

DOCKETED

Docket Number:	98-AFC-03C
Project Title:	Delta Energy Center Compliance
TN #:	216134
Document Title:	Applicant's Petition for Temporary Safety Modifications
Description:	Petition
Filer:	Deric Wittenborn
Organization:	Ellison Schneider Harris & Donlan LLP
Submitter Role:	Applicant
Submission Date:	2/21/2017 10:39:33 AM
Docketed Date:	2/21/2017

Petition for Temporary Safety Modifications

Delta Energy Center

Pittsburg, California

Submitted to
California Energy Commission

Submitted by
Delta Energy Center, LLC



February 2017

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Executive Summary

Delta Energy Center, LLC, as project owner, petitions the California Energy Commission (“CEC” or “Commission”) to modify the certification of the Delta Energy Center (“DEC”) to install temporary safety modifications to the steam turbine condenser, which will allow for operation of the facility during the period that repairs are being performed on the steam turbine (this “Petition for Temporary Safety Modification” or “Petition”). On Sunday, January 29, 2017, at approximately 15:42 hours, the Facility experienced a mechanical event and resultant fire inside the steam turbine generator compartment that gave rise to the deployment of the fire department to the facility. As a result of the event, the steam turbine and steam turbine generator experienced significant damage. The cause of the event is currently being investigated, and a schedule for repairs is being generated.

Delta Energy Center, LLC is petitioning to allow the facility to make temporary modifications to the steam turbine condenser that will allow repairs to the steam turbine to be performed, while the facility operates in simple cycle mode. This will allow the facility to return to service for Summer 2017 in a derated capacity, and DEC is expected to support the California Independent System Operator in resource planning for Summer 2017. In simple cycle mode, DEC can provide approximately 500 to 544 MW of capacity and frequency and voltage support to the applicable resource area.

Section 1.0 provides an overview of the Petition and a review of the ownership of the project. Section 2.0 provides a complete description of the proposed temporary modifications and the necessity for the proposed changes. Section 3.0 assesses the potential environmental effects of the proposed changes, the project’s continued compliance with all applicable laws, ordinances, regulations and standards (LORS), and the consistency of the changes with the Commission Decision certifying the facility. This assessment indicates that adoption of the Petition will not result in any significant, unmitigated adverse environmental impacts. The project will continue to comply with all applicable LORS.

There will be no changes to any conditions of certification as a result of this Petition.

Introduction

1.1 Overview of the Temporary Modifications

The Delta Energy Center (“DEC”) is a nominal 880 MW combined cycle natural gas fired power plant located in Contra Costa County in the eastern industrialized portion of the City of Pittsburg. The project was certified in February of 2000. The project owner, Delta Energy Center, LLC, hereinafter “Project Owner,” is a wholly-owned subsidiary of Calpine Corporation.

Highly efficient combined-cycle plants like DEC maximize the electricity-producing potential of their fuel source by combining natural gas and steam generation technologies. This process uses the extremely hot exhaust from natural-gas combustion turbines to create steam and generate additional electricity.

In the case of DEC, the facility uses three natural gas combustion turbines and one steam turbine to generate electricity. The waste heat from the generation process is directed to the heat recovery steam generators (HRSGs), which contain boiler tubes filled with ultrapure water. The hot exhaust flows past these tubes, turning the water into steam. The steam is then routed to the steam turbine, which is connected to its own generator, where more electricity is generated. The spent steam then flows into the condenser. The condenser converts the steam back into water, which is returned to the HRSG in a closed-loop cycle to be reused by the facility.

The plant is designed and equipped with a set of valves that allows the steam to bypass the steam turbine (the now-damaged equipment) and be sent directly to the condenser for routing to the cooling tower and reuse in the generation process. Even though the bypass valves allow steam to be diverted to the condenser, the top of the condenser is connected directly to the bottom of the LP steam turbine. As such, in order for safe work to be performed on the steam turbine while the facility is operating in bypass mode, an isolating plate (i.e., a blind) must be installed to prohibit steam from entering the steam turbine and to seal the system so that it can properly hold the vacuum necessary for condenser operation.

Project Owner is petitioning the Commission to install a rupture disk and associated pressure relief vent to allow temporary safe operations. This modification will allow the facility to operate in simple cycle mode, while continuing the repairs to the steam turbine.

Project Owner expects that once the steam turbine repairs are completed and combined cycle operations restored, the temporary isolating plate, rupture disk and pressure relief vent will be removed. All repairs are intended to be made with like-kind replacements and post-repairs, there will be no changes in the “project design, operation, or performance requirements” (20 CCR 1769(a)(1)).

This Petition for Temporary Safety Modifications contains all of the information that is required pursuant to the CEC’s Siting Regulations (California Code of Regulations (CCR) Title 20,

Section 1769, Post Certification Amendments and Changes). The information necessary to fulfill the requirements of Section 1769 is contained in Sections 1.0 through 6.0, as summarized in Table 1.1-1.

TABLE 1.1-1
Informational Requirements for Post-Certification Modifications

Section 1769 Requirement	Section of Petition Fulfilling Requirement
(A) A complete description of the proposed modifications, including new language for any conditions that will be affected	Section 2.0—Proposed modifications Sections 3.1 to 3.15—Proposed changes to Conditions of Certification, if necessary, are located at the end of the technical section
(B) A discussion of the necessity for the proposed modifications	Section 1.3
(C) If the modification is based on information that was known by the petitioner during the certification proceeding, an explanation why the issue was not raised at that time	Section 1.3
(D) If the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision, an explanation of why the change should be permitted	Sections 1.4, 3.1
(E) An analysis of the impacts the modification may have on the environment and proposed measures to mitigate any significant adverse impacts	Section 1.5, 3.1
(F) A discussion of the impact of the modification on the facility's ability to comply with applicable laws, ordinances, regulations, and standards;	Section 1.5, 3.1
(G) A discussion of how the modification affects the public	Section 4.0
(H) A list of property owners potentially affected by the modification	Section 5.0
(I) A discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.	Section 6.0

1.2 Ownership of the Facility Property

The Project Owner (Delta Energy Center, LLC) is a wholly owned subsidiary of Calpine Corporation (Calpine). Calpine is an independent power developer, owner, and operator engaged in the business of owning or leasing, operating, and selling energy and capacity from electric power generation facilities.

1.3 Necessity of Proposed Changes

The Siting Regulations require a discussion of the necessity for the proposed revision to DEC certification and whether the temporary modification are based on information known by the petitioner during the certification proceeding (Title 20, CCR, Sections 1769 (a)(1)(B) and (C)).

On Sunday, January 29, 2017, at approximately 15:42 hours, the Facility experienced a mechanical event and resultant fire inside the steam turbine generator compartment that gave rise to the deployment of the fire department to the facility. During the event, the steam turbine and steam turbine generator experienced significant damage. The cause of the event is currently being investigated and a schedule for repairs is being generated.

The proposed changes will allow the facility to return to service for Summer 2017 in a derated capacity, and DEC is expected to support the California Independent System Operator in resource planning for Summer 2017. In simple cycle mode, DEC can provide approximately 500 to 544 MW of capacity and frequency and voltage support to the applicable resource area.

1.4 Consistency of Changes with Certification

The Siting Regulations also require a discussion of the consistency of the proposed project revision with applicable laws, ordinances, regulations, and standards (LORS) and whether the modifications are based on new information that changes or undermines the assumptions, rationale, findings, or other basis of the final decision (Title 20, CCR Section 1769 (a)(1)(D)). If the project is no longer consistent with the certification, the petition must provide an explanation why the modification should be permitted.

The proposed project revisions are consistent with all applicable LORS. This Petition is not based on new information that changes or undermines any basis for the Final Decision. The assumptions, rationale, findings, and other basis of the Commission Decision for DEC are still applicable to the project, as temporarily modified.

1.5 Summary of Environmental Impacts

The CEC Siting Regulations require that an analysis be conducted to address the potential impacts the proposed modifications may have on the environment, and proposed measures to mitigate any potentially significant adverse impacts (Title 20, CCR, Section 1769 (a)(1)(E)). The regulations also require a discussion of the impact of the modification on the facility's ability to comply with applicable LORS (Section 1769 (1)(a)(F)). Section 3.0 of this Petition includes a discussion of the potential environmental impacts associated with the modifications, as well as a discussion of the consistency of the modification with LORS. Section 3.0 also includes updated environmental baseline information if changes have occurred since the AFC that would have a bearing on the environmental analysis of the Petition. Section 3.0 concludes that there will be no significant environmental impacts associated with implementing the actions specified in the Petition and that the project as temporarily modified will comply with all applicable LORS.

1.6 Proposed Changes to the Conditions of Certification

There are no required changes to any of the Conditions of Certification contained in the Commission Decision to facilitate this Petition.

SECTION 2.0

Description of Temporary Project Modifications

This section includes a description of the proposed temporary project modifications, consistent with CEC Siting Regulations (Title 20, CCR, Section 1769 (a)(1)(A)).

The facility is equipped with a steam bypass system that can bypass the steam turbine and send steam directly to the condenser. In fact, this is how the facility is operated during startups and shut downs. In order to continue the repairs to the steam turbine and the surrounding area, Project Owner proposes a few temporary modifications to the condenser to facilitate safe operation in simple cycle mode while performing the steam turbine repairs. The temporary modifications include placing an isolating plate (blind) at the expansion joint between the condenser and steam turbine and installing a rupture disk and pressure relief vent. These temporary modifications will allow the HRSG steam to be routed to the condenser and ensure safe operation of the facility, while the repairs to the steam turbine are ongoing.

A specialty contractor with expertise in condenser operation will engineer the project. The project then will be constructed and installed by experienced contract personnel. The project scope will be confined to the steam turbine condenser area within the steam turbine compartment and, therefore, will not require any ground disturbance. Parking and laydown will be contained within the plant site and no additional parking and laydown will be required. Project Owner expects that once steam turbine repairs are completed and combined cycle operations restored, the temporary isolating plate, rupture disk and pressure relief vent will be removed. All repairs are intended to be made with like-kind replacements and post-repairs, there will be no changes in the “project design, operation, or performance requirements” (20 CCR 1769(a)(1)).

Currently, 95% of the water that DEC utilizes is used for cooling water to condense steam. DEC uses recycled water meeting Title 22 standards from Delta Diablo Sanitation District for this purpose. The recycled water use will not increase as part of this temporary project. A small amount of additional water is also utilized to produce steam at the project. Contra Costa Water District Canal water is treated in the DEC demineralization system to serve this purpose. As with normal operations, the steam will continue to be condensed in the condenser and routed back to the process for reuse at the facility. The use of canal water will also not increase due to these safety modifications.

SECTION 3.0

Environmental Analysis of Proposed Temporary Project Modifications

The proposed temporary modification to the steam turbine condenser will not significantly impact any of the resource areas listed below. As a result, the environmental analysis for all of the environmental disciplines does not differ significantly from that described in the AFC, and the impacts associated with this Petition will be less than significant. The environmental analysis for the following environmental disciplines would not differ significantly from the AFC and Final Commission Decision for DEC:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Paleontology
- Hazardous Materials Management
- Land Use
- Noise
- Public Health
- Socioeconomics
- Soil and Water Resources
- Traffic and Transportation
- Visual Resources
- Waste Management
- Worker Safety and Fire Protection

The proposed temporary modifications do not require changes to Conditions of Certification.

3.1 Resources

3.1.1 Air Quality

There are no proposed modifications to emissions emitting equipment. The emissions from the combustion turbines will remain the same and in compliance with all Commission Decision Air Quality Conditions of Certification and Bay Area Air Quality Management District Permits. Therefore, the proposed changes in the Petition will not cause any adverse impacts to air quality resources, and the project will remain in compliance with its air permit as it operates temporarily in simple cycle mode.

3.1.2 Biological Resources

All the temporary modifications will take place on pre-existing location on top of the steam turbine deck, and no additional laydown areas will be required. Therefore, the proposed changes in this Petition will not cause any adverse impacts to biological resources.

3.1.3 Cultural Resources

There will be no ground disturbance as part of the modifications. Therefore, the proposed changes in this Petition will not cause any adverse impacts to cultural resources.

3.1.4 Geology and Paleontology

The proposed changes will occur on top of the steam turbine deck and will require and ground disturbance. Therefore, the proposed changes will not have any effect on geological or paleontological resources.

3.1.5 Hazardous Materials Management

No additional hazardous materials will be added as a result of the proposed temporary modifications. Therefore, the proposed changes will not have any effect or changes to the chemical inventory and/or quantities of chemicals used for the project.

3.1.6 Land Use

The proposed changes will not result in changes to the Commission Decision's condition, finding or conclusions regarding land use.

3.1.7 Noise and Vibration

In the unanticipated event that an overpressure of the condenser occurs, the pressure relief vent would engage and potentially generate additional noise. The noise at the project boundary would not be affected and the additional noise would be the result of an upset condition and would not be continuous. Therefore, the proposed changes will not result in changes to the Commission Decision's conditions, finding or conclusions regarding noise and vibration.

3.1.8 Public Health

The proposed changes will have no effect on public health.

3.1.9 Socioeconomics

The proposed changes will have no effect on socioeconomics.

3.1.10 Soil and Water Resources

The proposed changes will not impact soil and water resources.

3.1.11 Traffic and Transportation

The construction of the temporary modifications will require a very small workforce and take approximately two weeks to complete, once the engineering and design are complete. The additional work force will not cause a significant increase in transportation to the site and will be contained within the current parking area at the facility. There will not be any heavy load deliveries associated with the temporary modifications. Therefore, the proposed changes will not impact traffic and transportation.

3.1.12 Visual Resources

There will be no significant impact to visual resources due to the temporary modifications to the project. While not the result of the temporary safety modifications, the Project Owner

notes that there is the possibility that the increased heat rejection from the condenser during operation in simple cycle mode could potentially cause increased visible water vapor plumes characteristic of this industrial area during various weather conditions. These impacts, if any, would be intermittent and temporary. Further, operation is expected to largely occur during the warm summer months where visible water vapor plumes are typically minimal due to ambient conditions. The original Commission Decision indicated that:

"The project will produce visible steam exhaust plumes from cooling towers and HRSG stacks. Staff determined that several existing plants in the region produce steam plumes that vary from slightly smaller to slightly larger than those expected for the DEC project. The most noticeable visible impact would occur from waterways and islands. However the DEC plumes would only be visible intermittently and blended with other plumes from nearby facilities; therefore, potential impacts would be less than significant."

Based on the analysis above, visible water vapor plumes were found to be less than significant in the Commission Decision. The potential for a slight increase in plume under certain ambient conditions, due to potential increased heat rejection during simple cycle operations, would be temporary and are not significant.

3.1.13 Waste Management

The proposed changes will not change or impact waste management practices or the types or quantities of waste generated by the construction or operation of the project

3.1.14 Worker Safety and Fire Protection

The proposed changes will not result in any impacts different than those analyzed by the CEC during certification, and the proposed changes do not affect the Commission Decision's conditions, findings or conclusions regarding worker safety and fire protection.

3.2 LORS

The Commission Decision certifying the MEC project concluded that the project is in compliance with all applicable LORS. The project, as modified, will continue to comply with all applicable LORS.

SECTION 4.0

Potential Effects on the Public

This section discusses the potential effects on the public that may result from the modification proposed in this Petition for Temporary Safety Modification, pursuant to CEC Siting Regulations (Title 20, CCR, Section 1769(a)(1)(G)).

No adverse effects on the public will occur because of the temporary changes to the project, as proposed in this Petition.

SECTION 5.0

List of Property Owners

This section lists the property owners in accordance with the CEC Siting Regulations (Title 20, CCR, Section 1769(a)(1)(H)). A list of property owners within 1,000 feet of the proposed facility will be submitted under separate cover to the Compliance Project Manager. The list will be provided in a format suitable for copying to mailing labels.

As described in this Petition, there will be no significant adverse environmental impacts from the proposed changes. Therefore, no significant adverse effects on property owners would result from the adoption of the changes proposed in this Petition.

SECTION 6.0

Potential Effects on Property Owners

This section addresses potential effects of the project changes proposed in this Petition on nearby property owners, the public, and parties in the application proceeding, pursuant to CEC Siting Regulations (Title 20, CCR, Section 1769 (a)(1)(I)).

The project, as modified, will not differ significantly in potential effects on adjacent land owners, compared with the project as previously proposed. The project, therefore, will have no adverse effects on nearby property owners, the public, or other parties in the application proceeding.