

[REDACTED]
[REDACTED]
(WDT1289EXP)

Facilities Study

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SOUTHERN CALIFORNIA

EDISON

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Confidential: Contains Critical Energy Infrastructure Information (CEII)

Southern California Edison

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I. Executive Summary

[REDACTED] submitted an interconnection request for a 1.25 MW Energy Storage Project utilizing battery technology connecting to the existing Wellgen 13.8 kV. The point of interconnection for the [REDACTED] is the Wellgen 66 kV Substation. The project, along with the queued ahead project WDT1289 studied as part of the Queue Cluster 8 Studies, is an expansion of the existing [REDACTED] WDT190.

II. Facilities Study Assumptions

A. WDT1289EXP will utilize facilities installed for WDT1289 and WDT190 from earlier cluster studies.

III. Facilities Study Scope and Cost Estimate

III – A Pursuant to FERC's orders 2006-A (Small Generators) and 2003-A (Large Generators) all Facilities Studies are required to provide the customer with its "maximum possible funding exposure", which shall include the costs of upgrades that are reasonably allocable to the Interconnection Customer at the time the estimate is made, and the costs of any upgrades not yet constructed that were assumed in the interconnection studies for the Interconnection Customer but are, at the time of the estimate, an obligation of an entity other than the Interconnection Customer."

To comply with the FERC orders, the Scope of Work and Cost Estimate for all elements required for the interconnection are presented for the following two cases:

CASE A: All facilities required exclusively by the Project
and

CASE B: All additional facilities that may be required by the Project

The facilities included on Case B are those additional facilities required to remedy situations caused by earlier Projects, placed ahead WDT1289EXP in the Application Queue, and are expected to be implemented by them.

However, in the event that any of these earlier Projects withdraws or modifies their application in accordance with applicable tariff allowances, WDT1289EXP may become responsible for any or all of these additional facilities.

CASE A:

There are no Case A facilities.

CASE B:

Substation.

1. [REDACTED]

- [REDACTED]
[REDACTED]
2. Perform ground grid study
- [REDACTED]
[REDACTED]

Telecommunications.

1. Install all necessary channel banks, associated equipment (including terminal equipment), supporting protection and RTU requirements at the [REDACTED] [REDACTED] for the interconnection of the Generating Facility. Notwithstanding that certain telecommunication equipment, including the telecommunications terminal equipment, will be located on the Interconnection Customer's side of the Point of Change of Ownership, the Distribution Provider shall own, operate, and maintain such telecommunication equipment as part of the Distribution Provider's Interconnection Facilities.
2. Install new telecommunication equipment, CRIARs, and CRIAC to support the line protection relays on the [REDACTED]. The new telecommunication terminal equipment will be installed at [REDACTED].
3. Install approximately [REDACTED].

Power System Controls.

1. Install one (1) RTU at the Generating Facility to monitor typical generation elements such as MW, MVAR, terminal voltage and circuit breaker status for the Generating Facility and plant auxiliary load, and transmit the information received thereby to the Distribution Provider's Grid Control Center. Notwithstanding that the RTU will be located on the Interconnection Customer's side of the Point of Change of Ownership, the Distribution Provider shall own, operate, and maintain the RTU as part of the Distribution Provider's Interconnection Facilities.
2. Point additions to existing RTUs at [REDACTED] for the new protection relay status/alarm/control.

Real Properties.

Obtain access easement and rights checks.

Environmental Activities, Permits, and Licensing.

1. Perform the required environmental activities related to the installation of the Distribution Provider's Distribution Upgrades. The Distribution Provider shall obtain licensing and permits, as required. The Interconnection Customer shall be responsible for performing pre-construction activities and construction monitoring and related activities.

Metering.

1. Install meters and appurtenant equipment required to meter the retail load at the Generating Facility. Notwithstanding that the meters and appurtenant equipment will be located on the Interconnection Customer's side of the Point of Change of

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Ownership; the Distribution Provider shall own, operate and maintain such facilities as part of the Distribution Provider's Interconnection Facilities.

2. Install meters and appurtenant equipment required to meter the wholesale load at the Generating Facility. Notwithstanding that the meters and appurtenant equipment will be located on the Interconnection Customer's side of the Point of Change of Ownership; the Distribution Provider shall own, operate and maintain such facilities as part of the Distribution Provider's Interconnection Facilities.

Storage Management System.

1. Power System Controls
Create Storage Management System program in Energy Management System (EMS) to support charging aspect of energy storage project.
2. Substation
Service and test Storage Management System.

III – B Facilities Study Cost Estimate

- CASE A** Identifies the cost of all facilities that are required exclusively by the Project.
CASE B Identifies the cost of all upgrades required that were triggered by earlier Applicants placed ahead of the Project in the Application Queue.

In the event that any Applicant, presently placed ahead of the Project in the Application Queue, withdraws its Application, the system would need to be re-evaluated. The new evaluation may conclude that the Project would now trigger any of these upgrades and would then become responsible for some or all of the upgrades identified on Case B.

The total estimated cost of all elements of the interconnection as identified above in the Facilities Study Scope is as follows:

CASE A:	\$	0
CASE B (May be added to Case A):	\$	3,903,925
TOTAL MAXIMUM COST EXPOSURE:	\$	3,903,925

SEE EXHIBIT A: COST SUMMARY

IV. Conclusion

- A. The estimated cost for the Interconnection is approximately \$0 for Case A with the potential additional cost of \$3,903,925 for Case B for a total Maximum Cost Exposure of \$3,903,925.
- B. The time required to complete the proposed project will be 27 months after receiving project authorization and funding. This time includes engineering, material procurement and construction. This timeframe is subject to final verification by SCE of available resources at the time of the Project. The 27 month period does not include the time required for the preparation of the Environmental Impact Statement and/or Environmental Impact Report as required per CEQA and NEPA, if required, as well as any other approvals and permits to be provided by the CPUC or other regulatory agencies.

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A detailed Project Schedule will be provided during the Engineering and Design Phase of the Project.

- C. The costs indicated in the attached tables are shown 2016 Dollars and in Constant Dollars Escalated to the OD Year and are not firm.**
- D. These are only preliminary estimates based on conceptual engineering and system unit costs, and are subject to change based on the final design and actual material costs. This Facilities Study and cost estimates as presented are valid for a period of 90 days.**
- E. The estimated Project Cost will be reconciled to actual costs upon closure of the subject work orders. The necessary billing adjustments will be made at that time.**
- F. 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.**
- G. Although study results reflect no adverse impact on the high-voltage CAISO controlled transmission system with the addition of the WDT1289EXP project, the Interconnection Customer will still be required to adhere to all applicable WECC policies including, but not limited to, the WECC Generating Unit Model Validation Policy. For example, the Interconnecting Customer will be required to provide validated dynamic models for the proposed project within the timelines identified in the WECC policy. The latest policy is available on the WECC website at www.wecc.biz .**

EXHIBIT A

COST SUMMARY

WDT1289EXP CASE B -

Cost Estimate Summary (2016 Dollars)

Scope: 1.25 MW Expansion to WDT1289

No.	Element	Interconnection Facilities (Subject to ITCC)	Distribution Upgrades (Subject to ITCC)	Distribution One Time Cost (Not Subject to ITCC)	Total Project Cost	2016 Constant Dollars Escalated to OD Year 2018
Substation 1						
1		\$	295,814 \$	- \$	295,814 \$	300,636 \$
2		\$	283,059 \$	- \$	283,059 \$	286,486 \$
3	Ground Grid Study	- \$	- \$	46,941 \$	46,941 \$	48,120 \$
4		\$	295,814 \$	- \$	295,814 \$	300,636 \$
5		\$	- \$	- \$	- \$	- \$
6	Storage management system - In service testing	295,814 \$	- \$	- \$	295,814 \$	300,636 \$
7	Storage management system - Install BI-directional wind transducer to monitor power flow	- \$	27,167 \$	- \$	27,167 \$	28,468 \$
	Subtotal	\$	49,232 \$	- \$	49,232 \$	51,097 \$
	Subtotal	\$	1,282,241 \$	- \$	1,282,241 \$	1,353,532 \$
IT-Telecommunication						
	Install cross connects and associated equip. supporting diverse protection and SCADA	101,421 \$	- \$	- \$	101,421 \$	106,231 \$
1	Install lightning channel, CRIARS, CRIAC, & assoc. equipment at	- \$	1,165,477 \$	- \$	1,165,477 \$	1,220,766 \$
2		- \$	- \$	- \$	- \$	1,326,987 \$
	Subtotal	\$	336,363 \$	- \$	336,363 \$	362,317 \$
Transmission Telecommunication						
1	Fiber optic cable requirements	- \$	48,594 \$	- \$	48,594 \$	50,889 \$
	Subtotal	\$	48,594 \$	- \$	48,594 \$	50,889 \$
Corporate Environmental Services						
1	Activities related to the project	15,170 \$	- \$	- \$	15,170 \$	16,890 \$
	Subtotal	\$	41,176 \$	- \$	41,176 \$	43,128 \$
Rail Properties						
1	Activities related to the project	- \$	- \$	- \$	- \$	- \$
2	Activities related to the project	- \$	- \$	- \$	- \$	- \$
	Subtotal	\$	59,160 \$	- \$	59,160 \$	61,988 \$
Metering Services						
1	Retail Meter at the Generation Facility (includes storage component)	- \$	- \$	- \$	- \$	- \$
	Subtotal	\$	72,409 \$	- \$	72,409 \$	76,843 \$
Power System Control						
1	RTU at the generation facility	- \$	- \$	70,889 \$	70,889 \$	73,878 \$
2	Point additions at	- \$	- \$	- \$	- \$	- \$
3	Storage control system programming	- \$	505,786 \$	- \$	505,786 \$	528,776 \$
4	Storage management system - Transducer RTU point addition	- \$	- \$	9,481 \$	9,481 \$	9,910 \$
	Subtotal	\$	843,774 \$	136,291 \$	3,046,061 \$	3,903,925 \$
	Total	\$	3,046,061 \$	136,291 \$	3,727,146 \$	3,903,925 \$

* Pursuant to FERC Order 2003A, ITCC is not collected on Reliability Upgrades and One Time Costs.

** ITCC cost may be satisfied with a letter of credit in accordance with the tax provisions of the LGIA.

*** The ITCC included in this cost estimate was computed using a 35% rate.

Cost estimate is only an estimate based on 2016 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 2016 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 December 2017, which is roughly the CAISO last scheduled completion date of the Phase II study plus 90 days for the LGIA signing. 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 December 2018, 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. Does not include ITCC.

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