Technical Assessment

WDT 315

[redacted]

TECHNICAL ASSESSMENT

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EXECUTIVE SUMMARY

On February 8th , 2016 [redacted] submitted a Material Modification request to Southern California Edison Company ("SCE") for the interconnection of its [redacted] pursuant to the Cluster Large Generator Interconnection Procedures under the SCE Wholesale Distribution Access Tariff ("WDAT"). The Project, which is a [redacted] with an output of [redacted], has relocated his project location approximately [redacted] proposing to interconnect to a [redacted]. After initial review of the information, SCE performed the Technical Assessment to determine if the Material Modification request resulted in substantially change the total capability and/or electrical characteristics of the electric generating facility.

The results of this assessment will be used as the basis to confirm that the total capability and/or electrical characteristics of the [redacted] will remain substantially unchanged. If SCE confirms that the total capability and electrical characteristics of the generating unit are and will be substantially unchanged, then a high-level evaluation will be performed to identify potential Interconnection Facility upgrades needed to support the material modification project. This report provides detailed evaluation assumptions and conditions of the system in which the analysis was conducted. If SCE cannot confirm that the total capability and electrical characteristics of the generating unit are and will be substantially unchanged, then [redacted] will be required to submit an interconnection request and comply with the applicable interconnection process.

1. CONDITIONS AND STUDY ASSUMPTIONS

- The thermal rating of any conductor, connector, or apparatus shall not exceed 100% of its normal rated capacity with all facilities in service (base case).
- The thermal rating of any conductor, connector, or apparatus shall not exceed 100% of its emergency rating under loss of one element (N-1) conditions.
- Operational flexibility and reliability of the distribution system shall be maintained at all times.
- The power factor for the new generation facility was assumed to be within WDAT requirements of [redacted]
- Expected loading on the distribution system as projected by the SCE 2015 - 2024 distribution system plan was used.
- Distributed Generation resources connected to the distribution system are analyzed offline and online during peak load conditions as well as during minimum daytime load conditions as to determine worst case scenario.
- Current distribution standards are being updated to address generation interconnection systems. The proposed method of service in this report may change according on final design to comply with the updated distribution design standards.

2. RESULTS OF EVALUATION

It is understood that any Material Modification of a generating unit, unless replaced with identical equipment, will result in some changes to the total capability and electrical characteristics of the generating unit and therefore some degree of change to the performance of the SCE electrical system. Most of these changes can be attributed to improvements in technology or the unavailability of original equipment. SCE considers changes to be 'substantial' if there is a proposed change in fuel source or they are found to have an adverse impact on the distribution system, either of which would require the project to be evaluated pursuant to SCE's generator interconnection and deliverability allocation procedures.

Adverse impacts to the SCE electrical system would include increasing the power flow during normal or contingency conditions, any increase in the short circuit duty impacts, or adverse angular or voltage stability impacts, as compared to the impacts associated with the original generating unit.

A. Power Flow Impact

Based on the technical data provided by the [redacted] did not result in substantially changing the total capability and/or electrical characteristics of the electric generating facility. Therefore, no load flow analyses was required under this project.

B. Short Circuit Analysis

Short circuit study was performed to determine the fault duty impact of [redacted] to the SCE Distribution system and to ensure system coordination. The fault duties were calculated with and without the project to identify any equipment overstress conditions. Once overstressed circuit breakers are identified, the fault current contribution from each queue ahead project and the [redacted] is determined. The Short

Circuit Study analysis concluded that zero (0) breakers replacements are required as part of this project.

C. Telecom

[redacted] will be used at [redacted] to connect to the nearby diverse route for the [redacted] The diverse route uses [redacted] a high bandwidth technology, at all substations on the path to handle the high data traffic requirements. Any new substation being added to the diverse route must use the same technology.

Non-binding order of magnitude cost estimate for the required Interconnection Facilities and Distribution Upgrade needed to interconnect the [redacted]

[redacted]

COST ESTIMATE

Table 1: Non-binding Cost Estimate for Project Triggered Upgrades, Financial Responsibility of Interconnection Customer

		Before	After
Item #	Distribution Upgrade	$ in 2015 Dollars[1]	$ in 2015 Dollars[1]
		35% ITCC included	35% ITCC included
	Distribution		
1	[redacted]	$497,441.40	**$293,728.00**
	[redacted]		
2	Distribution Upgrades for Substation	$3,679,267	$3,679,267
3	Install relays for [redacted]	$734,118	$734,118
	Telecommunication		
4	Install SCADA for Renewable Interconnection telemetry	$356,308	$356,308
5	Install lightwave & associated equipment to include [redacted]	$823,131	$823,131
6	ECS scope: Install fiber optic cable from [redacted] to [redacted] [redacted]	$1,481,285	$1,481,285
7	Install [redacted]	$0	$660,604
	Environmental Health and Safety		
8	Support the generation tie-line	$114,750	**$20,874**
9	Activities related to [redacted]	$39,855	**$26,420**
10	Activities related to the fiber optic scope	$609,561	**$427,500**
	Licensing		
	Activities related to support of the generation tie line	$18,068	**$0**
	Real Properties		
11	Retail Meter and Generation Facility	$1,353,556	**$61,991**
12	Activities related to the fiber optic scope	$165,318	$165,318
	[redacted] **Poletops Metering Services**		
13	Retail Meter and Generation Facility	$41,767	$79,460
14	**Power System Control**		
15	RTU at Generation Facility	$100,550	$100,550
16	Two RTU's at [redacted]	$204,194	$204,194
17	SPS Program modification and testing, point addition for the [redacted]	$423,032	$423,032
	Subtotal =	$10,642,201	**$9,537,780**
#	**Reliability Network Facilities - Interconnection Customer**	$ in 2015 Dollars	**$ in 2015 Dollars**
	Substation		
1	Replace [redacted] and new hybrid circuit breaker	$20,240,608	$20,240,608
2	Install one pair of protection relays	$236,049	$236,049
	Information Technologies		
	Terminal equipment at [redacted]	$521,370	$0
	Corporate Environmental Health & Safety		
3	Activities related to phase shifter transformer and circuit breaker	$28,913	$13,235
	Subtotal =	$21,026,940	**$20,489,892**
	Total =	$31,669,141	**$30,027,672**

[1] Estimated Cost includes Income Tax Component of Contribution (ITCC)
[2] Estimated Cost includes Income Tax Component of Contribution (ITCC)

3. CONCLUSION

Based on the results of the assessment, the repower request does not result in substantially changing the total capability and/or electrical characteristics of [redacted] Therefore, the generating facility will be allowed to repower upon completion of any required upgrades properly described in the Interconnection Agreement and the execution of an Interconnection Agreement.