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CALIFORNIA ENERGY COMMISSION

DATE: **June 16, 2021**

TO: Interested Parties

FROM: Joseph Douglas, Compliance Project Manager

SUBJECT: **El Segundo Energy Center (ESEC) (00-AFC-14C)**
Staff Analysis of Petition to Amend for Turbine Uprate Activities

On March 16, 2021, El Segundo Energy Center, LLC, filed a post certification petition with the California Energy Commission (CEC) for the El Segundo Energy Center (ESEC) to uprate Units 5 and 7 gas turbines.

The ESEC is a 560-megawatt (MW), natural gas-fired, combined-cycle electric generating facility located at 301 Vista Del Mar Blvd., El Segundo. The project was certified by the CEC on February 5, 2005 and began operation on August 1, 2013.

CEC staff has reviewed the petition pursuant to Title 20, California Code of Regulations, section 1769 (Post Certification Amendments and Changes) and has concluded that the modifications to the Air Quality Conditions of Certification would not result in a significant impact on the environment, or cause the project to not comply with applicable laws, ordinances, regulations, and standards. Staff intends to recommend approval of the petition at the **June 25, 2021** Business Meeting of the CEC.

The CEC's webpage for this facility, https://ww2.energy.ca.gov/sitingcases/elsegundo/, has a link to the petition and the staff analysis on the right side of the webpage in the box labeled "Compliance Proceeding." Click on the "Documents for this Proceeding (Docket Log)" option. If approved, the CEC's Order approving this petition will also be available from the same webpage.

This letter has been mailed to the CEC's list of interested parties and property owners of parcels within 1,000 feet of the facility site. It has also been emailed to the Siting and El Segundo Energy Center listserv. The listserv is an automated CEC email system by which information about this facility is emailed to parties who have subscribed. To subscribe, go to the CEC's webpage for this facility, cited above, scroll down the right side of the project's webpage to the box labeled "Subscribe," and provide the requested contact information.

Any person may comment on the Staff Analysis. Those who wish to comment on the analysis are asked to submit their comments by **June 23, 2021**. To use the CEC's electronic commenting feature, go to the CEC's webpage for this facility, cited above, click on the "Submit e-Comment" link, and follow the instructions in the on-line form. Be

sure to include the facility name in your comments. Once submitted, the CEC Docket Unit reviews and approves your comments, and you will receive an email with a link to them.

Written comments may also be mailed or hand-delivered to:

California Energy Commission
Docket Unit, MS-4
Docket No. **[00-AFC-14C]**
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with and approved by the Docket Unit will be added to the facility Docket Log and become publicly accessible on the CEC's webpage for the facility.

If you have questions about this notice, please contact **Joseph Douglas**, Compliance Project Manager, at (916) **956**-**9527**, or via email at Joseph.Douglas@energy.ca.gov.

For information on participating in the CEC's review of the petition, call the Public Advisor, at (916) 654-4489 or (800) 822-6228 (toll-free in California) or send your email to.

News media inquiries should be directed to the CEC Media Office at (916) 654-4989, or by email to mediaoffice@energy.ca.gov.

Mail List: 7152
Listserv: El Segundo Energy Center

EL SEGUNDO ENERGY CENTER (00-AFC-14C)
Petition to Amend Commission Decision
EXECUTIVE SUMMARY
Joseph Douglas

INTRODUCTION

On March 16, 2021, El Segundo Energy Center, LLC, filed a post certification petition with the California Energy Commission (CEC) for the El Segundo Energy Center (ESEC) to uprate Units 5 and 7 gas turbines and modify Air Quality Condition of Certification AQ-11 in the Final Commission Decision. Staff has completed its review of all materials received.

The purpose of the CEC's review process is to assess whether the proposed amendment would have a significant impact on the environment or cause the project to not comply with applicable laws, ordinances, regulations, and standards (Cal. Code Regs., tit. 20, § 1769).

PROJECT LOCATION AND DESCRIPTION

The ESEC is a 560-megawatt (MW), natural gas-fired, combined-cycle electric generating facility located at 301 Vista Del Mar Blvd., El Segundo. The project was certified by the CEC on February 5, 2005 and began operation on August 1, 2013.

DESCRIPTION OF PROPOSED MODIFICATIONS

The modifications proposed in this analysis of the petition entail the following:

- Uprate the gas turbine Units 5 and 7. The fuel input on an hourly basis would increase, resulting in an increase in output from the respective gas turbines. The maximum output of the facility would increase from 573.4 MW to 580.4 MW, which would enable the facility to achieve the nominal net output of 560 MW.

- CEC staff proposes to incorporate the revisions in the South Coast Air Quality Management District (SCAQMD) permit in the Conditions of Certification **AQ-5**, **AQ-7**, **AQ-16**, **AQ-17**, **AQ-20**, and **AQ-32**, including the addition of two new Conditions of Certification **AQ-41**, and **AQ-42** proposed by SCAQMD. Staff also proposes to update Condition of Certification **AQ-37**, to be consistent with current SCAQMD permit condition F2.1.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The primary need for this amendment is to increase the allowable heat rate to be more representative of "maximum" heat input rating of the equipment. The turbines were described in former permit actions using a nominal heat rate rather than the maximum rate. ESEC is currently dispatched to serve peak power demand and needs to be permitted to operate at the maximum possible load to service that demand.

STAFF'S ASSESSMENT OF THE PROPOSED AMENDMENT

CEC technical staff reviewed the petition for potential environmental effects and consistency with applicable LORS. A summary of staff's conclusions reached in each technical area are summarized in **Executive Summary Table 1**.

For **Air Quality**, staff has proposed new and revised conditions of certification to ensure consistency with South Coast Air Quality Management District permit conditions. All proposed changes to conditions of certification would conform with the applicable LORS related to air quality and would not result in significant impacts to ambient air quality or public health. There would be no increase in greenhouse gas emissions. The details of the proposed changes to conditions of certification can be found under the **Air Quality** section in this staff analysis.

For the technical area of **Biological Resources** staff has concluded that the proposed changes would not result in a significant impact on the environment or cause the project to not comply with applicable LORS. The proposed modifications to air quality conditions of certification would not require physical construction or ground disturbance and would not result in any additional impacts from annual emissions. The annual emissions and associated impacts would continue to be fully mitigated through the use of existing RECLAIM Trading Credits.

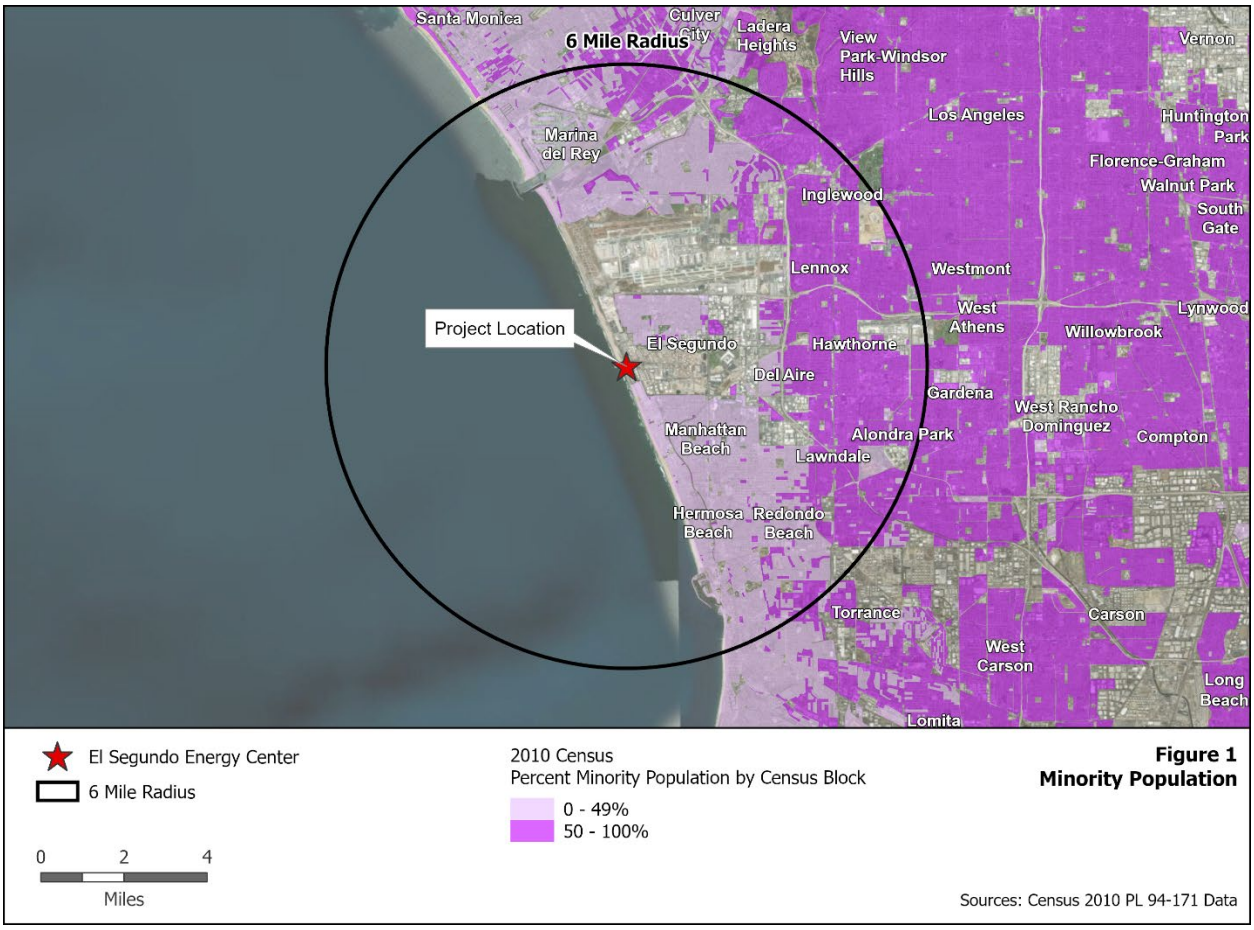
Executive Summary Table 1
Summary of Impacts to Each Technical Area

Technical Areas Reviewed	Technical Area Not Affected	CEQA			Conforms with applicable LORS	Revised or New Conditions of Certification requested or recommended
		Potentially significant impact	Less than significant impact with mitigation	Less than significant impact		
Air Quality				X	X	X
Biological Resources				X	X	
Cultural Resources	X					
Facility Design	X					
Geological and Paleontological Resources	X					
Hazardous Materials Management	X					
Land Use	X					
Noise and Vibration	X					
Paleontological Resources	X					
Public Health	X					
Socioeconomics	X					
Soil and Water Resources	X					
Traffic and Transportation	X					
Transmission Line Safety & Nuisance	X					
Transmission System Engineering	X					
Visual Resources	X					
Waste Management	X					
Worker Safety and Fire Protection	X					

ENVIRONMENTAL JUSTICE

Environmental Justice – Figure 1 shows 2010 census blocks in the six-mile radius of the ESEC with a minority population greater than or equal to 50 percent. The population in these census blocks represents an environmental justice (EJ) population based on race and ethnicity as defined in the United States Environmental Protection Agency's *Guidance on Considering Environmental Justice During the Development of*

Regulatory Actions. Staff conservatively obtains demographic data within a six-mile radius around a project site based on the parameters for dispersion modeling used in staff's air quality analysis. Air quality impacts are generally the type of project impacts that extend the furthest from a project site. Beyond a six-mile radius, air emissions have either settled out of the air column or mixed with surrounding air to the extent the potential impacts are less than significant. The area of potential impacts would not extend this far from the project site for most other technical areas included in staff's EJ analysis.



Based on California Department of Education data in the **Environmental Justice – Table 1**, staff concluded that the percentage of those living in the Centinela Valley Union, Inglewood, and Los Angeles Unified school districts (in a six-mile radius of the project site) and enrolled in the free or reduced price meal program is larger than those in the reference geography, and thus are considered an EJ population based on low income as defined in *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*. **Environmental Justice – Figure 2** shows where the boundaries of the school district are in relation to the six-mile radius around the ESEC site.

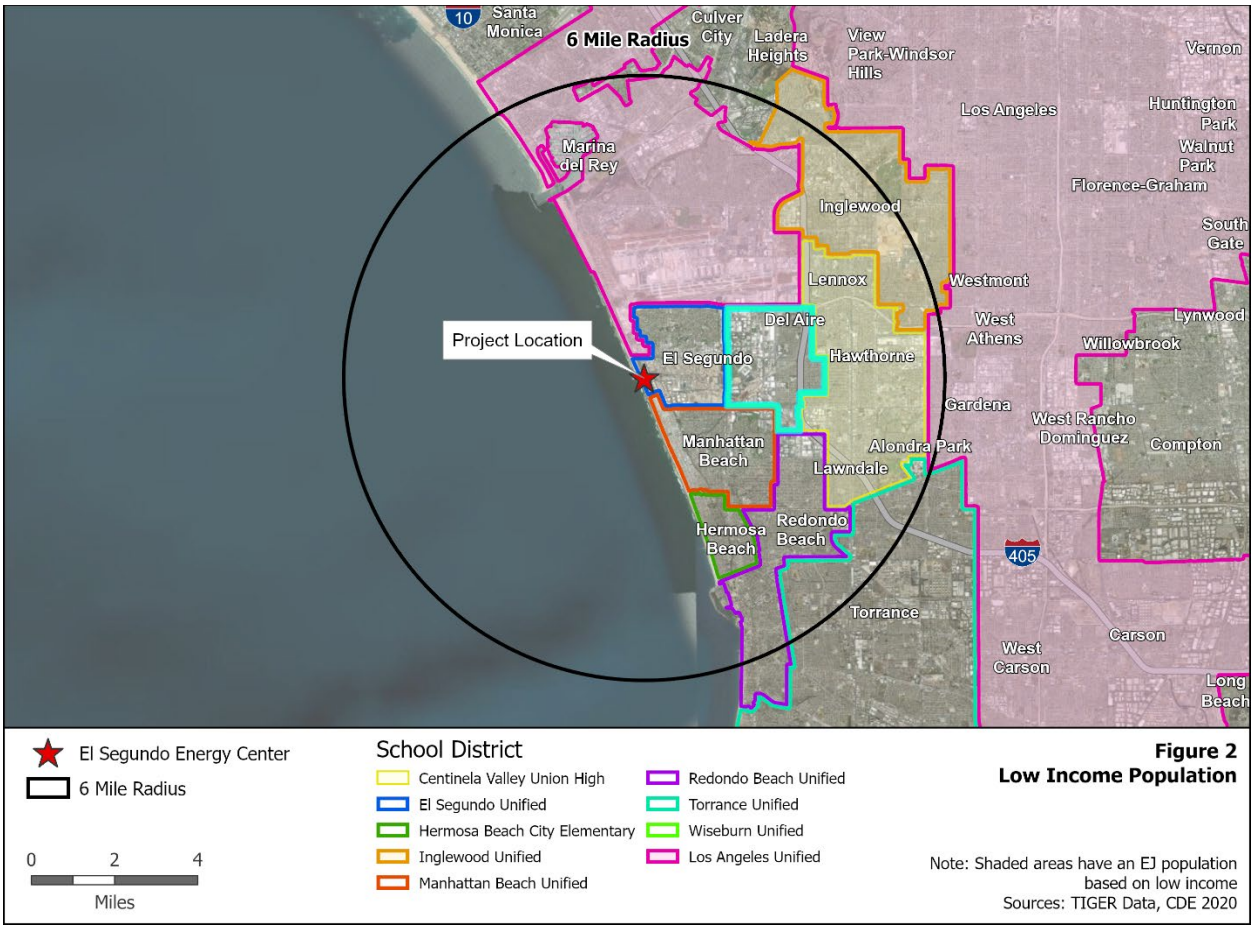


Figure 2
Low Income Population

Note: Shaded areas have an EJ population based on low income
Sources: TIGER Data, CDE 2020

SCHOOL DISTRICT IN SIX-MILE RADIUS	Enrollment Used for Meals	Free or Reduced Price Meals	
Centinela Valley Union High	7,584	5,262	69.4%
El Segundo Unified	3,502	510	14.6%
Hermosa Beach City Elementary	1,351	69	5.1%
Inglewood Unified	11,026	9,187	83.3%
Los Angeles Unified	596,937	479,085	80.3%
Manhattan Beach Unified	6,524	304	4.7%
Redondo Beach Unified	10,123	1,514	15.0%
Torrance Unified	23,100	6,525	28.2%
Wiseburn Unified	4,612	1,753	38.0%
REFERENCE GEOGRAPHY			
Los Angeles County	1,436,605	989,954	68.9%
Source: CDE 2020. California Department of Education, DataQuest, Free or Reduced Price Meals, District level data for the year 2019-2020, <http://dq.cde.ca.gov/dataquest/>.			

The following technical areas (if affected) consider impacts to EJ populations: Air Quality, Cultural Resources (indigenous people), Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, and Worker Safety and Fire Protection.

ENVIRONMENTAL JUSTICE CONCLUSIONS

For the one technical area affected by the proposed project changes that considers impacts to EJ populations – Air Quality – staff concludes that impacts would be less than significant, and thus would be less than significant on the EJ population represented in Environmental Justice – Figure 1, Figure 2, and Table 1.

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that the following required findings mandated by Title 20, section 1769(a)(3) of the California Code of Regulations can be made and will recommend approval of the petition to the CEC:

(i) there is no possibility that the change may have a significant effect on the environment; and

(ii) the change would not cause the project to fail to comply with any applicable laws, ordinances, regulations, or standards.

EL SEGUNDO ENERGY CENTER (00-AFC-14C)

Petition to Amend – Uprate Project

AIR QUALITY, PUBLIC HEALTH, AND GREENHOUSE GASES

Wenjun Qian, Ph.D., P.E.

INTRODUCTION AND SUMMARY

On March 16, 2021, El Segundo Energy Center, LLC, filed a post certification petition with the California Energy Commission (CEC) for the El Segundo Energy Center (ESEC). The petition requests to uprate the gas turbine Units 5 and 7. The fuel input on an hourly basis would increase, resulting in an increase in output of the respective gas turbines. The maximum output of the facility would increase from 573.4 megawatts (MW) to 580.4 MW, which would enable the facility to achieve the nominal net output of 560 MW.

In February 2005, the CEC approved the original El Segundo Power Redevelopment Project (ESPRP) to be a 630 megawatts (MW) project with GE Frame 7FA turbines (CEC 2005). However, construction of the original El Segundo Power Redevelopment Project did not commence following the permit approvals. In June 2010, the CEC approved an amendment to replace the approved technology with Siemens rapid response combined cycle (R2C2) design (CEC 2010b). The facility began operation on August 1, 2013.

The two 1x1 Combined Cycle Gas Turbines (CCGTs) were identified as Units 5 and 6, and Units 7 and 8, respectively, with each power block including a Siemens gas turbine and a heat recovery steam generator (HRSG). Selective catalytic reduction (SCR) systems and oxidation catalysts are utilized for control of nitrogen oxides (NOx) and carbon monoxide (CO)/volatile organic compounds (VOC) emissions, respectively.

Since the project was approved, the CEC has approved multiple amendments including: 1) change of the project name from El Segundo Power Redevelopment Project to El Segundo Energy Center Project and modification of the range of ammonia injection rates and elimination a venturi scrubber (CEC 2012); 2) modification of the Air Quality conditions of certification to define/clarify turbine startup/restarts and other administration changes (CEC 2015); and 3) installation of enhanced hardware to the combustor and turbine sections of gas turbine Units 5 and 7 and optimization of the control logic (CEC 2017).

The current petition requests to increase the input heat rate from 2,096 million British thermal units per hour (MMBtu/hr) to 2,250 MMBtu/hr, and the electrical output from 219 MW to 222.5 MW for each of the two CCGTs in the Equipment Description in the South Coast Air Quality Management District (SCAQMD) Permit to Operate (PTO). The PTA also proposes to modify air quality Condition of Certification **AQ-11** (SCAQMD condition A63.2) in the Final Commission Decision to allow for higher monthly VOC emissions (from 4,930 pounds per month [lbs/month] to 4,997 lbs/month) and to include a fuel use limit of 51,162 MMBtu per day.

The South Coast Air Quality Management District (SCAQMD) completed the Statement and Basis (SCAQMD 2021a) and provided the draft Title V De Minimis Permit Revision to United States Environmental Protection Agency (U.S. EPA) on June 4, 2021 for their expedited review. The U.S. EPA completed its review on June 9, 2021 and did not have comments at this time. The SCAQMD issued a final Title V De Minimis Permit Revision on June 11, 2021 (SCAQMD 2021b). The 60-day period for the public to petition the U.S. EPA to object to the permit begins the day after the U.S. EPA's 45-day review period.

Staff reviewed the petition and the associated SCAQMD analysis and permit. The SCAQMD analysis includes emissions calculations different from those provided by ESEC. As a result, the SCAQMD permit includes permit condition revisions different from the ESEC proposed revisions. CEC staff proposes to incorporate the revisions in the SCAQMD permit in the Conditions of Certification **AQ-5**, **AQ-7**, **AQ-16**, **AQ-17**, **AQ-20**, and **AQ-32**, including the addition of two new Conditions of Certification **AQ-41**, and **AQ-42** proposed by SCAQMD. Staff also proposes to update the annual emission limit of particulate matter with an aerodynamic diameter of less than 2.5 microns (PM2.5) to 70 tons per year in Condition of Certification **AQ-37**, to be consistent with current SCAQMD permit condition F2.1.

The modified project would comply with all laws, ordinances, regulations, and standards (LORS). Air quality and public health impacts from the evaluated changes would be less than significant, including impacts to environmental justice populations. There would be no increase in annual greenhouse gases emissions since the annual fuel use would not change. Therefore, there are no air quality, public health, or greenhouse gas environmental justice issues related to the evaluated facility modifications and no minority or low-income populations would be significantly or adversely impacted.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE

CEC staff reviewed the petition and the SCAQMD evaluation for consistency with all federal, state, and SCAQMD LORS. **Air Quality Table 1** includes a summary of the air quality LORS relevant to the proposed changes. **Air Quality Table 1** in this analysis is not intended to be comprehensive of all LORS applicable to the facility. The conditions of certification in the Final Commission Decision and amendments thereafter ensure that the facility would remain in compliance with all LORS.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description	Compliance
Federal	**U.S. Environmental Protection Agency**	
40 CFR 60, Subpart KKKK	This subpart establishes emission standards and compliance schedules for	Continued compliance with the NOx and SO_2 limits is expected with the use

Applicable LORS	Description	Compliance
(Standards of Performance for Stationary Combustion Turbines)	the control of emissions from stationary combustion turbines with a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the higher heating value of the fuel, that commenced construction, modification, or reconstruction after February 18, 2005. The pollutants regulated by this subpart are NOx and SO_2.	of SCR to control NOx emissions and PUC-quality pipeline natural gas that complies with the sulfur limits of SCAQMD Rule 431.1. The units also use Continuous Emission Monitoring Systems (CEMS) for NOx and CO.
40 CFR Part 63 Subpart YYYY (National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines)	This regulation applies to gas turbines located at major sources of hazardous air pollutants (HAP) emissions. A major source is defined as a facility with emissions of 10 tons per year or more of a single HAP or 25 tons per year or more of a combination of HAPs.	The largest single HAP emission from the facility is formaldehyde which emits from the turbines at a potential to emit of 8 tons per year. The total combined HAPs from the facility is less than 13 tons per year which is well below the 25 tons per year threshold. Therefore, the facility is not a major source, and the requirements of this regulation do not apply.
40 CFR Part 64 (Compliance Assurance Monitoring)	The Compliance Assurance Monitoring (CAM) regulation applies to emission units at major stationary sources, required to obtain a Title V Permit, which use control equipment to achieve a specified emission limit.	The facility uses CEMS to monitor, report and record both NOx and CO emissions continuously downstream of the control equipment. VOC emissions are also subject to an emission limit and are partially controlled by the oxidation catalyst. VOC emission limit is verified through a triennial source test and the oxidation catalyst is continuously monitored by the CO CEMS, which can be used as a surrogate monitor for the reliable operation of the oxidation catalyst for VOC control. Continued compliance is expected.
40 CFR Part 72 (Acid Rain Provisions)	The Acid Rain Program requires the monitoring and reporting of emissions of acidic compounds and their precursors from combustion equipment owned by a utility. Under the Acid Rain Provisions, SO_2 emissions from the unit are required to be offset with SO_2 allowances. SO_2 allowances are, however, not required in any year when the unit emits less than 1,000 lbs of SO_2.	In order to determine the amount of SO_2 emitted from the turbine, the SO_2 emissions are required to be monitored through the use of fuel gas meters and gas constituent analyses, or, if fired with pipeline quality natural gas, as in the case of this facility, a default emission factor of 0.0006 lbs/MMBtu is allowed. SO_2 mass emissions are to be recorded every hour. NOx and O_2 must be monitored with CEMS in accordance with the specifications of Part 75. Under this program, NOx and SOx emissions will be reported directly to the U.S. EPA. Continued compliance is expected.

Applicable LORS	Description	Compliance
Local	**South Coast Air Quality Management District**	
Regulation II – Permits Rule 212 (Standards for Approving Permits and Issuing Public Notice	This rule outlines specific criteria for approving permits and issuing public notice.	The facility is not located within 1,000 feet of the outer boundary of a school. The daily emissions increase would be less than the Rule 212(g) thresholds. The proposed changes would not result in exposure to Maximum Individual Cancer Risk (MICR) greater than or equal to the applicable thresholds in I(3)(A). Therefore, the proposed changes would not trigger Rule 212 public noticing requirements.
Regulation II – Permits Rule 218 (Continuous Emissions Monitoring)	This rule applies to all sources that require CEMS as specified in the regulations or permit conditions except for cases specified in paragraph (b)(1) of this rule.	The turbines have CEMS for CO and NOx. Because NOx CEMS was installed to comply with the RECLAIM program, NOx CEMS is not subject to this rule. Condition of Certification **AQ-14** (SCAQMD permit condition D82.4) requires the facility to operate CO CEMS to demonstrate compliance with emission limit of 2.0 ppmvd at 15 percent O_2. Continued compliance is expected.
Regulation IV – Prohibitions Rule 401 (Visible Emissions)	This rule prohibits visible emissions from operating equipment exceeding Ringelmann No. 1 for a period aggregating more than 3 minutes in any hour.	The CCGTs combust natural gas and will continue to combust natural gas following implementation of the proposed changes. Visible emissions are not expected from a well-maintained and properly operated equipment. Continued compliance is expected.
Regulation IV – Prohibitions Rule 402 (Nuisance)	This rule prohibits the discharge of air contaminants or materials which may cause nuisance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.	The CCGTs combust natural gas and will continue to combust natural gas following implementation of the proposed changes. Nuisance emissions are not expected with the proper operation of the equipment. Continued compliance is expected.
Regulation IV – Prohibitions Rule 407 (Liquid and Gaseous Air Contaminants)	This rule limits CO emissions to 2,000 parts per million by volume, dry basis (ppmvd) and SO_2 emissions to 500 ppmvd, averaged over 15 minutes.	The CO emissions will continue to be controlled by the CO catalyst to meet the limit of 2.0 ppmvd CO at 15 percent O_2, 1-hour average, which is well below the 2,000 ppmvd limit. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The facility will continue to be required to comply with

Applicable LORS	Description	Compliance
		Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.
Regulation IV – Prohibitions Rule 409 (Combustion Contaminants)	This rule restricts the discharge of contaminants from the combustion of fuel to 0.23 grams per cubic meter (0.1 grain per cubic foot) of gas, calculated to 12 percent CO_2, averaged over 15 minutes.	The CCGTs combust PUC-quality pipeline natural gas, which will ensure continued compliance with this rule. In addition, the facility is required to test for PM emissions once every three years. Results of the last source test show compliance with the rule.
Regulation IV – Prohibitions Rule 431.1 (Sulfur Content of Gaseous Fuels)	This rule limits the sulfur compounds in the natural gas to 16 ppmv, calculated as H_2S.	The CCGTs combust PUC-quality pipeline natural gas with a sulfur content of less than 0.25 grain (gr) per 100 standard cubic feet (scf), which is equivalent to a sulfur concentration of about 4 ppmv. Continued compliance with this rule is expected.
Regulation IV – Prohibitions Rule 475 (Electric Power Generating Equipment)	This rule applies to power generating equipment rated at greater than 10 MW and installed after May 7, 1976. It limits the PM10 mass emissions to 11 lbs/hr and a PM10 concentration limit of 0.01 gr/scf, calculated at 3 percent O_2 on a dry basis averaged over at least 15 minutes.	Prior source test results demonstrate that neither CCGT exceeds the rule limits. The proposed modifications are not expected to change the PM10 emission rate from the equipment; therefore, continued compliance with this rule is expected.
Regulation XI – Source-Specific Standards Rule 1135 (Emissions of Oxides of Nitrogen from Electricity Generating Facilities)	The purpose of this rule is to reduce emissions of NOx from electric generating units at electricity generating facilities.	On and after January 1, 2024, or when required by a permit to operate issued to effectuate the requirements, this rule limits NOx emissions to 2 ppmv and ammonia emissions to 5 ppmv, both at 15 percent O_2, for combined cycle gas turbines and associated duct burners. The CCGTs already comply with the NOx and ammonia slip limits pursuant to current permit conditions. Continued compliance is expected. The existing permit includes a limitation for the duration of startup and shutdown, and SCAQMD proposes additional limits to the number of startups and shutdowns as part of the modification. These additional limits are incorporated in Conditions of Certification **AQ-16**, **AQ-17**, and **AQ-32**. Continued compliance is also expected for other provisions of the rule.
Regulation XIII – New Source Review (NSR) Rule 1303 (Requirements)	The purpose of this regulation is to achieve no net increases of nonattainment air contaminants or their precursors from new or modified permitted sources. The requirements of	<u>Best Available Control Technology (BACT):</u> SCAQMD's analysis shows that the daily emissions for PM10 and ammonia would increase more than 1 lb/day.

Applicable LORS	Description	Compliance
	this regulation are applicable to pollutants not covered under RECLAIM requirements.	Therefore, BACT is triggered for PM10 and ammonia. The facility currently complies with the BACT requirements for PM10 using pipeline quality natural gas fuel and ammonia BACT of 5.0 ppmv at 15 percent O_2 averaged over 1-hour. Continued compliance is expected. Modeling: SCAQMD's analysis shows that modeling is required for PM10. SCAQMD determines that ESEC's modeling analysis demonstrates compliance with this rule. Offsets: SCAQMD's analysis shows that there would be no increase in 30-day average emissions for CO, VOC, PM10 or SOx. Therefore, offsets are not required per Rule 1303(b)(2).
Regulation XIII – New Source Review (NSR) Rule 1325 (Federal PM2.5 New Source Review Program)	This rule applies to major polluting facilities, major modifications to a major polluting facility, or any modifications to an existing facility that would constitute a major polluting facility in and of itself. A major polluting facility is defined as a facility located in a federal non-attainment area, which has actual emissions, or a potential to emit of greater than 70 tons per year (tpy) of PM2.5 or its precursors.	The existing facility is a major source (potential to emit [PTE] of 96 tons per year for NOx which is a precursor), but SCAQMD determined that the proposed changes will not result in an emission increase that constitutes a major modification. Therefore, the proposed modification is not subject to the requirements of this rule.
Regulation XIV – Toxics and Other Non-Criteria Pollutants Rule 1401 (New Source Review of Toxic Air Contaminants)	This rule specifies limits for maximum individual cancer risk (MICR), cancer burden (CB), and non-cancer acute hazard index (HIA) and chronic hazard index (HIC) for new permit units, relocations, or modifications to existing facilities emitting toxic air contaminants (TAC).	SCAQMD determined that there would be no increase in annual emissions of TACs. Therefore, there would be no increase that would constitute another determination of MICR, CB, and HIC. There would be an increase in hourly TAC emissions, which triggers a reassessment of HIA. SCAQMD determined that the HIA would be below the threshold of 1.0. Therefore, the modified project would comply with Rule 1401.
Regulation XVII Prevention of Significant Deterioration (PSD)	The purpose of this regulation is to establish preconstruction review requirements for stationary sources to ensure that air quality in clean air areas does not significantly deteriorate while maintaining a margin for future industrial growth.	The CO PTE from ESEC exceed 100 tpy; therefore, ESEC is a PSD facility. However, because the proposed changes do not result in emission increases that meet the definition threshold, the proposed changes do not constitute a major modification in and of itself, and the requirements of PSD do not apply.

Applicable LORS	Description	Compliance
Regulation XVII Prevention of Significant Deterioration (PSD) Rule 1714 (PSD for Greenhouse Gases)	As of January 2, 2011 Greenhouse gases (GHGs) are a regulated New Source Review pollutant under the PSD permitting program when they are emitted by new sources or modifications to existing sources at amounts equal to or greater than the applicability thresholds of the GHG tailoring rule.	According to a Supreme Court decision a project would not trigger GHG PSD review unless other criteria pollutants triggers a PSD review. As explained above, the proposed changes do not trigger PSD review of criteria pollutants. Therefore, the proposed changes do not trigger the GHG PSD review requirement of this rule.
Regulation XX RECLAIM Rule 2005 (New Source Review for RECLAIM)	This rule establishes the NSR requirements for new or modified facilities subject to the RECLAIM program.	BACT: SCAQMD's analysis shows that the hourly NOx emissions would increase, which will trigger BACT for NOx. Each of the CCGTs is permitted with a NOx limit of 2.0 ppm at 15 percent O_2, which is the current BACT standard for CCGTs. Therefore, the CCGTs meet NOx BACT requirement. Modeling: The AQIA provided in the PTA shows that the proposed changes would not cause a significant increase in air quality concentration for NO_2 as specified in Rule 2005. ESEC's modeling analysis demonstrates compliance with this rule. Offsets: SCAQMD's analysis shows that there would be no increase in annual NOx emissions. However, SCAQMD added a new condition (C1.11) to clarify and limit the annual fuel use to no more than what was previously evaluated.
Regulation XXX – Title V Permits	This regulation defines permit application and permit issuance procedures, as well as compliance requirements associated with the federal Operating Permit Program.	The proposed changes will not increase maximum daily emissions above the Title V De Minimis Emission Threshold for any pollutant. The proposed changes will not require an increase in allocation of RECLAIM RTCs. Therefore, SCAQMD determines that the proposed changes constitute a de minimis permit revision. EPA finished review of the proposed permit on June 9, 2021. SCAQMD issued the final permit on June 11, 2021.

ANALYSIS

CRITERIA POLLUTANT EMISSIONS ANALYSIS

ESEC is proposing to increase the maximum hourly heat input rating for each CCGTs from 2,096 MMBtu/hr to 2,250 MMBtu/hr. The increase in hourly heat input rate would result in an increase in the peak hourly NOx, SOx, CO, VOC, and PM10 emissions (in lbs/hr) during normal operations. However, the peak hourly emissions (in lbs/hr) are not limited by any condition of certification. But the NOx, CO, and VOC emission concentrations are each limited to 2.0 ppmv at 15 percent O_2 in Conditions of Certification **AQ-24**, **AQ-25**, and **AQ-33**. The PM10 and SOx emission factors are limited in Condition of Certification **AQ-11**. These limits will not change as a result of the proposed increase in maximum hourly heat input rating. **Air Quality Table 2** shows the comparison of the peak normal operating hourly emissions of each CCGT before and after the proposed modifications.

Emissions during startups and shutdowns will not change with the proposed increase in heat input during normal operation. However, SCAQMD corrected a typographical error in permit condition A433.1. The startup emissions were originally evaluated as 56 lbs/hr for each turbine. Permit condition A433.1 included an incorrect limit of 112 lbs/hr for each turbine, which is now corrected to 56 lbs/hr. CEC staff proposes to make the same correction in Condition of Certification **AQ-20** accordingly.

SCAQMD also added a requirement of source testing for ammonia, SOx, VOC, PM10, and PM2.5 within 180 days of the issuance of the revised permit in conditions D29.8 and D29.9. CEC staff proposes to incorporate the source testing requirement in Conditions of Certification **AQ-5** and **AQ-7** accordingly.

Air Quality Table 2
Summary of Peak Normal Operating Hourly Emissions (per CCGT)

Pollutant	Pre-Modification Emissions (lbs/hr)	Post-Modification Emissions (lbs/hr)	Change in Emissions (lbs/hr)
NOx	15.44	16.58	+1.14
CO	9.40	10.09	+0.69
VOC	5.37	5.77	+0.40
PM10	9.49	10.19	+0.70
SOx	1.47	1.58	+0.11

Source: SCAQMD 2021a

The maximum daily emissions would also increase with the proposed changes. However, maximum daily emissions are not specifically limited by conditions of certification. To minimize the emission increase, ESEC requested to add a daily fuel use limit of 51,162 MMBtu in Condition of Certification **AQ-11** (SCAQMD permit condition A63.2). However, SCAQMD performed a different calculation based on fuel throughput of 51,130 MMBtu/day and 2 startups and 2 shutdowns, which were also assumed in the

original application. **Air Quality Table 3** shows the comparison of the maximum daily emissions of each CCGT before and after the proposed modifications, based on the SCAQMD calculation.

SCAQMD added a new condition (C1.10) to limit the daily fuel throughput to 51,130 MMBtu/day. Staff proposes to incorporate the new condition as Condition of Certification **AQ-41**. SCAQMD also added the limit of 2 startups per day in permit conditions A99.7, A99.8, and A99.9 to be consistent with the original application. Staff proposes to incorporate the limit of 2 startups per day in Conditions of Certification **AQ-16**, **AQ-17**, and **AQ-32**.

Air Quality Table 3
Summary of Maximum Daily Emissions (per CCGT)

Pollutant	Pre-Modification Emissions (lbs/day)	Post-Modification Emissions (lbs/day)	Change in Emissions (lbs/day)
NOx	491.83	493.38	+1.55
CO	1,465.18	1,466.13	+0.95
VOC	161.50	162.04	+0.54
PM10	227.88	231.62	+3.74
SOx	35.23	35.81	+0.58

Source: SCAQMD 2021a

Monthly NOx and CO emissions are not limited by conditions of certification. Condition of Certification **AQ-11** (SCAQMD permit condition A63.2) limits monthly VOC, PM10, and SOx emissions through emission factors and fuel use. Therefore, the monthly fuel usage is indirectly limited through Condition of Certification **AQ-11** (SCAQMD permit condition A63.2). ESEC proposes to keep this limit even though the turbines will be permitted at higher hourly heat input. Likewise, the number of startups and shutdowns will be limited by two per day for the month as originally evaluated. The PM10 emissions limit in Condition of Certification **AQ-11** (SCAQMD permit condition A63.2) will limit total monthly fuel usage for the turbines to approximately 1,488 million standard cubic feet (mmscf) per month.

NOx, CO, and VOC emissions are based on concentration limits, number of startups and shutdowns, and total amount of fuel used. Since these concentration limits, number of startups and shutdowns, and total monthly fuel usage will not change, there are no expected changes in monthly emissions of NOx, CO, and VOC. Likewise, monthly emissions of PM10 and SOx would not change since they are based on fuel type emission factors and fuel usage.

However, ESEC conservatively estimated that monthly NOx, CO, and VOC emissions would increase with an updated higher heating value (HHV) of 1,050 Btu/scf, which is currently used by SCAQMD. A HHV of 1,020 Btu/scf was used in SCAQMD's previous engineering evaluation for the project. ESEC proposed to increase the monthly VOC emissions limit in Condition of Certification **AQ-11** (SCAQMD permit condition A63.2). However, in the current Statement of Basis (SCAQMD 2021a), SCAQMD used the same

methodology (i.e., same concentration limits, same F-factor for natural gas, same monthly fuel use, etc.) for a more accurate comparison of the project's emissions before and after the proposed modifications. **Air Quality Table 4** shows the comparison of the monthly emissions of each CCGT before and after the proposed modifications, based on the SCAQMD calculation. The monthly emissions of each CCGT would not change after the proposed modifications. Likewise, the 30-day average daily emissions would not change after the proposed modifications since they are calculated based on the monthly emissions averaged over 30 days.

In permit condition A63.2, SCAQMD added a clarification that the limits in the condition apply to the emissions from a single turbine. Condition of Certification **AQ-11** already included such clarification; therefore, staff does not propose any changes to the condition.

The original application of the project estimated annual emissions based on a total of 5,456 hours of annual operation including 200 startups and 200 shutdowns. The petition assumes no increase in annual usage of the turbines. The annual fuel usage will remain the same, but it is not limited by any conditions of certification. SCAQMD added a new condition (C1.11) to limit the annual fuel usage to 11,124 mmscf per year, which was used as a basis for annual emissions calculation in the original evaluation. Staff proposes to incorporate the new condition as Condition of Certification **AQ-42**.

NOx, CO, and VOC emissions are based on concentration limits, number of startups and shutdowns, and total amount of fuel used. Since these limits will not change, there are no expected changes in annual emissions of NOx, CO, and VOC. Likewise, annual emissions of PM10 and SOx would not change since they are based on fuel type emission factors and annual fuel usage. As mentioned above, ESEC conservatively estimated that annual NOx, CO, and VOC emissions would increase by using an updated HHV. However, SCAQMD used the same methodology (i.e., same concentration limits, same F-factor for natural gas, same annual fuel use, etc.) for a more accurate comparison of the project's emissions before and after the proposed modifications. **Air Quality Table 5** shows comparison of the annual emissions of each CCGT before and after the proposed modifications, based on the SCAQMD calculation. The annual emissions of each CCGT would not change after the proposed modifications.

Air Quality Table 4
Summary of Maximum Monthly Emissions (per CCGT)

Pollutant	Pre-Modification Emissions (lbs/month)	Post-Modification Emissions (lbs/month)	Change in Emissions (lbs/month)
NOx	15,029.64	15,029.64	0
CO	45,289.60	45,289.60	0
VOC	4,930.70	4,930.70	0
PM10 [a]	6,935.00	6,935.00	0
SOx	1,065.80	1,065.80	0

Source: SCAQMD 2021a
Note: [a] Facility is retaining the PM10 emission limit of 6,935 lbs/month as per Condition of Certification **AQ-11** (SCAQMD permit condition A63.2), therefore limiting total monthly fuel usage.

Air Quality Table 5
Summary of Maximum Annual Emissions (per CCGT)

Pollutant	Pre-Modification Emissions (lbs/yr)	Post-Modification Emissions (lbs/yr)	Change in Emissions (lbs/yr)
NOx	96,370.64	96,370.64	0
CO	175,246.40	175,246.40	0
VOC	32,558.72	32,558.72	0
PM10	51,832.00	51,832.00	0
SOx	7,965.76	7,965.76	0

Source: SCAQMD 2021a

The ambient air quality impacts due to the criteria pollutant emissions increases are discussed under **Air Quality Impacts Analysis (AQIA)** below.

TOXIC AIR CONTAMINANTS (TACs) EMISSIONS ANALYSIS

The proposed increase in hourly heat input rate would result in an increase in maximum hourly emissions of TACs. **Air Quality Table 6** shows comparison of the maximum hourly TAC emissions of each CCGT before and after the proposed modifications.

Air Quality Table 6
Summary of Maximum Hourly TAC Emissions (per CCGT)

TAC	CAS	Pre-Modification Emissions (lbs/hr)	Post-Modification Emissions (lbs/hr)	Change in Emissions (lbs/hr)
Benzene	71432	0.00665	0.00714	+4.90E-04
1,3-Butadiene	106990	8.76E-04	9.41E-04	+6.50E-05
Formaldehyde	50000	0.732	0.786	+0.054
Naphthalene	91203	0.00265	0.00285	+2.00E-04
PAHs (excluding Naphthalene)	1151	0.00183	0.00197	+1.40E-04
Acetaldehyde	75070	0.0814	0.0874	+6.00E-03
Acrolein	107028	0.00737	0.00791	+5.40E-04

Ammonia	7664417	14.27	15.31	+1.04
Ethylbenzene	100414	0.0651	0.0699	+4.80E-03
Propylene Oxide	75569	0.0591	0.0634	+4.30E-03
Toluene	108883	0.265	0.285	+0.020
Xylene	1330207	0.130	0.140	+0.010

Source: SCAQMD 2021a

SCAQMD determined that since annual TAC emissions are based on annual fuel usage, which will not change, the annual emissions of TACs will not change (SCAQMD 2021a). The health risks due to the hourly TAC emissions increases are discussed under **Health Risk Assessment (HRA)** below.

AIR QUALITY IMPACTS ANALYSIS (AQIA)

ESEC performs an AQIA according to requirements of SCAQMD rules. Per Rule 1303(b), an AQIA is required when a project results in an increase of any nonattainment pollutant emissions from a permit unit. Since the South Coast Air Basin (SCAB) is in attainment for CO and SO_2, no AQIA assessment is needed for these pollutants. For PM10 and PM2.5, SCAQMD accepted ESEC's modeling and determined the project will comply with the regulation.

ESEC is a NOx RECLAIM facility. SCAQMD Rule 2005 requires an AQIA when a project results in an increase in the maximum emissions for a RECLAIM pollutant. The proposed modifications will result in an increase of the maximum hourly NOx emissions, an AQIA assessment is required. ESEC provided a screening modeling assessment with AERSCREEN and compared the project impact with the Significant Change in Air Quality Concentration for NO_2 specified in Rule 2005, Appendix A. The screening modeling assessment shows that the proposed changes will not cause a significant increase in air quality concentration for NO_2 as specified in Rule 2005.

It should be noted that ESEC's screening modeling assessment evaluates impacts of emission increases during normal operations. However, the worst-case hourly impacts previously evaluated were from startup/shutdown hours (besides commissioning hours) for NOx and CO. In **Air Quality Table 7**, CEC staff compares the worst-case emissions modeled previously with the post-modification emissions to determine if a new AQIA is needed. The emissions rates are presented based on the averaging period of each criteria pollutant's ambient air quality standards (AAQS).

As shown in **Air Quality Table 7**, the worst-case hourly NOx emission rate of 91.1 lbs/hr per CCGT for the startup/shutdown hour (which includes one startup and one shutdown within the same hour) was analyzed for modeling purposes in the 2007 permit application package (ESPRP 2007). This is much higher than the NOx emission rate of 15.44 lbs/hr and 16.58 lbs/hr during normal operations before and after the proposed modifications. Similarly, the worst-case hourly CO emission rate of 823.3 lbs/hr per CCGT for the startup/shutdown hour was modeled in the 2007 permit application package. This is also

higher than the CO emission rate of 9.40 lbs/hr and 10.09 lbs/hr during normal operations before and after the proposed modifications.

The modeling results from the 2007 permit application package, which are reflected in the 2010 Revised Staff Analysis (CEC 2010a), show that the maximum impacts are well below the most stringent ambient air quality standards for NO_2 and CO. And ESEC does not expect a change to maximum allowable NOx and CO emissions during startup/shutdown hours. Therefore, the worst-case short-term NO_2 and CO impacts were analyzed previously, and the impacts would not change due to the proposed modifications. A new AQIA is not needed for short-term NO_2 and CO impacts. Similarly, the post-modification SO_2 and PM emissions would be lower than those modeled previously. Therefore, a new AQIA is not needed for the SO_2 or PM standards.

Air Quality Table 7
Summary of Emissions for AQIA

Pollutant	Averaging Period	Worst-case Emissions Modeled Previously (lbs/avg period)	Post-Modification Emissions (lbs/avg period)	Change in Emissions (lbs/avg period)	AQIA Needed?
NO_2	1-hr	91.1	91.1	0	No
	Annual	90,970	96,370.64	+5,400.64	Yes
CO	1-hr	823.3	823.27	0	No
	8-hr	6,586.2 [a]	1,317.56 [b]	-5,268.6	No
SO_2	1-hr	2.37	1.58	-0.79	No
	24-hr	56.88	35.81	-21.07	No
PM10/PM2.5	24-hr	240	231.62	-8.38	No
	Annual	51,946.80	51,832.00	-114.8	No

Sources: ESPRP 2007, SCAQMD 2021a, CEC staff analysis
Notes:
[a] The 2007 permit application package (ESPRP 2007) used the worst-case hourly CO emission rate of 823.3 lbs/hr for both the 1-hour and 8-hour CO impacts analysis. Therefore, the modeled 8-hour CO emission rate was 8 times of the hourly emission rates (i.e. 6,586.2 = 823.3 x 8).
[b] The PTA did not provide 8-hour CO emission rates. CEC staff conservatively calculated the worst-case 8-hour CO emission rates assuming 2 startups, 2 shutdowns, and 4 hours of normal operation for post-modification emissions.

However, **Air Quality Table 7** shows that the post-modification emissions for annual NOx would be higher than those previously modeled. Therefore, CEC staff believes that a new AQIA is needed for the annual NO_2 standard.

CEC staff performed a simplified AQIA for the post-modification annual NO_2 impacts. Since the ambient air quality impacts are proportional to emission rates, staff calculated the post-modification project impacts by prorating the pre-modification impacts with the ratio between the post- and pre-modification emissions shown in **Air Quality Table 7**. The pre-modification impacts are obtained from the 2010 Revised Staff Analysis (CEC 2010a). Staff also obtained the worst-case background data for the most recent three

years (2017-2019) for which data are available as of May 2021. Staff then computed the total post-modification impacts by adding the post-modification project impacts with background to compare with the limiting standard. **Air Quality Table 8** shows the results of staff's simplified AQIA. **Air Quality Table 8** shows that the annual NO_2 impacts would be below the limiting standard after the proposed modifications. Therefore, the air quality impacts of the project with proposed modifications would be less than significant.

Air Quality Table 8
Post-Modification AQIA Results

Pollutant and Averaging Period	Pre-Modification Impact ($\mu g/m^3$) [a]	Post-Modification Project Impact ($\mu g/m^3$) [b]	Background ($\mu g/m^3$) [c]	Total Post-Modification Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Percent of Standard
Annual NO_2	0.29	0.31	20.7	21.0	57	37%

Sources: CEC 2010a, ARB 2021, CEC staff analysis
Notes:
[a] The pre-modification impacts are from AIR QUALITY Table 5 Modeled Maximum Impacts for Units 5 and 7 For Post-Commissioning Operations in the 2010 Revised Staff Analysis (CEC 2010a).
[b] Staff calculated the post-modification project impacts by prorating the pre-modification impacts with the ratio between the post- and pre-modification emissions shown in **Air Quality Table 7**.
[c] These are the worst-case background data for the most recent three years (2017-2019) for which data are available on the ARB website as of May 2021 (ARB 2021) from the LAX monitoring station.

Health Risk Assessment (HRA)

SCAQMD Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden (CB), and non-cancer acute hazard index (HIA) and chronic hazard index (HIC) for new permit units, relocations, or modifications to existing facilities emitting toxic air contaminants (TAC). SCAQMD determined that there would be no increase in annual emissions of TACs. Therefore, there would be no increase that would constitute another determination of MICR, CB, and HIC. There would be an increase in hourly TAC emissions as shown in **Air Quality Table 6**, which triggers a reassessment of HIA. Based on the maximum hourly emissions and Tier 2 Screening Risk Assessment, SCAQMD determined that the HIA would be below the threshold of 1.0 for the highest target organ system. Therefore, the modified project would comply with Rule 1401. The health risks of the project with proposed modifications would be less than significant.

Greenhouse Gas Emissions

The greenhouse gas (GHG) emissions are proportional to fuel use and analyzed on annual basis. Since the annual fuel use would not change, the annual GHG emissions would not change as a result of the proposed modifications.

CONCLUSIONS AND RECOMMENDATIONS

Staff recommends approval of the proposed uprate of the gas turbine Units 5 and 7 with accompanying changes to the air quality conditions of certification. All proposed

changes would conform with the applicable LORS related to air quality and would not result in significant impacts to ambient air quality or public health. There would be no increase in GHG emissions. The SCAQMD has analyzed requested changes and issued a revised Title V permit.

AMENDED CONDITIONS OF CERTIFICATION

The modifications to the Air Quality conditions of certification are included below. **Bold underline** indicates new language. ~~Strikethrough~~ indicates deleted language. **Air Quality Table 9** includes a summary of the proposed modifications and justification.

Air Quality Table 9
Air Quality Conditions of Certification (COCs)
with Proposed Modifications and Justification

Energy Commission Numbering	SCAQMD Numbering	Proposed Modifications and Justification
AQ-5	D29.8	SCAQMD added a requirement of source testing for ammonia within 180 days of the issuance of the revised permit. Staff agrees. Staff also deleted two testing methods to be consistent with the current permit condition. Staff also added the requirement of four consecutive quarterly source tests if the annual test fails to be consistent with the current permit condition.
AQ-7	D29.9	SCAQMD added a requirement of source testing for SOx, VOC, PM10, and PM2.5 within 180 days of the issuance of the revised permit. Staff agrees. Staff also proposes additional administrative edits to be consistent with the current permit condition.
AQ-16	A99.7	SCAQMD added the limit of 2 startups per day to be consistent with the original application. Staff agrees.
AQ-17	A99.8	SCAQMD added the limit of 2 startups per day to be consistent with the original application. Staff agrees.
AQ-20	A433.1	SCAQMD corrected a typographical error in the startup emission limit. Staff agrees.
AQ-32	A99.9	SCAQMD added the limit of 2 startups per day to be consistent with the original application. Staff agrees.
AQ-37	F2.1	Staff proposes to update the annual PM2.5 emission limit to 70 tpy to be consistent with current SCAQMD permit condition. Staff also deleted the emission factor for boiler No. 4 since it has retired.
AQ-41	C1.10	SCAQMD added the new condition to limit the daily fuel throughput. Staff proposes to add the new condition as Condition of Certification **AQ-41**.
AQ-42	C1.11	SCAQMD added the new condition to clarify and limit the annual fuel use to no more than what was previously evaluated. Staff proposes to add the new condition as Condition of Certification **AQ-42**.

AQ-5 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be Tested	Required Test Method(s)	Averaging Time	Test Location
NH_3 Emissions	District Method 207.1 ~~and 5.3 or EPA Method 17~~	1 hour	Outlet of SCR serving this equipment

The test shall be conducted within 180 days of the date of issuance of the District permit.

The test shall be conducted and the results submitted to the District within 45 days after the test date. The District shall be notified of the date and time of the test at least 7 days prior to the test.

The test shall be conducted annually. **If an annual source test is failed, four consecutive quarterly source tests must demonstrate compliance with ammonia emission limits prior to resuming annual source tests.** The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted to demonstrate compliance with the Rule 1303 BACT concentration limit.

If the equipment is not operated in any given quarter, the operator may elect to defer the required testing to a quarter in which the equipment is operated.

For the purpose of this condition, alternative test methods may be allowed for each of the above pollutants upon concurrence of the District, EPA and CPM.

Verification: The project owner shall submit the proposed protocol for the source tests no later than 45 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall notify the District and CPM no later than 10 days prior to the proposed source test date and time. The project owner shall submit source test results no later than 60 days following the source test date to both the District and CPM.

AQ-7 The operator shall conduct source test(s) for the pollutant(s) identified below on combined cycle turbine Units 5 and 7.

Pollutant(s) to be Tested	Required Test Method(s)	Averaging Time	Test Location
SOx Emissions	AQMD **Laboratory** Method 307-91	N/A	Fuel Sample
VOC Emissions	District Method 25.3	1 hour	Outlet of SCR serving this equipment
PM10 Emissions	District Method 5	4 hours	Outlet of SCR serving this equipment

PM2.5 Emissions	EPA Method 201A and 202	District-approved averaging time	Outlet of SCR serving this equipment

The test shall be conducted within 180 days of the date of issuance of the District permit.

The test**(**s**)** shall be conducted at least once every three years for SOx, **VOC,** PM2.5 and PM10 **thereafter.** ~~, and annually for VOC~~.

The test(s) shall be conducted to determine the oxygen levels in the exhaust. In addition, the test(s) shall measure the fuel flow rate (CFH), the flue gas flow rate, and the turbine generating output in megawatts (MW).

The test(s) shall be conducted in accordance with District- approved test protocol. The protocol shall be submitted to the District and the CPM no later than 45 days before the proposed test date and shall be approved by the District and the CPM before the test commences. The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The test shall be conducted when this equipment is operating at 100 percent load.

The test(s) shall be conducted for compliance verification of the BACT VOC 2.0 ppmv limit.

For natural gas-fired turbines only, VOC compliance shall be demonstrated as follows: a) Stack gas samples are extracted into Summa canisters maintaining a final canister pressure between 400-500 mm Hg absolute, b) Pressurization of canisters is done with zero gas analyzed/certified to contain less than 0.05 ppmv total hydrocarbon as carbon, and c) Analysis of canisters are per EPA method TO-12 (with preconcentration) and temperature of canisters when extracting samples for analysis is not below 70 deg. F. The use of this alternative method for VOC compliance determination does not mean that it is more accurate than District method 25.3, nor does it mean that it may be used in lieu of District method 25.3 without prior approval except for the determination of compliance with the VOC BACT level of 2.0 ppmv calculated as carbon for natural gas fired turbines. The test results shall be reported with two significant digits.

For the purpose of this condition, alternative test methods may be allowed for each of the above pollutants upon concurrence of the District, EPA and CPM.

Verification: The project owner shall submit the proposed protocol for the source

tests no later than 45 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall notify the District and CPM no later than 10 days prior to the proposed source test date and time. The project owner shall submit source test results no later than 60 days following the source test date to both the District and CPM.

AQ-16 The 2.0 PPM NOx emission limit(s) shall not apply during startup and shutdown periods. Startup periods shall not exceed 60 minutes for each startup. Shutdown periods shall not exceed 60 minutes for each shutdown. **The turbine shall be limited to a maximum of 2 start-ups per day.** The turbine shall be limited to a maximum of 200 startups per year. Written records of start-ups and shutdowns shall be maintained and made available upon request from the District.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (ARB), EPA and the **Energy** Commission.

AQ-17 The 2.0 PPM CO emission limit(s) shall not apply during startup and shutdown periods. Startup periods shall not exceed 60 minutes for each startup. Shutdown periods shall not exceed 60 minutes for each shutdown. **The turbine shall be limited to a maximum of 2 start-ups per day.** The turbine shall be limited to a maximum of 200 startups per year. Written records of start-ups and shutdowns shall be maintained and made available upon request from the District.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and the **Energy** Commission.

AQ-20 The owner/operator shall comply at all times with the 2.0 ppm 1-hour BACT limit for NOx, except as defined in condition **AQ-16** and with the following additional restriction on startup.

NOx emissions shall not exceed ~~112~~ **56** lbs total per startup per turbine. Each turbine shall be limited to 200 startups per year with each startup not to exceed 60 minutes in duration.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operational Report required in **AQ-C8**.

AQ-32 The 2.0 PPM VOC emission limit(s) shall not apply during startup and shutdown periods. Startup periods shall not exceed 60 minutes for each startup. Shutdown periods shall not exceed 60 minutes for each shutdown. **The turbine shall be limited to a maximum of 2 start-ups per day.** The turbine shall be limited to a maximum of 200 startups per year. Written records of startups and shutdowns shall be maintained and made available upon request from the District.

For the purposes of this condition, the beginning of start-up occurs at initial fire in the combustor and the end of start-up occurs when the BACT levels are achieved. If during start-up the process is aborted and the turbine is restarted, then the start-up and restart will count as one start-up, provided the total time for the start-up does not exceed 60 minutes. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and the **Energy** Commission.

AQ-37 The owner/operator shall limit PM emissions from this facility to less than ~~100~~ **70** tons in any one year. For the purpose of this condition, the PM emission limit shall be applicable to particulate matter with an aerodynamic diameter of less than 2.5 microns. For the purpose of this condition, any one year shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month. The operator shall calculate the emissions using the calendar monthly fuel use data and the following emission factors: PM2.5: 4.66

lb/mmscf for Gas Turbines No. 5 and No. 7~~ and 5.15 lb/mmscf for Boiler No. 4~~.

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report of Condition of Certification **AQ-C8**.

AQ-41 The operator shall limit the heat input to no more than 51,130 MMBtu in any one day.

For the purpose of this condition, heat input shall be defined as the total heat input to a single turbine.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and the Energy Commission.

AQ-42 The operator shall limit the fuel usage to no more than 11,124 MM cubic feet in any one calendar year.

For the purpose of this condition, fuel usage shall be defined as the total natural gas usage of a single turbine.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and the Energy Commission.

REFERENCES

ARB 2021 – California Air Resources Board (ARB). Air Quality Data Statistics Top 4 Summary. Accessed May 2021. Available online at: https://www.arb.ca.gov/adam/topfour/topfour1.php

CEC 2005 – California Energy Commission (CEC), El Segundo Power Redevelopment Project (00-AFC-14C) Commission Decision, February 2005.

CEC 2010a – California Energy Commission (CEC), El Segundo Power Redevelopment Project (00-AFC-14C) Revised Staff Analysis of the Proposed Change to Dry Cooling and Other Project Changes, dated June 14, 2010.

CEC 2010b – California Energy Commission (CEC), El Segundo Power Redevelopment Project (00-AFC-14C) Commission Decision to the Amendment, June 2010.

CEC 2012 – California Energy Commission (CEC), El Segundo Power Redevelopment Project (00-AFC-14C), Order Approving a Petition to Modify the Range of Ammonia Injection Rates, Eliminate a Venturi Scrubber, and Change the Project

Name, Order No. 12-0808-4, August 2012.

CEC 2015 – California Energy Commission (CEC), El Segundo Energy Center (00-AFC-14C), Order Approving a Petition to Modify the Air Quality Conditions of Certification to Define/Clarify Turbine Startup/Restarts and Other Administrative Changes, Order No. 15-0114-2, January 2015.

CEC 2017 – California Energy Commission (CEC), El Segundo Energy Center (00-AFC-14C), Turbine Upgrade Notice of Determination, TN 221912, December 2017.

ESEC 2021 – El Segundo Energy Center LLC (SEEC), ESEC Uprate Project Petition to Amend 00-AFC-14C March 12 2021, TN 237188, docketed March 16, 2021.

ESPRP 2007 – El Segundo Power Redevelopment Project (ESPRP), Application for a Determination of Compliance and Permit to Construct for the El Segundo Power Redevelopment Project, TN 41110, dated 6/21/07. Submitted to CEC/C. Meyer on 6/22/07.

SCAQMD 2021a – South Coast Air Quality Management District (SCAQMD), Statement of Basis – ESEC LLC Title V De Minimis Permit Revision, El Segundo Energy Center (00-AFC-14C), TN 238190, dated June 4, 2021.

SCAQMD 2021b – South Coast Air Quality Management District (SCAQMD), Title V De Minimis Permit Revision, El Segundo Energy Center (00-AFC-14C), TN 238198, dated June 11, 2021.