation and costs of certain underground facilities[redacted] to the extent required by the final design. The construction of the underground facilities will be as per SCE's project drawings.

System Study

A Facilities Study may be performed to conclusively determine the detailed scope and cost of facilities required to interconnect the project.

V. PART A: NON-BINDING ORDER OF MAGNITUDE COST ESTIMATE

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

Distribution Upgrades	$ 58.3 k
○ [redacted]	
Interconnection Facilities	$129.8 k
○ [redacted]	
○ [redacted]	
○ [redacted]	
○ [redacted]	
○ [redacted]	
Telemetry	$ 14.5 k[1]
Corporate Environmental Services	$ 92.6 k
○ Support for Interconnection Facilities	

[1]Cost Estimate based on centralized RTU method; the cost and scope of telemetry may significantly increase to include a dedicated RTU as required by SCE's Interconnection Handbook with an approximate cost of $155,000 in the event that Centralized RTU method is not feasible for this project.

Subtotal	$295.2 k
ITCC (35%)	$103.3 k
Total non-binding order of magnitude cost estimate	$398.5 k

VI. PART A: SUMMARY

The Part A System Impact Study showed:

1. Distribution upgrades include the installation of [redacted] at Redman Substation.

2. Interconnection facilities include the installation of [redacted]

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

Distribution Upgrades $ 58.3 k

- [redacted]

Interconnection Facilities $129.8 k

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Telemetry $ 14.5 k[1]

Corporate Environmental Services $ 92.6 k

- Support for Interconnection Facilities

Subtotal	$295.2 k
ITCC (35%)	$103.3 k
Total non-binding order of magnitude cost estimate	$398.5 k

4. Real time telemetry will be required for this project. It will be required to install an RTU and Telecom systems as required to provide Watt and VAR flow from the generation facility to the SCE distribution system.

[1]Cost Estimate based on centralized RTU method; the cost and scope of telemetry may significantly increase to include a dedicated RTU as required by SCE's Interconnection Handbook with an approximate cost of $155,000 in the event that Centralized RTU method is not feasible for this project.

5. Interconnection service pursuant to WDAT GIP would be expected to commence within approximately 9 months of executing a Generator Interconnection Agreement (GIA) and receipt of related documents and funds.

6. Upgrades identified are general and preliminary descriptions only. The costs indicated are non-binding order of magnitude only. The schedule is projected and preliminary.

7. A Facilities Study detailing required scope and cost of the identified upgrades is required to proceed with the project.

8. This System Impact Study is based on various technical data previously provided by the applicant. If any of that information changes significantly, as determined by SCE, the results of this study may no longer be appropriate and may necessitate a new study.

ADDITIONAL REQUIREMENTS

The Interconnection Customer must comply with the following:

- All civil construction related to SCE's Interconnection Facilities and Distribution Upgrades must be completed and approved by SCE inspectors prior to SCE scheduling the electrical construction of the Interconnection Facilities and Distribution Upgrades.
- All protection settings must comply with the SCE's interconnection requirements. These requirements can be downloaded at: https://www.sce.com/wps/portal/home/regulatory/open-access-information/
- A Final Commissioning Test will be performed to verify that the interconnection requirements have been met.
- The Interconnection Customer shall provide SCE with an electrical single line diagram that represents the final system design to be included in the GIA.
- The Interconnection Customer is responsible for the cost of civil work which is required for the distribution and interconnection electrical facilities.
- The Interconnection Customer shall install all equipment necessary to comply with generation output ramp rates as provided by the Distribution Provider.

DISCLOSURE OF STUDY ASSUMPTIONS

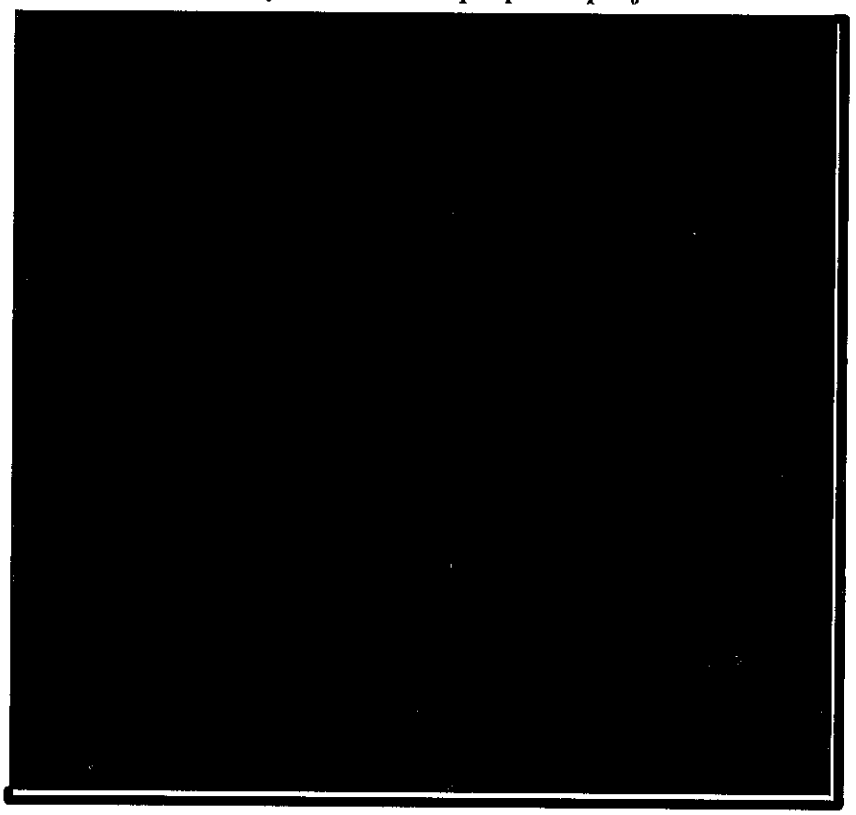
- Current distribution standards are being updated to address generation interconnection systems. The proposed method of service in this report is subject to change during final design to comply with the updated distribution design standards.
- This study assumes that all easements required for the construction of Distribution Upgrades and/or Interconnection Facilities will be secured in a timely manner to accommodate the requested in-service date.
- This report does not consider potential milestone setbacks that could result from the local jurisdiction requiring underground construction of distribution facilities. SCE encourages the Interconnection Customer to consult with the local jurisdiction to identify existing underground ordinance to reduce the risk of complication associated with said ordinance.
- This study does not include analysis related to the following system variability conditions, et. al.
    - [redacted] increasing output profile during sunrise, i.e. system start-up
    - [redacted] output variation correlated with weather conditions, i.e. cloud cover

This study assumes that the Interconnection Customer's generating facility will include all equipment, software, and appropriate controls necessary to maintain the generator output profile per SCE requirements. The Interconnection Customer will be responsible for maintaining designated voltage levels under all conditions, including but not limited to the conditions identified above. Upon execution of the GIA, SCE will provide the Interconnection Customer with the required ramp rate control parameters. The ramp rate controls will be a function of the generation penetration on the distribution system, as well as SCE's distribution system configuration (additional parameters maybe considered, as need). Changes to the ramp rate control scheme may be required as determined by increased generation, changes in the distribution system topology, or other changes in the distribution system.

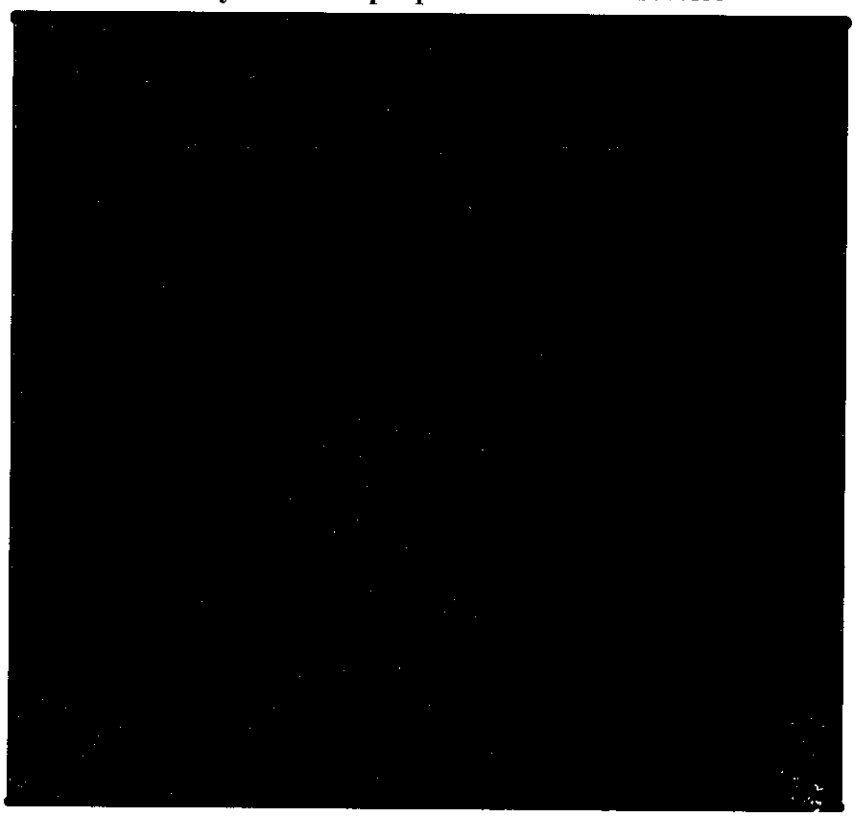
- Applicable to projects requesting primary service: This study does not include analysis related to coordination of system protection equipment. A coordination study may be required during final engineering. The coordination study may identify additional interconnection requirements such as installing new protection equipment, reprogramming and/or relocating existing protection equipment. The additional scope of work may have an effect on the Interconnection Customer's requested in-service date.

ATTACHMENT A

A1 - System without proposed project



A2 - System with proposed method of service



ATTACHMENT B