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Petition for Modification

Los Esteros Critical Energy Facility, LLC

San Jose, California

Submitted to

California Energy Commission

Submitted by

Los Esteros Critical Energy Facility, LLC

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Attachments

List of Property Owners within 1,000 feet (provided under separate cover)

Executive Summary

Los Esteros Critical Energy Facility, LLC, as project owner, petitions the California Energy Commission ("CEC" or "Commission") to modify the Phase 2 certification of Los Esteros Critical Energy Facility, LLC ("LECEF"). This Amendment includes the following components:

- Installation of up to 6 MW vanadium flow battery, with up to 18 MWh of energy storage capability. The system layout will be approximately 167 ft. wide x 112 ft. length and approximately 20 ft. in height. The energy storage system will be built on a concrete foundation and secondary containment will be provided.
- And/or an additional installation of up to 6MW lithium-ion (Li-ion) Battery, with up to 6 MWh of energy storage capability. The energy storage system is comprised of the storage device, the interconnection and the communication system. Secondary containment will be provided.
- An interconnection of the battery to the existing 4160V auxiliary bus through which energy will flow to and from the grid using existing electrical infrastructure.
- And an installation of a new and separate revenue meter for monitoring flow battery activity

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 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.

SECTION 1.0

Introduction

1.1 Overview of the Modification

The Los Esteros Critical Energy Facility ("LECEF") is a natural gas fired power plant located in the City of San Jose. The facility recently converted into a 320 MW combined-cycle plant (LECEF Phase 2). Los Esteros Critical Energy Facility, LLC, hereinafter "project owner," is a wholly-owned indirect subsidiary of Calpine Corporation.

This Petition for Modification 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

Project owner (Los Esteros Critical Energy Facility, LLC) and is a wholly-owned indirect 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 LECEF certification and whether the modification is based on information known by the petitioner during the certification proceeding (Title 20, CCR, Sections 1769 [a][1][B] and [C]).

The proposed modification is necessary to support procurement targets for energy storage as required by the California Public Utilities Commission ("CPUC") Decision 13-10-040 ("Decision" or "D.13-10-040"), Pursuant to Assembly Bill 2514. In addition, it may also provide Black Start capability to LECEF.

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.

1.5 Summary of Environmental Impacts

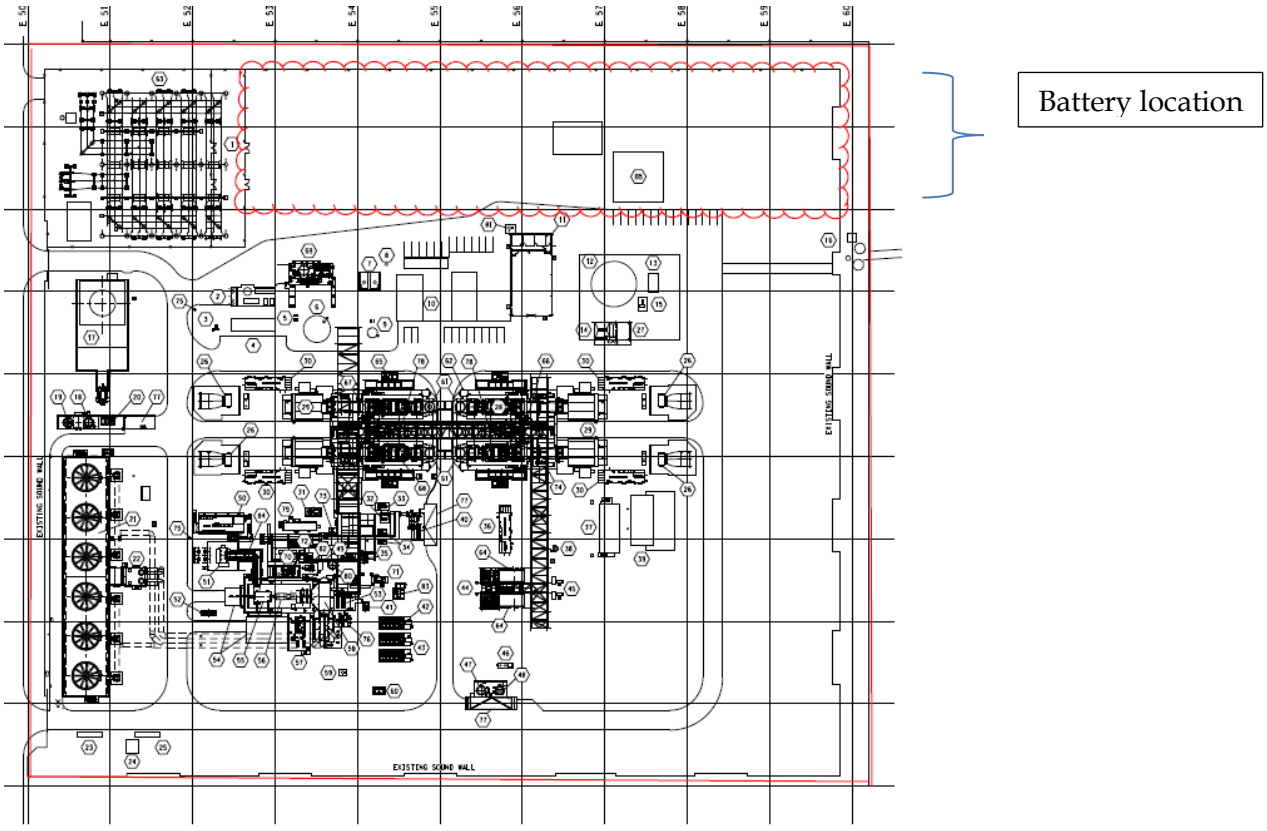
The CEC Siting Regulations require that an analysis be conducted to address the potential impacts the proposed modifications may have on the environment, and proposed measures to mitigate any potentially significant adverse impacts (Title 20, CCR, Section 1769 (a)(1)(E)). The regulations also require 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.

SECTION 2.0

Description of Project Modifications

This section includes a description of the proposed project modifications, consistent with CEC Siting Regulations (Title 20, CCR, Section 1769 (a) (1) (A)). The battery installation will be located on the north end of the existing property east of the switchyard inside the fence line. The project map below indicates the area that the batteries will be located. The project includes an installation of up to 6 MW vanadium flow battery, with up to 18 MWh of energy storage capability and/or an additional installation of up to 6 MW lithium-ion (Li-ion) Battery, with up to 6 MWh of energy storage capability. These energy storage systems are comprised of the storage device, the interconnection and the communication system. . The system layout will be approximately 167 ft. wide x 112 ft. length and approximately 20 ft. in height. The energy storage system will be located on a concrete foundation with secondary containment.

In addition, the project will include an interconnection of the battery to the existing 4160V auxiliary bus thru which energy will flow to and from the grid using existing electrical infrastructure and installation of a new and separate revenue meter for monitoring flow battery activity.



SECTION 3.0

Environmental Analysis of Proposed Project Modification

The proposed modification to Installation of up to6 MW vanadium flow battery and/or up to 6 MW lithium-ion (Li-ion) Battery 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 significantly from the Phase 2 AFC and Final Commission Decision for Phase 2:

- 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

3.1 Resources

3.1.1 Air Quality

The proposed modification will not affect emissions from the Project and will support continued safe, reliable and effective operation. The Project will continue to meet all existing emissions limits established in the existing permits. The proposed modification will not have a significant impact to air quality.

3.1.2 Biological Resources

The proposed modification will occur entirely on site, and will not result in any significant physical modification to the site. No sensitive biological resources or habitats occur on site. Because the entire site is currently developed and used for existing Project operations, the proposed modification will not have a significant impact to biological resources.

3.1.3 Cultural Resources

The proposed modification will occur entirely on site, and will not result in any significant impact to cultural resources. Extensive backhoe testing was performed for Phase I and the testing demonstrated the general lack of buried remains on site. Batteries will be placed on concrete foundations and any excavation will comply with all Phase 2 applicable Cultural Conditions of Certification.

3.1.4 Geology and Paleontology

The proposed modification will not cause geological hazards, or impacts to paleontological or geological resources beyond those analyzed by the Commission during certification.

3.1.5 Hazardous Materials Management

The proposed modification will potentially add two new chemicals to the hazardous materials management. Vanadium electrolyte solution and/or lithium-ion batteries will be added to the Hazardous Materials Business Plan and Annual Compliance Report. A hazardous materials permit application with the County of Santa Clara will be filed. Hazardous materials will be handled and stored in a safe manner, reducing any potential public health or safety hazards. The attached updated table 8.5-5 is included for reference.

Table 8.5-5. Battery chemical inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	LaFollette Bill TPQ[c]	Prop 65
Hazardous Materials							
Vanadium Electrolyte Solution	Vanadium Oxide Sulphate (10.0%)	27774-13-6	380,400 gal	1000 lbs	10000 lbs	d	No
	Vanadium Trioxide (4.6%)	1314-34-7		d	d	d	No
	Sulphuric Acid (15.5%)	7664-93-9		1000 lbs	6452 lbs	d	No
	Water (Balance %)	7732-18-5		d	d	d	No
Lithium-Ion Battery	Lithium-Ion Battery*	TBD	TBD	d	d	d	Yes

[a]Reportable quantity for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [Ref. 40 CFR 302, Table 302.4]. Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.
[b] Reportable quantity for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of a reportable chemical, the reportable quantity of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 lbs., the reportable quantity for that material would be (100 lbs.)/(10%) = 1,000 lbs.
[c] Threshold Planning Quantity [Ref. 40 CFR Part 355, Appendix A]. If quantities of extremely hazardous materials equal to or greater than TPQ are handled or stored, they must be registered with the local Administering Agency.
[d] No reporting requirement. Chemical has no listed RQ or TPQ.

- Lithium- Ion Battery chemical makeup to be determined once vendor is selected.

The two new potential chemicals are vanadium electrolyte solution and and/or lithium ion battery. For the vanadium battery, the electrolyte solution consists of vanadium oxide sulphate (10%), vanadium trioxide (4.6%), sulfuric acid (15.5%) and the balance of water: The solution is not categorized as toxic nor water-reactive material but is corrosive due to the concentration of sulfuric acid.

The containers storing the material are double walled and serve as secondary containment. In the event of a catastrophic failure, 100% of the electrolyte solution will be entirely contained. The Flow battery system is designed to withstand 1.5 times of maximum designed pressure. The system is equipped with a leak detection system, which will detect a leak in the event of a system breach. If a leak occurs, sensors are equipped inside each container, which will detect leakage of electrolyte and alarm. In that event, the flow battery system automatically shuts down and sends an alert to maintenance personnel.

The Lithium-Ion Battery is a closed cell battery. The system is totally enclosed and exposure to hazardous ingredients is not expected. Lithium-Ion batteries are made with non-toxic, non-hazardous materials. Lithium-ion batteries carry a very remote fire risk. There is minimal fire hazard when manufacturer's recommendations are followed for proper handling of the battery and its containment. . Secondary containment and fire suppression are supplied with the battery package as specified by the battery manufacturer. . In addition, each lithium-ion cell is continuously monitored and is provided with an automatic shutdown to prevent a runaway thermal condition.

3.1.6 Land Use

The proposed modification would not significantly change the land uses associated with the site.

3.1.7 Noise and Vibration

The vanadium flow battery and lithium-ion (Li-ion) battery would add minimal new sources of noise to the site. The source of the noise would be the HVAC system for Li-Ion battery and the electrolyte pump operations for the vanadium flow battery. Batteries are typically low in noise and will not cause a significant adverse noise impact. The noise will meet the City of San Jose Noise Ordinance and noise conditions in the Phase 2 CEC License.

3.1.8 Public Health

The proposed modification will meet Phase 2 CEC license requirements.

3.1.9 Socioeconomics

The proposed modification will require construction contractors and labor for the installation of the batteries. At peak, construction there will be approximately 25 workers

for a 6-month period. There will be no increased staff required for the operational phase of the project.

3.1.10 Soil and Water Resources

Construction will result in land disturbance of one acre or more to build the foundations associated with the battery installation, therefore a General Storm Water Permit will be required. LECEF will obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance (Construction General Permit) Order 2009-0009-DWQ and prepare a Construction Storm Water Pollution Prevention Plan (SWPPP). In addition, any excavations and soil disposal will comply with the existing Soils Management Plan. The soils will be complied with and all excavated soil will be disposed of in accordance with existing soils management plan final grading will comply with the existing Erosion and Sedimentation Control Plan.

3.1.11 Traffic and Transportation

All project deliveries during construction will continue to comply with all applicable Conditions of Certification TRANS-3.

The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transport of all hazardous materials, and that all federal and state regulations for the transport of hazardous materials are observed.
The project owner shall ensure that all heavy vehicles and vehicles transporting hazardous materials shall use the following route: from SR 237, exit northbound at Zanker Road, from Zanker turn right to enter the LECEF site via Thomas Foon Chew Way, the primary site access road.

3.1.12 Visual Resources

The proposed modification will not substantially degrade the existing visual character or quality of the site, or its surrounding. The maximum height of the vanadium energy storage system will be 20 feet. This will not exceed the Urban Design Policy 10 of the General Plan, the building height limitation of 50 feet or the structural height limitation of 100 feet. The proposed modification will not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Therefore, the proposed modification will not have a significant impact to visual resources.

3.1.13 Waste Management

The proposed changes will not change or affect waste management practices or the types or quantities of waste generated by the construction or operation of the project. All waste generated during construction will comply with the facility's existing Waste Management Plan.

3.1.14 Worker Safety and Fire Protection

The proposed changes will not modify or increase impacts 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. All workers will undergo proper training consistent with the Phase 2 CEC license requirements.

The vanadium flow batteries generate a small amount of hydrogen gas that is continuously purged out of the package by nitrogen gas in order to avoid hydrogen accumulation inside the battery package. The amount of hydrogen is not sufficient to cause worker safety or fire protection issues. In addition, the vanadium electrolyte solution is not flammable. The main components of the cell stacks are UL-certified (UL94 incombustibility) or equivalent. As a result, the possibility of fire is extremely low. Devices and cables are incombustible. A fire alarm will be installed in the battery area and the battery will be shut down in the event it is activated. The Flow battery system will stop operation after receiving an emergency stop signal or detection of a ground fault.

Lithium-Ion batteries are made with non-toxic, non-hazardous materials. The battery is supplied with secondary containment and fire suppression, which will automatically activate in the event of an emergency. Further, each lithium-ion cell is monitored and can be shut down individually to prevent a runaway thermal condition.

3.2 LORS

The proposed modification will not impact the Project's ability to comply with applicable laws, ordinances, regulations, and standards ("LORS").

SECTION 4.0

Potential Effects on the Public

The proposed modification will not adversely affect the public. The modification will occur entirely onsite, and will not negatively impact air quality or public health. Therefore, there are no significant adverse effects on property owners that will result from the proposed modification.

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 is submitted under separate cover with this Petition. The list is 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.