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Docket Number:	12-AFC-02C
Project Title:	Huntington Beach Energy Project - Compliance
TN #:	212678
Document Title:	Huntington Beach California ISO Repowering Study Report
Description:	N/A
Filer:	Judith Warmuth
Organization:	Stoel Rives LLP
Submitter Role:	Applicant
Submission Date:	8/8/2016 2:51:15 PM
Docketed Date:	8/8/2016

August 1, 2016

Eric Pendergraft
AES Huntington Beach Energy, LLC
21730 Newland Street
Huntington Beach, CA 92646

RE: Huntington Beach Energy Project – AES Huntington Beach Energy, LLC Repowering Request

Dear Mr. Pendergraft:

The California Independent System Operator Corporation ("CAISO") and Southern California Edison Company ("SCE") have completed their assessment of AES Huntington Beach Energy, LLC's request dated March 21, 2016 to review the Huntington Beach Energy Project ("Project") to determine if the total capability and electrical characteristics are substantially unchanged in accordance with Section 25.1 of the CAISO tariff. The CAISO received the complete materials needed to begin reviewing the request on April 4, 2016.

Based on the attached Huntington Beach Energy Project Repowering Study Report ("Report"), the CAISO agrees that the Project can forgo the interconnection queue process as the total capability of 902 MW and electrical characteristics of the units repowering to the existing 220kV Huntington Beach Switching Station, with delivery to the ISO Controlled Grid at the Ellis 220kV Substation are substantially unchanged from the existing facility. As outlined in the Report, an additional interconnection facilities study between SCE and the Project will be required to assure that interconnection facilities including telemetry and protective relay equipment are compliant with the SCE's current interconnection handbook requirements, as well as any other relevant standards (e.g., NERC, WECC). Any additional interconnection facilities required as a result of this interconnection facility study will be incorporated into the Generator Interconnection Agreement ("GIA").

AES Huntington Beach Energy, LLC may request a Study Results meeting within five (5) calendar days of the report issuance, and AES Huntington Beach Energy, LLC must formalize the decision to proceed with the repower request within ten (10) business days of the report issuance (i.e. by August 15, 2016). Please reply as soon as possible if you desire a results meeting before the due date to make your election to accept the report results.

The CAISO and SCE look forward to working with the IC to repower these unit(s). Please contact Jennifer White at 916-608-7311 or at jwhite@caiso.com with any questions.

Kindest regards,

Deborah A. Le Vine
Director of Infrastructure Contracts & Management

Repowering Study Report

AES Huntington Beach Energy, LLC

Huntington Beach Energy Project

California ISO

July 29, 2016

This study has been completed in coordination with Southern California Edison (SCE) per CAISO Tariff Section 25.1.2

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1. Introduction

On March 22, 2016, AES Huntington Beach Energy, LLC ("AES") submitted a Generating Unit Repowering request to the California Independent System Operator ("CAISO"). AES's request is to repower the Huntington Beach Energy Project ("Project"). After initial review of the information, the CAISO and Southern California Edison ("SCE") determined that additional work was needed to complete the review. On April 6, 2016, AES provided a complete package of all materials needed to complete evaluation of the repowering request. In addition, AES provided a notarized affidavit representing that the total capability and/or electrical characteristics of the 902 MW electric generating facility will remain substantially unchanged in satisfaction of the requirements under Section 25.1.2 of the CAISO Tariff for repowering. The requested in-service date for the repower project is March 2019 for the CCGT and January 2023 for the CTs. A construction sequencing plan was not included in the provided information.

A technical assessment to ascertain and verify that the repower request does not result in a substantial change to the total capability and/or electrical characteristics of the electric generating facility. The assessment was performed following Section 12 of the Business Practice Manual ("BPM") for Generator Management which describes the CAISO's procedures for evaluating repower requests by an owner of an existing generating unit made pursuant to Section 25.1.2 of the CAISO tariff. Section 25.1.2 of the CAISO tariff allows such entities to obtain a CAISO interconnection agreement without having to participate in the CAISO generator interconnection and deliverability allocation study process if they demonstrate that the total capability and electrical characteristics of the generating unit will be substantially unchanged.

Based on the results of the assessment, the repower request does not result in a substantial change to the total capability and/or electrical characteristics of the Project under both bus configurations at Huntington Beach 220kV switching station. However, a Facilities Study is required to further define scope, cost, and schedule of Interconnection Facility upgrades needed to support the repower project so that such scope can be properly described in the Interconnection Agreement. The Project will not be allowed to repower without the completion of the Facilities Study, the incorporation of any required upgrades into an Interconnection Agreement and the execution of an Interconnection Agreement addressing the repower and corresponding upgrades.

2. Conditions and Assumptions

The evaluation was conducted by utilizing a 2020 WECC base case for both peak and off-peak conditions and applying the CAISO Reliability Criteria. The evaluation considered generation dispatch conditions that maximized local Metro area generation to stress the transmission system in the area of the project. Critical local area stability assessment will consider various double-outage (N-2) conditions.

3. Scope of Work Associated With Repowering

As described in docket #: 12-AFC-02C in Project Details, construction would commence in two phases with the first phase consisting of the CCGT electrical generating facility while the second phase would begin with adding two single cycle generating turbines GTs. The Project is a modification to the licensed Huntington Beach Energy Project with replacing power block 1 with a two-on-one combined-cycle, gas turbine (CCGT) configuration and power block 2 with two GE LMS-100 PB simple-cycle gas turbines (SCGT).

The project base option for alternative 1 consists of two blocks, Block 1: Natural gas-fired, air cooled, CCGT comprised of 2 General Electric (GE) combustion turbine generators (CTGs) and 1 Toshiba/Tosmap steam turbine generator (STG) constructed behind a single circuit breaker, Block 2: SCGTs comprised of 2 GE LMS100s behind a single circuit breaker.

The project base option for alternative 2 consists of two blocks, Block 1: Natural gas-fired, air cooled, CCGT comprised of 2 GE CTGs behind one circuit breaker and 1 Toshiba/Tosmap STG behind a separate circuit breaker, Block 2: SCGTs comprised of 2 GE LMS100 behind a single circuit breaker.

The generation will be interconnected to the SCE existing 220kV Huntington Beach Switching Station, with delivery to the CAISO Controlled Grid at the Ellis 220kV Substation. The plant will utilize the existing natural gas infrastructure. A new gas metering station is anticipated and gas pressure control station will be constructed by the project owner. Water will be supplied from an existing 8-inch pipeline from the City of Huntington Beach into a 442,500 gallon service water/fire water storage tank. This water will be used as plant service water, irrigation water, makeup water to the combustion turbine inlet air evaporative coolers, and raw feed to the steam cycle makeup water treatment system.

Table 1 provides general information about the Project while Figure 1 provides a map for the Project with transmission facilities in the vicinity of the Project. Figure 2 and Figure 3 provide a conceptual single line diagram of the Project configurations evaluated.

Table 1: Project General Information

Project Location	Huntington Beach, CA
SCE Planning Area	Metro Area
Number and Type of Generators	5 – Synchronous Generators
Maximum Generator Output	916.7 MW
Generator Auxiliary Load	26.1 MW
Maximum Net Output at generator terminal	890.6 MW
Power Factor	0.9 lagging/0.95 leading
Step-up Transformer	Combined Cycle One 171/228/285 MVA 230/18 kV with Z = 12% @ 171 MVA Two 169/225/282 MVA 230/18 kV with Z = 12% @ 169 MVA Peaker Units Alternative 1 (w/ CLR): Two 73/97/122 MVA 230/13.8 kV with Z = 10% @ 73 MVA Alternative 2 (Block Split): Two 73/97/122 MVA 230/13.8 kV with Z = 12% @ 73 MVA
Description Of Interconnection Configuration	Connect to the CAISO controlled grid at the Ellis Substation over the Ellis – Huntington Beach 220 kV transmission lines.
Connection Voltage	220 kV

Figure 1: Vicinity Map

Figure 2: Single Line Diagram for Huntington Beach Energy Project Alternative 1

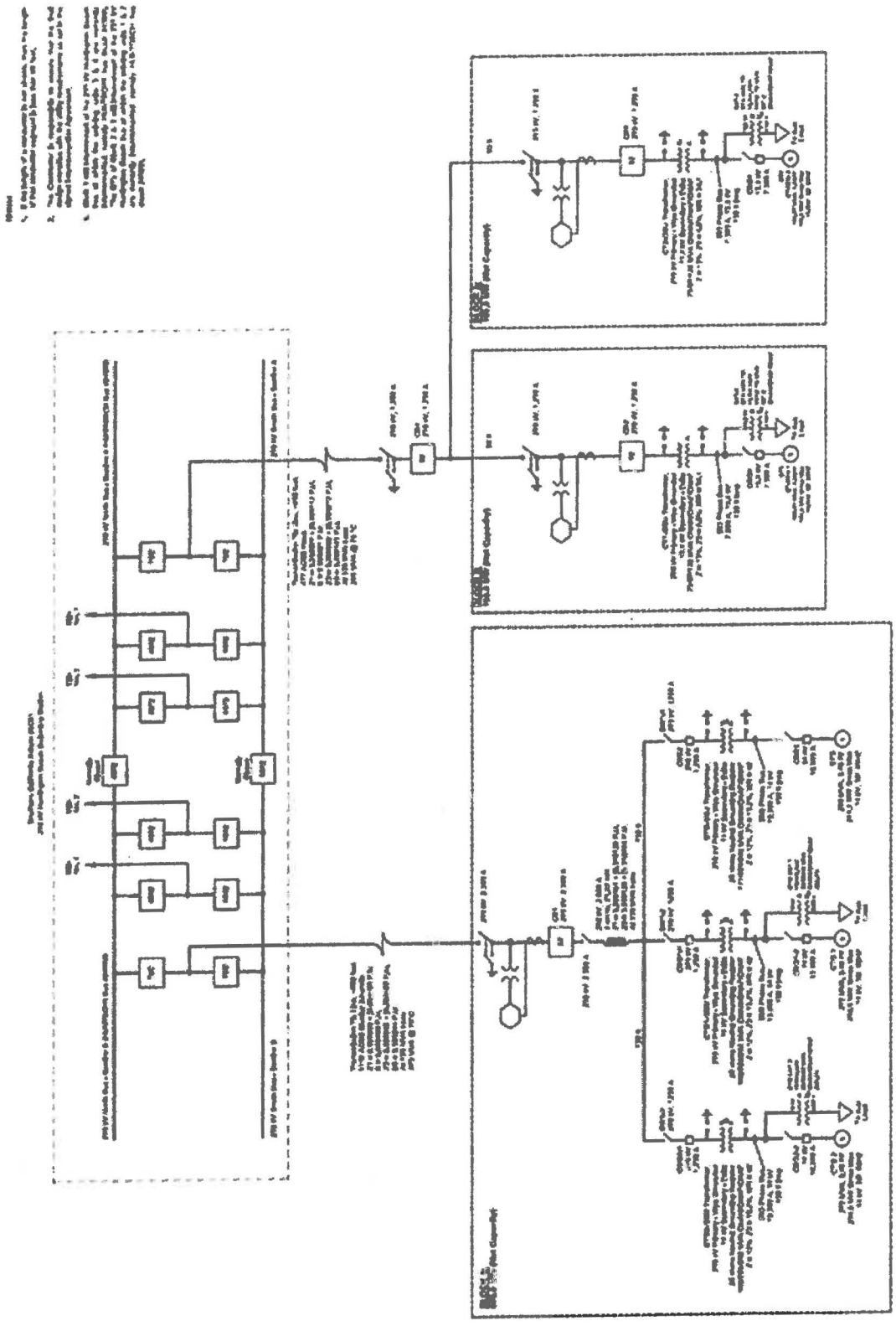
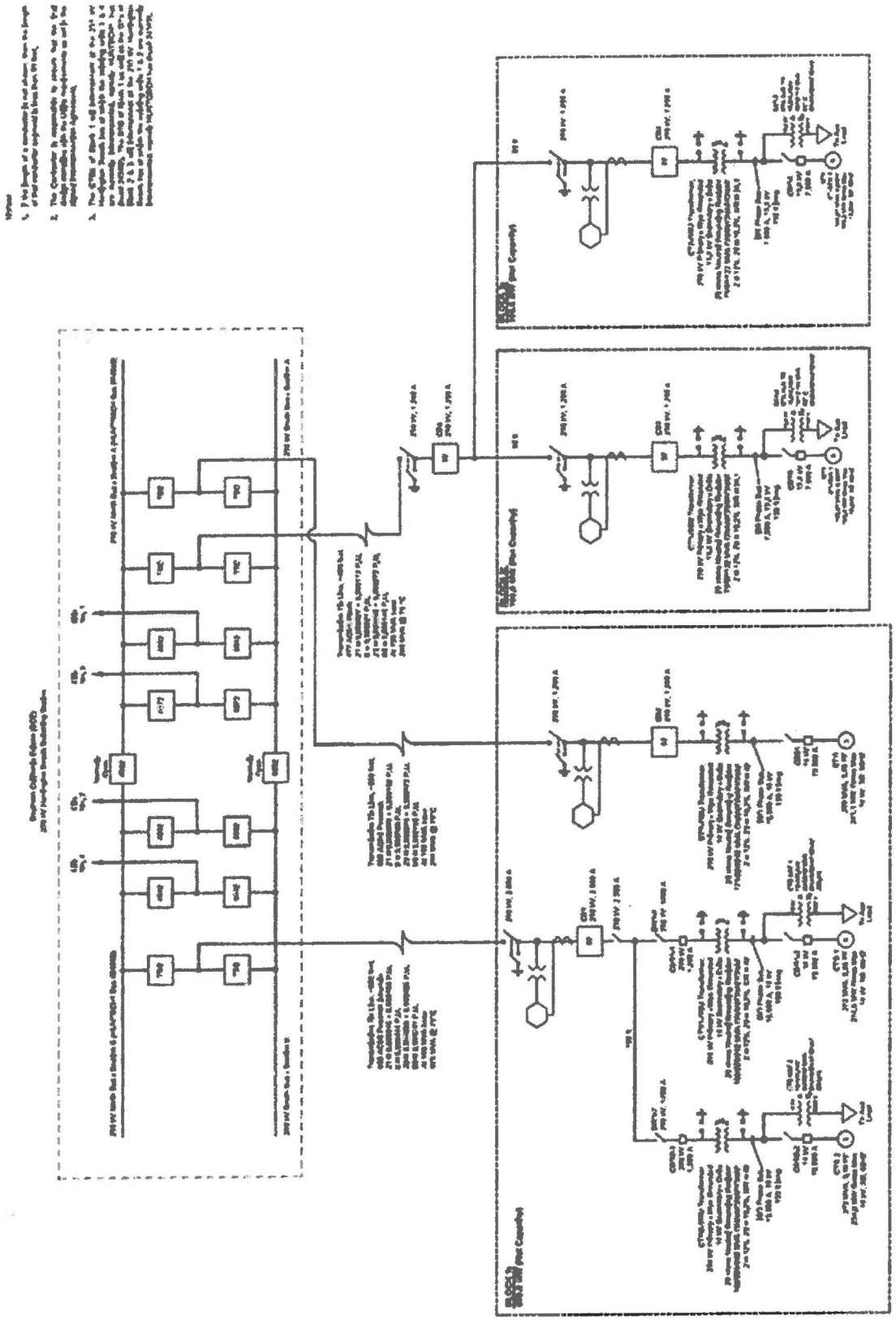


Figure 3: Single Line Diagram for Huntington Beach Energy Project Alternative 2



4. Results of Evaluation

It is understood that any repower 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 transmission system. Most of these changes can be attributed to improvements in technology or the unavailability of original equipment. The CAISO 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 transmission system, either of which would require the project to be evaluated pursuant to the CAISO's generator interconnection and deliverability allocation procedures.

Adverse impacts to a transmission 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

Section 12 of the BPM for Generator Management states that a repower of a generating unit that results in the same or less MW capacity is not to be considered a substantial change to the total capability of the generating unit from a flow impact standpoint provided all CAISO tariff requirements regarding reactive power are met by the new generating unit.

Based on the technical data provided, the repower project involves replacing the existing Huntington Beach Generating Station Units 1 - 4 with one (1) 2 x 1 gas-fired combined cycle (CCGT) and two (2) open-cycle combustion turbines (CTs). This scope of work results in a reduction of total net MW capability from 902 MW down to 890.6 MW. As far as reactive power requirements, since the generation units are synchronous generators, the repowered units inherently meet all CAISO tariff requirements regarding reactive power. Consequently, the repower of the Project as well as the operational implication in 2020 with only the CCGT on is not considered a substantial change to the total capability of the generating unit from a flow impact standpoint as there would be no adverse power flow impact on the transmission grid under normal and contingency conditions as compared with the original generating unit.

B. Short Circuit Duty Impact

Section 12 of the BPM for Generator Management states that any reduction in the short circuit duty of the repowered generating unit as compared with the original generating unit will not be considered an adverse impact and will not be considered a substantial change to the electrical characteristics.

To evaluate the change of short-circuit duty corresponding to the repower project, the evaluation calculated the maximum symmetrical three-phase-to-ground and single-phase-to-ground short-circuit duties at the Huntington Beach 220 kV bus for both the existing units and the resulting configuration following the repower project. Generation and transformer data represented in the generator and transformer data sheets

provided by the customer were utilized. Results of the SCD evaluation for Scenario 1 and Scenario 2 are provided below in Table 2 and Table 3 respectively.

Table 2
Three-Phase-to-Ground and Single-Phase-to-Ground Short-Circuit Duties
Repower Scenario 1

Fault Location	Fault Type	Existing		Repower		Delta
		kA	X/R	kA	X/R	kA
Huntington Beach	3Φ	39.93	16.16	37.48	14.58	-2.45
	1Φ	29.95	19.48	27.68	16.44	-2.27
Ellis	3Φ	46.47	16.75	44.23	15.56	-2.24
	1Φ	38.93	17.57	37.35	16.43	-1.58

Table 3
Three-Phase-to-Ground and Single-Phase-to-Ground Short-Circuit Duties
Repower Scenario 2

Fault Location	Fault Type	Existing		Repower		Delta
		kA	X/R	kA	X/R	kA
Huntington Beach A	3Φ	39.93	16.16	31.76	13.33	-8.17
	1Φ	29.95	19.48	24.57	13.30	-5.38
Huntington Beach B	3Φ	39.93	16.16	31.59	8.17	-8.34
	1Φ	29.95	19.48	24.46	10.144	-5.39
Ellis	3Φ	46.47	16.75	45.37	15.80	-1.10
	1Φ	38.93	17.57	37.52	16.77	-1.41

Based on a reduction in SCD at the Huntington Beach and Ellis 220 kV Substations, the repower of the Huntington Beach facility as well as the operational implication in 2020 with only the CCGT on is not considered a substantial change to the electric characteristics.

C. Angular and Voltage Stability Impact

Section 12 of the BPM for Generator Management states that angular and voltage stability impacts of a generating unit directly depends on the type of generator and the power system control functions that the generating unit encompasses. To evaluate angular and voltage stability impacts, local area N-2 contingencies were evaluated for transient stability and post-transient voltage performance. The evaluation was conducted to determine performance according to NERC/WECC planning criteria for the repower project. The double contingencies evaluated that affect the area of interest are listed below in Table 4.

TABLE 4
TRANSIENT STABILITY AND POST-TRANSIENT VOLTAGE
CRITICAL STUDY CASES

Outage	Bus Fault Location	Fault Type	Duration
Ellis-Johanna and Ellis-Santiago 230 kV T/Ls	Ellis 230 kV	3Φ	4 cycles
Ellis-Huntington Beach No.1 and No.2 230 kV T/Ls	Ellis 230 kV	3Φ	4 cycles
Ellis-Huntington Beach No.3 and No.4 230 kV T/Ls	Ellis 230 kV	3Φ	4 cycles
Ellis-Barre No.1 and No.2 230 kV T/Ls	Ellis 230 kV	3Φ	4 cycles
Ellis-Barre No.3 and No.4 230 kV T/Ls	Ellis 230 kV	3Φ	4 cycles

No transient stability problems or post-transient voltage issues were identified in the repower of the Huntington Beach facility. In addition no issues were identified in operational year 2020 with only the CCGT on. Consequently, the repower of the Project is not considered a substantial change to the electric characteristics.

5. Conclusions

Based on the results of the assessment, the repower request does not result in substantially changing the total capability and/or electrical characteristics of the electric generating facility under both bus configurations at Huntington Beach 220kV switching station. However, a Facilities Study is required to further define scope, cost, and schedule of Interconnection Facility upgrades needed to support the repower project so that such scope can be properly described in the Interconnection Agreement. The Project will not be allowed to repower without the completion of the Facilities Study, the incorporation of any required upgrades into an Interconnection Agreement and the execution of an Interconnection Agreement addressing the repower and corresponding upgrades.

6. Facilities Study

Although the evaluation has concluded that the capability and electrical characteristics for the Huntington Beach repower project is substantially unchanged and therefore does not need to be submitted into the CAISO generation interconnection queue, a Facilities Study is required to assure that interconnection facilities and telemetry or protective relay equipment are compliant with the Participating TO's current interconnection requirements and standards. A high-level evaluation of these facilities has identified the need to perform a detailed review to adequately support the repower project. The activities required involve:

- Development of cost estimate and schedule to replace each set of motor operated disconnect (MOD) switches with two 220 kV circuit breakers and four 220 kV disconnect switches, and a 220 kV MEER (Mechanical Electrical Equipment Room) building.

- The Facilities Study will also look at the following elements inside the Ellis and/or Huntington Beach Substations and develop scope, cost and schedule of any Interconnection Facility upgrades needed to support interconnection of the repower of the Huntington Beach facility:

    - Transmission
    - Substation
    - Protection
    - Telecommunications
    - Environmental Health and Safety
    - Licensing
    - Real Properties

Such scope, cost, and schedule will form the basis for properly defining Interconnection Agreement.