DOCKETED	
Docket Number:	13-AFC-01C
Project Title:	Alamitos Energy Center - Compliance
TN #:	227497
Document Title:	AEC Petition to Amend Operational Changes
Description:	N/A
Filer:	Jerry Salamy
Organization:	Jacobs
Submitter Role:	Applicant Consultant
Submission Date:	4/4/2019 10:04:09 AM
Docketed Date:	4/4/2019

Modification of Gas Turbine Operating Hours and Combined Cycle Gas Turbine (CCGT) Stack Height

Petition for Post-Certification Amendment

for the

Alamitos Energy Center
Long Beach, California
(01-AFC-13C)

April 2019

Submitted to the:
California Energy Commission

Submitted by:
AES Alamitos Energy, LLC

With Technical Assistance by:

JACOBS

and
Yorke Engineering

Modification of Gas Turbine Operating Hours and Turbine Combined Cycle Gas Turbine Stack Height

Project No: 708945CH.01.PA
Document Title: Petition for Post-Certification Amendment
Document No.: AX0401191228SAC
Revision: 0
Date: April 2019
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Document History and Status

Revision	Date	Description	By	Review	Approved
0	04/03/2019	Alamitos Energy Center Gas Turbine Operating Hours and Turbine CCGT Stack Height Petition to Amend	J. Salamy	S. Madams	J. Salamy

Executive Summary

AES Alamitos Energy, LLC (the Project Owner) is submitting this petition to the California Energy Commission (CEC) for post-Certification license modification for the Alamitos Energy Center (AEC) (13-AFC-01C). The AEC consists of a combined cycle gas turbine (CCGT) power block and a simple cycle gas turbine (SCGT) power block. The CCGT power block includes unfired heat recovery steam generators (HRSG), a condensing steam turbine (STG), an air-cooled condenser, and ancillary facilities.

This petition for post-Certification license amendment (Petition to Amend or PTA) proposes to modify the CCGT and SCGT operating hours to optimize project operations and to achieve an operating profile that more closely mirrors the Project Owner's affiliated project located in Huntington Beach. The PTA includes the following actions:

- Increase the CCGT operating hours from 4,460 per unit per year (including starts and stops) to 6,545 hours per year per unit (including starts and stops).
- Decrease the SCGT operating hours from 2,360 per unit per year (including starts and stops) to 1,060 hours per year per unit (including starts and stops).
- Modify air emission limits commensurate with the modification of operating hours.

No changes to the number or type of startup and shutdowns are required or proposed.

To ensure compliance with all applicable laws, ordinances, regulations and standards (LORS), the Project Owner has submitted a permit application to the South Coast Air Quality Management District (SCAQMD), Attachment 3.1 of this PTA, including the Project Owner's proposed permit conditions. The Project Owner expects the SCAQMD to issue a Determination of Compliance (DOC), including modifications to certain Air Quality Conditions of Certifications (COC). To ensure clarity and avoid confusion, the Project Owner believes it is prudent to look to the SCAQMD's DOC for its revised permit conditions.

In addition to the proposed changes in the operating profile, this PTA assumes the changes to the CCGT stack heights as submitted to the SCAQMD and the CEC's Compliance Project Manager (CPM) in May 2018 have been incorporated. The CCGT stack heights increased from 140 feet during engineering design to 150 feet in the final as-built condition to allow enough space for the installation of noise attenuation components (stack dampers) to ensure the project complies with the noise requirements of Condition of Certification (COC) NOISE-4. To analyze potential environmental effects, an environmental impacts assessment is presented in Section 3. The assessment concludes that there will be no significant environmental impacts associated with the implementation of the actions specified in this PTA and that the project, as modified, will continue to comply with all applicable LORS.

Contents

Attachment

Tables

1. Introduction

1.1 Background

The CEC approved the AEC AFC on April 12, 2017. The AEC project site is on the existing Alamitos Generating Station property, in the City of Long Beach, CA. The CEC analyzed the AEC's project impacts for two General Electric Model 7FA.05 combustion turbines in a combined cycle configuration and four General Electric Model LMS100-PB combustion turbines simple cycle configuration. The AEC project is currently under construction.

The Project Owner submitted a PTA to the CEC license in July 2018. The purpose of that PTA was to allow the use of a gravel area adjacent to the project site, on Southern California Edison's switchyard site. The CEC approved the PTA in August 2018.

1.2 Overview of Proposed Amendments

This PTA addresses the potential environmental impacts associated with revising the operating hours of the individual Project components to optimize operational capability, similar to the affiliated Huntington Beach Energy Project (12-AFC-02C). The modification of operating hours will not significantly increase air emissions, as the increase in CCGT operating hours will be offset by reductions in the SCGT operating hours. The number and type of startup and shutdowns have not changed for either the CCGT or SCGT.

In addition to the proposed changes in the operating profile, this PTA assumes the changes to the CCGT stack heights as submitted to the SCAQMD and Project CPM in May 2018 have been incorporated into the project. The CCGT stack heights increased from 140 feet during engineering design to 150 feet in the final as-built condition to allow enough space for the installation of noise attenuation components (stack dampers) to ensure the project complies with the noise requirements of Condition of Certification (COC) NOISE-4.

Detailed descriptions of the proposed modifications are included in Section 2 and analyzed in Section 3.

This PTA 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 through 6 as summarized in Table 1.2-1.

Table 1.2-1. Informational Requirements for Post-Certification Modifications

Section 1769(a)(1) Requirements	Sections of Petition Fulfilling Requirements
(A) A complete description of the proposed change, including new language for any conditions of certification that will be affected;	Sections 1, 2 and 3
(B) A discussion of the necessity for the proposed change and an explanation of why the change should be permitted;	Sections 1.1, 1.2, 1.3, and 3
(C) A description of any new information or change in circumstances that necessitated the change;	Sections 1.1, 1.2, 1.3, and 3
(D) An analysis of the effects that the proposed change to the project may have on the environment and proposed mitigation measures to mitigate any significant environmental effects;	Sections 1.4 and 3
(E) An analysis of how the proposed change would affect the project's compliance with applicable laws, ordinances, regulations, and standards;	Sections 1.5 and 3
(F) A discussion of how the proposed change would affect the public;	Sections 1, 3 and 4

Table 1.2-1. Informational Requirements for Post-Certification Modifications

Section 1769(a)(1) Requirements	Sections of Petition Fulfilling Requirements
(G) A list of current assessor's parcel numbers and owners' names and addresses for all parcels within 500 feet of any affected project linears and 1000 feet of the project site;	Section 5
(H) A discussion of the potential effect of the proposed change on nearby property owners, residents, and the public; and	Sections 3, 4 and 6
(I) A discussion of any exemptions from the California Environmental Quality Act, commencing with section 21000 of the Public Resources Code, that the project owner believes may apply to approval of the proposed change.	Section 7

1.3 Necessity of Proposed Changes, an Explanation of Why it Should Be Permitted, and a Description of New Information or Change in Circumstances

The CEC Siting Regulations require a discussion of the necessity for the proposed revisions to AEC Certification, an explanation of why the change should be permitted, and a description of any new information or change in circumstances that necessitated the change (Title 20, CCR, Sections 1769 (a)(1)(B), and (C)). The changes are necessary to revise the operational hours of the CCGT and SCGTs to optimize operations for the most efficient delivery of energy and to be consistent with the affiliated Huntington Beach Energy Project. The PTA further discusses why the changes should be allowed, including the previously submitted project design change needed to increase the height of the stack to ensure compliance with Noise COCs. With respect to new information or changes in circumstances, this PTA proposes to increase CCGT operating hours and decrease SCGT operating hours to better reflect the expected demand by the electrical system.

1.4 Summary of Potential Environmental Effects and Proposed Mitigation Measures

The CEC Siting Regulations require an analysis of the effects that the proposed change to the project may have on the environment and proposed mitigation measures to mitigate any significant environmental effect (Title 20, CCR, Section 1769 (a)(1)(D).) Section 3 of this PTA 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 concludes that there will be no significant environmental impacts associated with implementing the actions specified in this PTA and that the project, as modified, will comply with all applicable LORS.

1.5 Consistency of Changes with Applicable LORS

The CEC Siting Regulations require an analysis of how the impacts the proposed change would affect the project's compliance with applicable laws, ordinances, regulations, and standards (LORS). (Title 20, CCR, Section 1769 (a)(1)(E).) The proposed project modifications are consistent with all applicable LORS, as discussed in Section 3. The proposed project changes will allow AEC to run efficiently, while meeting environmental goals, and increasing available electrical production during periods of high electrical demand. The project changes to AEC's operating hours and stack heights will comply with all applicable LORS.

2. Description of Proposed Amendments

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

The AEC is currently in construction and is scheduled to begin commissioning in October 2019. All major project components associated with the CCGT power block have been erected, including the exhaust stacks. The proposed changes to the AEC include increasing the height of the CCGT exhaust stacks to match as built conditions and changing the CCGT and SCGT operating hours. Neither of these changes will require any change in equipment foundation design or require any excavations beyond those analyzed during licensing. No other physical changes to the project design are proposed, and no earth-moving activities are required. The following subsection describes the two proposed changes.

2.1 Increase Combined Cycle Gas Turbine Exhaust Stack Height

During licensing, the Project Owner balanced the potential visual impacts of the CCGT's exhaust stacks with potential air quality impacts as analyzed through a dispersion modeling analysis. This balance was accomplished by identifying the lowest possible CCGT exhaust stack height that allowed the project to comply with applicable ambient air quality standards (AAQS). During this exercise, the Project Owner determined that a minimum CCGT stack height of 140 feet above grade would allow the project to comply with the AAQS while minimizing the visual impacts. During post-Certification detailed design, the Project Owner determined that additional height in the CCGT exhaust stacks was required to accommodate stack dampers for noise attenuation to satisfy the noise limits of COC NOISE-4. The design of the exhaust stacks is identical to the design analyzed during licensing (relative to sampling test ports and platforms), but the stack height is increased by 10 feet. Visual simulations of the Project depicting the stack heights at 150 feet above grade were submitted to the CEC Compliance Project Manager on May 2, 2018 as part of the requirement of COC VIS-2.

2.2 Proposed Operating Hour Changes

The approved and modified annual operation hours for the CCGT and SCGT are presented in Table 2-1.

Table 2-1. Licensed and Proposed AEC Annual Turbine Operating Hours

Turbine	Operating Mode	Approved		Modified		Net Change	
		Duration (hours/ year)	Max. Number Events/ Year	Duration (hours/ year)	Max. Number Events/ Year	Duration (hours/ year)	Max. Number Events/ Year
Combined-Cycle	Normal Operations	4,100	--	6,005	--	1,905	--
	Cold Starts	80	80	80	80	0	0
	Non-Cold Starts	210	420	210	420	0	0
	Shutdowns	250	500	250	500	0	0
	Total	**4,640**	--	**6,545**	--	**1,905**	--
Simple-Cycle	Normal Operations	2,000	--	700	--	-1,300	--
	Startup	250	500	250	500	0	0
	Shutdowns	110	500	110	500	0	0
	Total	**2,360**	--	**1,060**	--	**-1,300**	--

The proposed modification of annual operating hours for the individual Project components will not require any physical changes (i.e., increased natural gas conveyance or filtration, additional air-cooled condenser cells, etc.) or operational changes beyond revising the existing SCAQMD construction/operational permits. The modified operating hours will also not impact the size or operations of the auxiliary boiler used to maintain the CCGT operational readiness.

3. Environmental Analysis of Proposed Amendments

The following subsections present a discussion of the potential impacts that the proposed changes may have on the environmental analysis as presented in applicable sections of the AFC. Each discussion includes an environmental analysis, an assessment of compliance with applicable LORS, proposed mitigation measures, and, if applicable, proposed changes to the COCs that are necessary as a result of project modifications.

3.1 Air Quality and Greenhouse Gases

3.1.1 Environmental Setting

The proposed modifications have the potential to affect air quality and greenhouse gas (GHG)emissions. Table 3.1-1 presents the National and State Ambient Air Quality Standards (NAAQS and CAAQS) which will be used, in combination with measured ambient pollutant concentrations, to assess the potential air quality impacts of the modifications. An air permit application reflecting the 150-foot CCGT gas turbine exhaust stack height has been submitted to the SCAQMD and is presented as Attachment 3.1. The potential effects of both the proposed operational changes and the turbine exhaust stack height are considered in each of the subsections below.

Table 3.1-1. National and State Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS Standard[a]	Units	CAAQS Standard[b]	Units
CO	1 Hour	35	ppm	20	ppm
	8 Hour	9	ppm	9	ppm
NO_2	1 Hour	100	ppb	0.18	ppm
	Annual	53	ppb	0.03	ppm
$PM_{2.5}$	24 Hour	35	$\mu g/m^3$	--	--
	Annual	12	$\mu g/m^3$	12	$\mu g/m^3$
PM_{10}	24 Hour	150	$\mu g/m^3$	50	$\mu g/m^3$
	Annual	--	--	20	$\mu g/m^3$
SO_2	1 Hour	75	ppb	0.25	ppm
	3 Hour	0.5	ppm	--	--
	24 Hour	--	--	0.04	ppm

Source: Yorke Engineering, LLC AES Application for Modification: Turbine Emissions Limit, AES Alamitos, LLC. February 2019

[a] NAAQS Standards come from https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed 6/8/2018

[b] CAAQS Standards come from https://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed 6/8/2018

The Project is located in Los Angeles County, which is within the South Coast Air Quality Management District's jurisdiction. The SCAQMD is the US Environmental Protection Agency's delegated authority to implement state and federal air quality regulations. The SCAQMD also monitors and reports the status of the area's air quality attainment of the CAAQS and NAAQS. Table 3.1-2 presents the attainment status for Los Angeles County.

Table 3.1-2. State and Federal Air Quality Designations for Sacramento County, California

Pollutant	State Designation	Federal Designation
Ozone	1-hour: Nonattainment 8-hour: Nonattainment	1-hour: Nonattainment (Extreme) 8-hour: Nonattainment (Extreme)
CO	1-hour: Attainment 8-hour: Attainment	1-hour: Attainment (Maintenance) 8-hour: Attainment (Maintenance)
NO_2	1-hour: Attainment Annual: Attainment	1-hour: Unclassified/Attainment Annual: Attainment
SO_2	1-hour: Attainment 24-hour: Attainment	1-hour: Pending - Unclassified/Attainment 24-hour: Unclassified/Attainment
PM_{10}	24-hour: Nonattainment Annual: Nonattainment	24-hour: Attainment Annual: Attainment
$PM_{2.5}$	NA Annual: Nonattainment	24-hour: Nonattainment (Serious) Annual: Nonattainment (Serious)
Lead	Attainment	Nonattainment (Partial)
H2S, Sulfates, Visibility, Vinyl Chloride	Attainment/Unclassified	Attainment/Unclassified

Notes:

N/A = Not applicable (i.e., no standard)

Sources: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf

The proposed modification of operational emissions will only affect the proposed annual emissions from the individual Project components. Maximum potential short term emission rates (1, 3, 8 and 24-hour average) are not affect by the proposed changes. Therefore, air quality dispersion modeling need only be performed for criteria pollutants with an annual ambient air quality standard. As such, Table 3.1-3 presents annual background NAAQS for NO2 and $PM_{2.5}$.

Table 3.1-3. Background Ambient Air Concentrations

Pollutant	Averaging Period	Background Value
NO_2 ($\mu g/m^3$)	Annual	39.6
$PM_{2.5}$ ($\mu g/m^3$)	Annual	11.4

3.1.2 Environmental Consequences

A comparison of the approved and modified air emissions are presented in Table 3.1-4. These emissions are based on the assumed operating hours shown in Table 2-1 and the hourly emission limits in the current AEC air permit from SCAQMD.

Table 3.1-4. Summary of Facility-Wide Air Emissions

Pollutant	Licensed/Proposed	Maximum Monthly Emissions (Pounds)	Maximum Annual Operational Emissions (Pounds)	Maximum Annual Operational Emissions (Tons)
NOx	Approved	56,635.9	274,130.4	137.07
	Proposed Modification	56,635.9	293,593.4	146.80
	Net Change	0.0	19,463.0	9.73
CO	Approved	225,025.9	487,373.6	243.69
	Proposed Modification	225,025.9	494,972.0	247.49
	Net Change	0.0	7,598.4	3.80
VOC	Approved	34,623.2	136,613.9	68.31

Table 3.1-4. Summary of Facility-Wide Air Emissions

Pollutant	Licensed/Proposed	Maximum Monthly Emissions (Pounds)	Maximum Annual Operational Emissions (Pounds)	Maximum Annual Operational Emissions (Tons)
	Proposed Modification	34,623.2	146,346.7	73.17
	Net Change	0.0	9,732.8	4.87
$PM_{10}/PM_{2.5}$	Approved	31,314.0	139,042.3	69.52
	Proposed Modification	31,314.0	139,031.3	69.52
	Net Change	0.0	-11.0	-0.01
SO_x	Approved	12,089.6	20,356.9	10.18
	Proposed Modification	12,089.6	23,644.9	11.82
	Net Change	0.0	3,288.0	1.64
CO_2E	Approved	--	--	1,717,335
	Proposed Modification	--	--	1,952,538
	Net Change	--	--	235,203

Source: Yorke Engineering, LLC AES Application for Modification: Turbine Emissions Limit, Tables 3-6 and 3-12, AES Alamitos, LLC. February 2019.

3.1.3 Regulatory Requirements

3.1.3.1 Federal Regulations

The federal pre-construction Prevention of Significant Deterioration (PSD) program for sources subject to PSD pre-construction review permitting applies to sources located in attainment areas, which are classified as major sources. The AEC is subject to the PSD program. Therefore, PSD review applies to the proposed modification, which will be addressed below in the Local Regulations discussion.

The federal operating permit program (Title V) and prohibitory rules applicable will be addressed in the Section 3.1.3.2, Local Regulations.

3.1.3.2 Local Regulations

The SCAQMD has promulgated rules governing the need for sources to apply for pre-construction/operating permits, and prohibitory rules. Below is an analysis of the SCAQMD rules applicable to the proposed AEC modifications.

Rule 212 – Standards for Approving Permits and Issuing Public Notice

Public notice is required for any new or modified equipment under Regulation XXX that may emit air contaminants located within 1,000 feet from the outer boundary of a school, unless the modification will result in a reduction of emissions of air contaminants from the facility and no increase in health risk at any receptor location. The nearest K-12 school, Rosie the Riveter Charter High School, is located within 1,000 feet. Due to the expected increase in toxic air contaminants (see the Subsection 3.9), public notice is required.

Rule 218 – Continuous Emissions Monitoring

The CCGTs and SCGTs are equipped with CO continuous emissions monitoring system that comply with the requirements of Rule 218 (c), (e), and (f). The changes in operating limits will not affect compliance with this rule.

Regulation III – Fees; Rule 301

The processing fees were determined using Rule 301. Attachment 3-1 documents that the Project Owner has paid the applicable processing fees and has requested expedited permit processing.

Rule 401 – Visible Emissions

The subject equipment is not expected to result in visible emissions. Compliance with this rule is expected.

Rule 402 – Nuisance

This project is not expected to cause injury, detriment, nuisance, or annoyance to the public, based on the control systems and mitigation measures being employed as part of the project.

Rule 403 – Fugitive Dust

The fugitive dust emissions requirements set forth in Rule 403 will be adhered to by the Project Owner during operation. No significant fugitive dust emissions are expected from the facility during normal operations or due to the proposed changes in the operating limits. Therefore, compliance with this rule is expected.

Rule 407 – Liquid and Gaseous Air Contaminants

This rule prohibits an operator from discharging SO_2 and CO into the atmosphere from any equipment in excess of 500 parts per million by volume dry (ppmvd) and 2000 ppmvd, respectively. The CCGT and SCGT SO_2 and CO concentrations are expected to be less than these limits. Therefore, compliance with this rule is expected.

Rule 409 – Combustion Contaminants

This rule prohibits an owner/operator from discharging into the atmosphere from any equipment combustion contaminants exceeding 0.1 grain per cubic foot of gas calculated to 12 percent of CO_2 at standard conditions averaged over a minimum of 15 consecutive minutes. The gas turbines combust only pipeline quality natural gas. The requested modification of emission limits will not adversely impact continued compliance with this rule.

Rule 431.1 – Sulfur Content of Gaseous Fuels

The natural gas fuel supplied to AEC is the same source as during licensing. Therefore, AEC is expected to comply with the Rule 431.1 fuel sulfur limit.

Rule 474 – Fuel Burning Equipment-Oxides of Nitrogen

This rule is superseded by NO_x RECLAIM, Rule 2001 (see below).

Rule 475 – Electric Power Generating Equipment

The facility-wide PM emissions from the modification of operating limits is expected to remain approximately the same. Therefore, compliance with this rule is expected.

Regulation IX – New Source Performance Standards

The New Source Performance Standards (NSPS) establishes emission standards for specific emission sources, as published in the Code of Federal Regulations (CFR) and in the Federal Register (FR) by the Environmental Protection Agency (EPA). The following NSPS are applicable to AEC.

40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

Title 40 CFR 60 Subpart KKKK*, Standards of Performance for Stationary Combustion Turbines*, applies to units with a heat input rating greater than 10 MMBtu/hr which commence construction after February 18, 2005.

The natural gas fired CCGT and SCGT units use Selective Catalytic Reduction (SCR) to control NO_x emissions, resulting in NOx emissions that comply with Subpart KKKK's limits. The NSPS also includes monitoring, recordkeeping and reporting requirements. the Project Owner will demonstrate compliance by installing, operating and maintaining a continuous emissions monitoring system to monitor NO_x emissions. As the proposed changes will not result in an increase in the NOx emission limits of the CCGT and SCGT, continued compliance with Subpart KKKK is expected.

40 CFR 60, Subpart TTTT – GHG Emissions from Electric Generating Units

This rule applies to steam generating units, integrated gasification combined-cycle, and stationary gas turbines that commenced construction, modification, or reconstruction after January 8, 2014. As the combustion turbines and heat rates are not changing, continued compliance with Subpart TTTT is expected.

Regulation X – National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAP) regulate the emissions of hazardous air pollutants from specific emission sources. These regulations are periodically updated to reflect actions by the EPA.

NESHAPS for Stationary Gas Turbines – 40 CFR Part 63 Subpart YYYY

Subpart YYYY applies to gas turbines located at major sources of 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. AEC is not considered a major source of HAP (See Section 3.9). Therefore, the requirements of Subpart YYYY do not apply.

Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

The rule is superseded by NO_x RECLAIM, Rule 2001 (See below).

Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Stations

The rule is superseded by NO_x RECLAIM, Rule 2001 (See below).

Regulation XIII – New Source Review

The proposed changes results in an emission increase of non-attainment pollutants, therefore new source review is required. However, as AEC is subject to RECLAIM for NO_x, Regulation XIII is not applicable for NO_x.

Rule 1303 – Requirements

Rule 1303 requires use of best available control technology (BACT), emissions modeling and emission offsets.

Best Available Control Technology (BACT)

New and modified equipment resulting in a net emissions increase exceeding 1 lb/day must apply BACT. The proposed changes to AEC's operating hours result in an increase in annual CO, VOC, and SO_x emissions, but no change in the maximum daily emissions. Therefore, BACT is not triggered.

Protection of Visibility

The proposed operating changes will increase annual CCGT PM_{10} emissions and reduce annual SCGT PM_{10} emissions, with the facility-wide PM_{10} emissions decreasing by 11 pounds. This level of emissions increase does not exceed the rule's 15 ton/year PM_{10} threshold for requiring a plume visibility analysis. Therefore, AEC is expected to comply with this rule.

Modeling

Modeling demonstrating AEC's compliance with the annual ambient air quality standards is presented below. This analysis shows that AEC will not cause or contribute to the violation of an ambient air quality standard.

Offsets

Regulation XIII requires facilities with an air emission increase of greater than four tons per year for VOC, SO_2, and PM_{10} provide emission offsets, exempt by Rule 1304. The AEC is exempt from the requirement to purchase emission offsets based on Rule 1304(a)(2), which requires the Project Owner to pay an offset fee for SCAQMD-provided offsets.

Rule 1304.1– Electrical Generating Facility Fee for Use of Offset Exemption

Rule 1304(a)(2) required repower projects to pay a fee for the emissions of VOC, PM, and SO_x. Offset fees for NO_x emissions are excluded if the facility is subject to RECLAIM. The Project Owner is currently subject to RECLAIM for NO_x emissions and pays the annual Rule 1304.1 fee to the SCAQMD for AEC's VOC, PM, and SO_x emissions. The Project Owner will continue to comply with Rule 1304.1 when the proposed operational changes are approved by the SCAQMD and the CEC.

Rule 1401 – New Source Review for Air Toxics

As described in Section 3.16, an updated human health risk assessment was conducted for this permit modification at the request of SCAQMD. The human health risk assessment modeling predicted that the MICR, HIC and HIA from each permit unit would remain below the appropriate Rule 1401 thresholds.

Regulation XVII – Prevention of Significant Deterioration

To demonstrate compliance with SCAQMD Rule 1703, annual NO_2 modeling was conducted for the entire facility (2 CCGTs, 4 SCGTs, auxiliary boiler) for comparison to the SIL. The results of this analysis showed that the total facility annual NO_2 and PM_{10} concentration was predicted to be less than the Class II SILs and Class I SIL. Table 3.1-5 demonstrates that the project does not exceed the Class I or II SILs or PSD increment thresholds and that no further modeling analysis is required.

Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases

Rule 1714 codifies the federal PSD regulations as they apply to GHGs emissions. The applicable GHG standard is the NSPS Subpart TTTT (Part 60, CO_2 Emission Standards for Stationary Combustion Turbines). To demonstrate the CCGTs comply with the NSPS Subpart TTTT performance standard of 450 kg of CO_2 per MWh of gross energy output (1,000 lb CO_2/MWh), a GHG Efficiency Demonstration was performed (See Attachment 3.1, Appendix B). This demonstration shows the gross GHG efficiency, including an 8 percent degradation, is 916.1 lb CO_2/MWh-HHV. The SCGTs comply with the standard of 120 lb CO_2/MMBtu of heat input through the exclusive use of natural gas, with a gross GHG efficiency of 1503.6 lb CO_2/MWh-HHV, with an 8 percent degradation included.

Table 3.1-5. Total Facility Model-Predicted Impacts Compared to Class I and II SILs and PSD Increments

Pollutant	Averaging Time	Modeled Concentration (µg/m³)	Significant Impact Level (SIL) (µg/m³)	Exceed SIL?	PSD Increment (µg/m³)	Exceed Increment?
Class I Analysis						
NO_2	Annual	0.007	0.3	No	NA	NA
PM_{10}	Annual	0.005	0.2	No	NA	NA
Class II Analysis						
NO_2	Annual	0.36	1.0	No	25	No
PM_{10}	Annual	0.30	1.0	No	17	No

Source: Yorke Engineering, LLC AES Application for Modification: Turbine Emissions Limit, Table 3-6, AES Alamitos, LLC. February 2019.

Notes:

The NO_2 concentration included conversion of NO_x to NO_2 using ARM2.

Maximum modeled Class I concentrations predicted at 50 kilometers from facility.

Rule 2005 – New Source Review for RECLAIM

Rule 2005(b)(B) requires that new or modified source(s) will not exceed NO_2 ambient air quality standards. Table 3.1-6 demonstrates that either the CCGT or SCGT's exceed the NO_2 ambient air quality standards.

Table 3.1-6. Rule 2005 Modeled Results – Annual Operations for a CCGT and SCGT

Pol	Avg. Time	Modeled Conc. (µg/m³)	Max. Back-ground Conc. (µg/m³)	Modeled + Back-ground Conc. (µg/m³)	CAAQS (µg/m³)	NAAQS (µg/m³)	Rule 1303 Thresholds (µg/m³)	Exceed Threshold?
Highest Modeled CCGT Impact								
NO_2	Annual	0.165	39.6	39.8	57	100	-	No
Highest Modeled SCGT Impact								
NO_2	Annual	0.016	39.6	39.6	57	100	-	No

Source: Yorke Engineering, LLC AES Application for Modification: Turbine Emissions Limit, Table 3-6, AES Alamitos, LLC. February 2019.

Notes:

Maximum modeled concentration predicted for either CCGT.

The NO_2 concentration included conversion of NOx to NO_2 using ARM2.

Rule 2005(c)(2) requires facilities to hold sufficient RTCs to offset the initial year of an emissions increase, including commissioning emissions. The changes to the CCGT and SCGT operating hours do not affect the commissioning year emissions as approved. However, proposed operating hour changes proposed will reduce the commissioning year emissions associated with the SCGTs, requiring fewer RTCs.

Rule 2005 requires RECLAIM sources to install BACT for NO_x and to conduct air dispersion and visibility modeling. The Project Owner is not proposing to change the emission control measures or emission rates of either the CCGT or SCGT, as determined by the SCAQMD during the licensing of AEC. Furthermore,

the emissions increases are below the Rule 2005 threshold of 40 tons per year for NO_x that triggers the modeling requirements. Therefore, AEC complies with the Rule 2005 BACT and modeling requirements.

Regulation XXX – Title V

AEC has a Title V permit that covers emissions of VOC, NO_x, CO, and PM_{10}. The proposed changes to AEC will increase the NO_x emissions over the Title V threshold of 10 tons per year. As a result, the SCAQMD will require the posting of a public notice for modification to AEC's Title V permit consistent with Rule 3006.

Regulation XXXI – Acid Rain Permit Program

AEC is subject to the Acid Rain Permitting Program requirements, NOx and SOx emissions will be reported directly to the USEPA. Increases in NOx and SOx emissions are expected with this modification and continued compliance is anticipated.

3.1.4 Mitigation Measures

The proposed AEC modifications will not create a significant air quality or GHG impact and will not require additional mitigation measures beyond SCAQMD required Rule 1304.1 fee payment and RECLAIM NOx RTCs.

3.1.5 Consistency with LORS

The air dispersion modeling assessment (presented above) demonstrates the modification of operating hours and the increase CCGT exhaust stack height does not cause or contribute to the violation of an ambient air quality standard. AEC will comply with applicable federal, state, and local air quality LORS.

3.1.6 Conditions of Certification

The Project Owner is not proposing changes to the COCs as the SCAQMD will issue a Determination of Compliance with revised COCs. The CEC staff will incorporate these revised air quality COCs into the Staff Assessment.

3.1.7 Reference

Yorke Engineering, LLC AES Application for Modification: Turbine Emissions Limit, AES Alamitos, LLC. February 2019.

3.2 Biological Resources

3.2.1 Environmental Setting

The proposed changes to AEC's CCGT and SCGT operating hours and the increased CCGT exhaust stack height will not result in any physical disturbance to biological resources as no ground disturbances or additional land are necessary. The proposed changes will result in slightly higher air emissions for some pollutants (see Table 3.1-4 above), which will be offset via existing SCAQMD regulations.

3.2.2 Environmental Consequence

The modification of CCGT/SCGT operations and increased CCGT exhaust stack height will not result in any change in habitat or disturbance of special-status species, natural or cropland vegetation; soils; wetlands; vernal pools or vernal swales; interfere with wildlife or aquatic species movement; or conflict with any local policies/ordinances or any approved/adopted conservation plans.

The proposed AEC changes increases the project's NO_X potential to emit above the approved annual emission by approximately 7.1 percent (see Table 3.1-4). This slight increase in NO_X emissions has the potential to increase the already less than significant nitrogen deposition impacts analyzed during licensing. During licensing, CEC staff noted that the air dispersion modeling that was performed to predict AEC's nitrogen deposition was likely an overprediction of the actual nitrogen deposition by as much as 10-fold, and therefore was not expected to approach the critical nitrogen deposition levels on nearby sensitive habitats. Staff also concluded that the project areas nitrogen emission inventory and baseline nitrogen deposition levels has decreased by more than 50 percent since the reporting of nitrogen deposition levels in 2002.[1] The small increase in AEC's NO_X emissions does not alter the CEC staff conclusions or undermine the conclusions reached by the CEC in the Final Decision.

3.2.3 Mitigation Measures

No additional mitigation measures are required.

3.2.4 Consistent with LORS

The project conforms to applicable LORS related to biological resources.

3.2.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for biological resources.

3.2.6 References

California Energy Commission, Final Staff Assessment, Part 1 for Alamitos Energy Center (AEC), September 2016 CEC-700-2016-004-FSA-Part 1.

3.3 Cultural Resources

3.3.1 Environmental Setting

The proposed changes to AECs will not result in any ground disturbing activities not analyzed during licensing nor will the increase CCGT exhaust stack height (a 7 percent increase) result in a material change to the physical appearance of the project.

3.3.2 Environmental Consequences

The proposed AEC modifications will not impact native soils and no excavations or earth moving are expected. Additionally, the proposed changes do not materially alter the physical appearance of the project, which could impact nearby potentially historic properties. Therefore, no impacts to cultural resources are expected.

3.3.3 Mitigation Measures

The proposed AEC modifications will not create a significant cultural resource impact and will not require additional mitigation measures.

3.3.4 Consistency with LORS

The proposed changes to AEC do not alter the project's compliance with applicable LORS related to cultural resources.

[1] California Energy Commission, Final Staff Assessment, Part 1 for Alamitos Energy Center (AEC), September 2016 CEC-700-2016-004-FSA-PT1, pages 4.2-34 to 4.2-37.

3.3.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for cultural resources.

3.4 Geologic Hazards and Resources

3.4.1 Environmental Setting

This PTA does not require changes to the geologic hazards and resources environmental setting as described in the AFC and the CEC Decision.

3.4.2 Environmental Consequences

The proposed AEC modifications will not result in ground disturbance, excavations, earth moving, or foundation installation beyond those analyzed during licensing. No additional geologic resources or geologic hazards have been identified in the project area. Therefore, no impacts to geologic hazards and resources are expected.

3.4.3 Mitigation Measures

The proposed AEC modifications will not create a significant impact to geologic resources, and new geologic hazards have not been identified that require additional mitigation measures.

3.4.4 Consistency with LORS

The project conforms to applicable LORS related to geologic hazards and resources.

3.4.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for geologic hazards and resources.

3.5 Hazardous Materials Handling

3.5.1 Environmental Setting

This PTA does not require changes to the hazardous materials handling environmental Setting as described in the AFC and the CEC Decision.

3.5.2 Environmental Consequences

The proposed AEC modifications will not result in the use of a new hazardous material onsite or increase the approved amount of hazardous materials use. As only a minor increase in annual air emissions is expected, the number and frequency of ammonia deliveries will increase by 2 to 3 trucks per year assuming AEC operates at its permitted maximum capacity. This slight increase in ammonia deliveries will not alter the basis of hazardous materials handling analysis or conclusions. Therefore, no impacts from hazardous materials handling are expected.

3.5.3 Mitigation Measures

The proposed AEC modifications will not create a significant impact from hazardous materials handling that will require additional mitigation measures.

3.5.4 Consistency with LORS

The project conforms to applicable LORS related to hazardous materials handling.

3.5.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for hazardous materials handling.

3.6 Land Use

3.6.1 Environmental Setting

The proposed changes to AEC's CCGT and SCGT operation and the increase to the CCGT exhaust stack height result does not result in a change in land use affecting the project site.

3.6.2 Environmental Consequences

This PTA does not require changes to the Land Use Setting as described in the AFC and the CEC Decision.

3.6.2.1 Potential Effects on Land Use

The proposed operational changes and CCGT exhaust stack height increase do not physically divide an established community. The project changes are consistent with existing land uses, the policy for consistent land use designation/zoning district, and policies.

3.6.3 Mitigation Measures

The proposed AEC modifications will not create a significant impact to land use that requires additional mitigation measures.

3.6.4 Consistency with LORS

The project conforms to applicable LORS related to land use.

3.6.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for land use.

3.7 Noise and Vibration

3.7.1 Environmental Setting

The proposed change to the CCGT and SCGT operating hours will not alter the noise or vibration impacts of the project. Furthermore, the proposed increase in the CCGT exhaust stack heights is needed to incorporate noise attenuation equipment necessary to ensure AEC compliance with Condition NOISE-4.

3.7.2 Environmental Consequences

The proposed AEC modifications will not increase noise or vibration-producing activities at the site.

3.7.3 Mitigation Measures

The proposed AEC modifications will not create a significant impact to noise and vibration that requires additional mitigation measures.

3.7.4 Consistency with LORS

The project conforms to applicable LORS related to noise and vibration.

3.7.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for noise and vibration.

3.8 Paleontological Resources

3.8.1 Environmental Setting

This PTA does not adversely affect the paleontological resources environmental setting as described in the AFC Supplement AFC, and CEC Decision.

3.8.2 Environmental Consequences

No excavations or earth moving are expected due to the proposed change to AEC's CCGT and SCGT operating hours or the increase in the CCGTs exhaust stack height. Therefore, no impacts to paleontological resources are expected.

3.8.3 Mitigation Measures

The proposed AEC modifications will not create a significant paleontological resource impact and will not require additional mitigation measures.

3.8.4 Consistency with LORS

The proposed changes are consistent with applicable paleontological LORS. Therefore, the project conforms to applicable LORS related to paleontological resources.

3.8.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for paleontological resources.

3.9 Public Health

3.9.1 Environmental Setting

This PTA does not require changes to the Public Health environmental setting as described in the AFC and the CEC Decision.

3.9.2 Environmental Consequences

The proposed AEC operational changes will result in a slight increase in fuel consumption, which will increase Toxic Air Contaminant (TAC) and Hazardous Air Pollutant (HAP) emissions. TAC/HAP emissions were estimated using EPA AP-42 TAC emission factors. Table 3.9-1 presents AEC's TAC/HAP emissions for the entire facility (CCGT, SCGT, and auxiliary boilers), including the proposed operating changes to the CCGT/SCGT. The potential effects of both the proposed operational changes and the turbine exhaust stack height are considered in each of the subsections below.

To determine whether the proposed AEC modifications result in a significant public health impact, a health risk assessment was performed based on the total TAC/HAP emissions resulting from the increased fuel consumption.

Table 3.9-1. AEC TAC/HAP Emissions

Pollutant	Approved		Proposed Modification		Change	
	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Ammonia	55.98	202,076.53	55.98	229,874.92	0.00	27,798.39
Acetaldehyde	1.42	5,129.46	1.42	5,836.49	0.00	707.03
Acrolein	0.03	105.98	0.03	120.52	0.00	14.54
Benzene	0.03	96.05	0.03	109.14	0.00	13.10
1,3-Butadiene	0.00	12.53	0.00	14.26	0.00	1.73
Ethylbenzene	0.26	933.77	0.26	1,062.32	0.00	128.55
Formaldehyde	2.90	10,493.15	2.90	11,939.35	0.00	1,446.21
Hexane	0.00	0.83	0.00	0.83	0.00	0.00
Naphthalene	0.01	37.94	0.01	43.16	0.00	5.22
PAHs (exc. Naph.)	0.00	13.13	0.00	14.94	0.00	1.81
Propylene	0.04	95.46	0.04	95.46	0.00	0.00
Propylene Oxide	0.23	845.10	0.23	961.60	0.00	116.50
Toluene	1.05	3,793.17	1.05	4,315.41	0.00	522.24
Xylene	0.52	1,868.60	0.52	2,125.71	0.00	257.10

The human health risk assessment modeling was conducted based on the Office of Environmental Health Hazard Assessment (OEHHA) 2015 guidelines[2] Tier 1 and SCAQMD Tier 4 techniques[3] to estimate the health risk impacts for the closest residential, sensitive, and off-site worker receptors. The health risk calculations were performed using the HARP2 Air Dispersion Modeling and Risk Tool (ADMRT, version 18159). A normalized concentration (X/Q) was determined for each emission source from the AERMOD software and imported into the HARP2 program to determine the concentration of each TAC/HAP. The concentrations were used to estimate the long-term cancer health risk to an individual and non-cancer chronic and acute health indices.

Table 3.9-2 shows the human health risk assessment results for the excess cancer, acute and chronic hazard index at the maximally exposed individual resident, maximally exposed individual worker, maximally exposed sensitive receptor, and the excess cancer burden. The cancer risk threshold commonly used to determine if an impact is significant is 10 in a million. Similarly, the Chronic and Acute Hazard Indices are both below the well the significance level of 1.0. As shown below, the TAC/HAP emission impacts for the proposed changes to AEC are not expected to be significant.

Table 3.9-2. AEC Health Risk Screening Results

Risk Component	Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Residential	1.61 in a million	0.0041	0.0146
Worker	0.09 in a million	0.0027	0.0173
Sensitive Receptor	1.05 in a million	0.0064	0.0166
Cancer Burden	0.0283	NA	NA

[2] https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

[3] http://www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/riskassessproc-v8-1.pdf?sfvrsn=12.

3.9.3 Mitigation Measures

The AEC impacts on public health are less than significant, and, therefore, will not require additional mitigation measures.

3.9.4 Consistency with LORS

The project conforms to applicable LORS related to public health.

3.9.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for public health.

3.10 Socioeconomics

3.10.1 Environmental Setting

This PTA does not require changes to the socioeconomic environmental Setting as described in the AFC and the CEC Decision.

3.10.2 Environmental Consequences

The proposed changes to the CCGT and SCGT operating hours or the increase in the CCGT exhaust stack height will not alter the basis of the CEC's determination that AEC will not have a significant impact on socioeconomics. Therefore, no significant, negative socioeconomic impacts are expected.

3.10.3 Mitigation Measures

The proposed AEC modifications will not create a significant, negative impact to socioeconomics that requires additional mitigation measures.

3.10.4 Consistency with LORS

The project conforms to applicable LORS related to socioeconomics.

3.10.5 Conditions of Certification

The CEC Decision did not include COCs for socioeconomics.

3.11 Soils and Agriculture

3.11.1 Environmental Setting

This PTA does not require changes to the soils and agricultural environmental setting as described in the AFC and the CEC Decision.

3.11.2 Environmental Consequences

The proposed modifications to AEC do not result in any ground disturbance or excavations and occur entirely within the developed project site. Therefore, no impacts to soils or agriculture are expected.

3.11.3 Mitigation Measures

The proposed AEC changes will not create a significant impact to soils or agriculture that requires additional mitigation measures.

3.11.4 Consistency with LORS

The project conforms to applicable LORS related to soils and agriculture.

3.11.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for soils and agriculture.

3.12 Traffic and Transportation

3.12.1 Environmental Setting

This PTA does not require changes to the traffic and transportation environmental setting as described in the AFC and the CEC Decision.

3.12.2 Environmental Consequences

The proposed changes to the CCGT and SCGT operating hours may require 2 to 3 additional aqueous ammonia deliveries per year, assuming the facility operates at the permitted maximum hours. This increase in truck deliveries to the site does not result in a material increase in traffic in the project area. No additional truck trips will be needed for the increase in the CCGT exhaust stack height. Therefore, no impacts to traffic or transportation are expected.

3.12.3 Mitigation Measures

The proposed AEC changes will not create a significant impact to traffic or transportation that requires additional mitigation measures.

3.12.4 Consistency with LORS

The project conforms to applicable LORS related to traffic and transportation.

3.12.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for traffic and transportation.

3.13 Visual Resources

3.13.1 Environmental Setting

This PTA includes an update to the visual resources environmental setting due to the development of the parcel located immediately west of the CCGT as a business park/warehouse.[4] The development of this 8.5-acre site (6.7 acres of buildable area) will significantly reduce the view of the CCGT portion of AEC. The business park development is expected to cover approximately 43 percent of the 6.7 buildable acres with two, single-story buildings approximately 34 feet tall.

3.13.2 Environmental Consequences

The proposed increase in the CCGTs exhaust stack height from 140 feet to 150 feet will not materially alter the appearance of the project from Loynes Drive (the location of the Key Observation Point). The increased CCGT exhaust stack height will be further offset by development of the business park on the property adjacent to intersection of Studebaker Road and Loynes Drive.

[4] Referred to as the Studebaker Road Business Park, 300 Studebaker Road, Long Beach, CA.

3.13.3 Mitigation Measures

The proposed changes to AEC will not create a significant impact to visual resources that requires additional mitigation measures.

3.13.4 Consistency with LORS

The project conforms to applicable LORS related to visual resources.

3.13.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for visual resources.

3.14 Waste Management

3.14.1 Environmental Setting

This PTA does not require changes to the waste management environmental setting as described in the AFC and the CEC Decision.

3.14.2 Environmental Consequences

The proposed changes to AEC will not result in an increase in waste generation at the site. Therefore, no impacts to waste management are expected.

3.14.3 Mitigation Measures

The proposed changes to AEC will not create a significant waste management impact and will not require additional mitigation measures.

3.14.4 Consistency with LORS

The project conforms to applicable LORS related to waste management.

3.14.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for waste management.

3.15 Water Resources

3.15.1 Environmental Setting

This PTA does not require changes to the water resources environmental setting as described in the CEC Decision.

3.15.2 Environmental Consequences

The proposed changes to AEC will not result in an increase in water consumption or discharge. Therefore, no impacts to water resources are expected.

3.15.3 Mitigation Measures

No water resources impacts are expected from the proposed changes to AEC. Therefore, no additional mitigation measures are required.

3.15.4 Consistency with LORS

The project conforms to applicable LORS related to water resources.

3.15.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for water resources.

4. Potential Effects on the Public

This section discusses the potential effects on the public that may result from the modifications proposed in this PTA, in accordance with CEC Siting Regulations (Title 20, CCR, Section 1769(a)(1)(F)).

With the implementation of the proposed changes, the project would have no adverse effect on the public. As previously mentioned, the operation of AEC will result in a slight increase in maximum potential annual air emissions for some pollutants and the potential impacts will be reduced to less than significant levels by providing the SCAQMD Rule 1304.1 fee payment and surrendering RECLAIM NOx RTCs. Amending the air quality COCs does not adversely affect the public because the facility will still adhere to the conditions in the Project's Title V Permit, Permit to Operate, as well as all other conditions of certification contained in the CEC license. The modifications will occur entirely onsite, and air quality and public health impacts are not expected to result in unmitigated significant impacts on the public. Therefore, there are no significant adverse effects on public that will result from the proposed modification. The increase in height of the CCGT exhaust stack will also not result in any significant impacts to the public. Therefore, no adverse effects on the public will occur because of the changes to the project as proposed in this PTA.

5. List of Property Owners

A list of current assessor's parcel numbers and owners' names and addresses for all parcels within 500 feet of any affected project linears and 1000 feet of the project site in accordance with the CEC Siting Regulations (Title 20, CCR, Section 1769(a)(1)(G)) is provided under separate cover.

6. Potential Effects on Property Owners, the Public, and Parties in the Proceeding

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

As set forth in Section 3, the proposed modifications will not result in any potentially significant impacts and the project will remain in compliance with all applicable LORS. The project as modified will not differ significantly in potential effects on adjacent land owners, compared with the project as certified. Operation of AEC with the slightly increased air emissions and increased CCGT exhaust stack height will have no adverse effect on nearby property owners, the public, or other parties in the application proceeding. The project, therefore, would have no adverse effects on nearby property owners, the public, or other parties in the application proceeding.

7. Potentially Applicable CEQA Exemptions

This section includes a discussion of any exemptions from the California Environmental Quality Act, commencing with section 21000 of the Public Resources Code, that the project owner believes may apply to approval of the proposed change. Given the operational changes proposed, the CEQA exemption for Air Quality permits (14 CCR 15281) would not apply in this case, and no other exemptions appear to be applicable.

Attachment 3.1
AEC Air Permit Application

AES Alamitos Energy
690 N. Studebaker Road
Long Beach, CA 90803
tel 562 493 7891
fax 562 493 7320

February 15, 2019

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission
1516 9th Street
Sacramento, CA 95814

Subject: Alamitos Energy Center (13-AFC-01C)
Conditions of Certification AQ-SC6

Dear Mr. Douglas;

In accordance with Condition of Certification AQ-SC6, attached is a package submitted to the South Coast Air Quality Management District to modify our current Title V Permit for the Alamitos Energy Center. This requested change is the result of revised projected demands for the Combined-Cycle Gas Turbines (CCGTs) and Simple-cycle Gas Turbines (SCGTs). AES is requesting additional operating hours for the CCGTs and less operating hours for the SCGTs. The attached Permit Modification application includes details of these changes.

AES has also attached a CEC Project Change Questionnaire which includes information on how these changes impact the Project as Licensed.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Jeff Miller, PG
Compliance Manager
Alamitos Energy Center

cc: Stephen O'Kane/Alamitos Energy Center

CALIFORNIA ENERGY COMMISSION
PROJECT CHANGE QUESTIONNAIRE

PROJECT: Alamitos Energy Center **AFC No.**: 13-AFC-01C

CONTACT: Stephen O'Kane/562-493-7840 **DATE**: February 15, 2019

1. Please describe the proposed project change.

AES Alamitos Energy, LLC is proposing changes to the operating profile of the natural gas turbines currently under construction at the Alamitos Energy Center (AEC) located at 690 North Studebaker Road in Long Beach, CA. This filing is made to inform the Commission pursuant to Condition AQ-SC6.

Specifically, AES has reconsidered the projected demand on the combined-cycle gas turbines (CCGTs, Power Block 1) and simple-cycle gas turbines (SCGTs, Power Block 2) and has determined that the annual utilization of the power blocks should be re-balanced in favor of more operating hours for the CCGTs, and less operating hours for the SCGTs. Accordingly, AES is proposing revised annual emission limits in the facility's Title V permit for the CCGTs and SCGTs, to implement the proposed operating profile for each turbine type.

AES is proposing to revise the facility Title V permit to increase emissions from the two CCGTs to reflect an operating profile based on an additional 1,905 hours per year of maximum output operation per turbine and reduce emissions from the four SCGTs associated with an operating profile based on a reduction in operating hours of 1,300 hours per year, per turbine. The selection of the specific increase in CCGT operating hours and reduction in SCGT operating hours was designed to yield no net change in annual PM2.5 emissions from the facility due to offset considerations, in accordance with South Coast Air Quality Management District (SCAQMD) permit condition F2.1 and Rule 1325.

The proposed modifications will not impact permitted short-term emissions (i.e., maximum hourly, daily or monthly emissions) of any pollutant because maximum hourly, daily and monthly fuel use for each unit does not change. The change in operating hours has the following impact on the annual facility-wide emissions, all within the existing permitting envelope for AEC:

- Annual PM10/PM2.5 emissions will decrease slightly;
- Annual CO emissions will increase by about 4 tons/yr;
- Annual NOx emissions will increase by about 10 tons/yr;
- Annual SO2 emissions will increase by about 2 tons/yr;
- Annual VOC emissions will increase by about 5 tons/yr; and
- Annual GHG emissions will have a net increase of 241,488 tons/yr.

2. Would the proposed project change cause a direct physical change or reasonably foreseeable indirect physical change to the site or equipment on site? If yes, please explain.

No. The proposed project change would not change the site or equipment on site.

a. Is the proposed project change to software? ☐ Yes ☒ No

b. Is there a change to method of operation or how the facility is being operated?

No. The proposed change would not change the method of operation. The annual utilization of the power blocks would be re-balanced in favor of more operating hours for the CCGTs, and less operating hours for the SCGTs

3. Please describe why the project change is needed (e.g., due to changes in regulation or operation and maintenance specifications, equipment or component failure)?

The AEC has been designed to meet the local area reliability needs of the local utility and balancing authority. Its primary function is to provide resource adequacy and generating capacity to meet local reliability area needs. The AEC is also designed to provide flexible generating resources to help balance net electrical energy demand and supply as California incorporates an ever-increasing amount of intermittent renewable energy.

While the amount of capacity required for resource adequacy needs in a local area can be calculated *a priori* with confidence, the amount of energy required to satisfy demand in a given area from a specific resource can vary significantly from year to year depending on system conditions (grid reliability) and energy market conditions. AES's view of the future energy market has changed since the AEC was first proposed. AES believes there will be a greater need for energy production from the CCGTs than from the peaking SCGTs. The proposed changes reflect AES's projection of energy system conditions' demand on the individual generators currently under construction at the AES Alamitos generating station.

4. Would the proposed project change require a change to existing conditions of certification? ☒ Yes ☐ No

If yes, please list the conditions of certification affected.

Changes to the Title V permit include the following

- AQ-A1 - Monthly and annual contaminant emission limits (CO, VOC, PM10, & SOx) for the CCGTs
- AQ-E9 - Limits CO2 emissions to 610,480 tons per year for the CCGTs.
- AQ-A2 - Monthly and annual contaminant emission limits (CO, VOC, PM10, & SOx) for the SCGTs
- AQ-E10 - Limits CO2 emissions to 120,765 tons per year for the SCGTs.

- AQ-I2 - Prohibited from operation unless the project owner holds sufficient RTCs for the SCGTs.

5. Would the proposed project change result in a temporary or permanent non-conformance with existing LORS? ☐ Yes ☒ No

   If yes, please list the applicable LORS and describe the non-conformance.

6, Would the proposed project change affect the project's design, operation, or performance requirements as described in the Final Commission Decision and any documents incorporated by reference (e.g. AFC, FSA, etc.)?

   ☐Yes ☒ No.

7. Is there a change to the project description as listed in the Final Commission Decision? ☐ Yes ☒ No

8. Would the proposed project change have any significant adverse environmental or public health and safety impacts? ☐Yes ☒ No

   If so, how were the impacts determined and what mitigation measures are proposed?

9. Does the proposed project change affect the public, including nearby property owners and residents? ☐ Yes ☒ No

   If so, how?

   The proposed permit modifications will comply with all applicable rules and regulations. Ambient air quality modeling demonstrates that the change in annual emissions complies with all National and California Ambient Air Quality Standards (NAAQS and CAAQS). The change in toxic air contaminants (TAC) emissions complies with the health risk standards established by Rule 1401.

10. Are there any additional permits from other agencies required and proposed timing? ☒ Yes ☐ No

    Yes, AES is proposing to revise the facility Title V permit.

11. What is the proposed timing/schedule for demolition, construction, and commissioning?

    There is no change to any component of the project schedule. The AEC CCGTs are scheduled to be available for operation by the end of the 1st quarter of 2020.

AES Alamitos Energy LLC **Remittance Advice Voucher**

Vendor ID	Vendor Name	Check Date	Check No
10027103	SOUTH COAST AQMD	January 29,2019	09781

Invoice No	Invoice Date	PO#	Text	Gross Amount	Withholding Tax	CashDiscount	Net Amount
CR012419	01/24/2019		Permit fees	121176.12	0.00	0.00	121,176.12
TOTAL:				121,176.12	0.00	0.00	121,176.12

AES
we are the energy

One Monument Circle, Indianapolis, IN 46204

JPMorgan Chase Bank, National Associatio
NEW YORK CITY NY

09781
1-2/210

Date
January 29, 2019
VOID AFTER 180 DAYS

Amount

*** One hundred twenty-one thousand one hundred seventy-six dollars and twelve cents *** $ **121,176.12**

Authorized Signature

Pay to the Order of:
SOUTH COAST AQMD
PO BOX 4943
DIAMOND BAR CA US 91765-0943

Authorized Signature

Security features included. Details on back.

⑈09781⑈ ⑆021000021⑆ 100047395⑈

AES Alamitos Energy LLC **Remittance Advice Voucher**

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TOTAL:				121,176.12	0.00	0.00	121,176.12

AES Alamitos, LLC
690 North Studebaker Road
Long Beach, CA 90803

SCAQMD Facility ID: 115394

February 2019

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Applications for Modification: Turbine Emission Limits

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Prepared for:
AES Alamitos, LLC
690 North Studebaker Road
Long Beach, CA 90803

SCAQMD Facility ID: 115394

February 2019

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List of Acronyms and Abbreviations

ADMRT	Air Dispersion Modeling and Risk Tool
AEC	Alamitos Energy Center
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AES	AES Alamitos, LLC
AQIA	Air Quality Impact Analysis
ARM2	Ambient Ratio Method 2
ATC	Authority to Construct
BACT	Best Available Control Technology
BPIPPRM	Building Profile Input Program for PRIME
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCGT	Combined-Cycle Gas Turbine
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
EPA	Environmental Protection Agency
ERC	Emission Reduction Credits
°F	Degree Fahrenheit
FDOC	Final Determination of Compliance
FR	Federal Register
g	Gram
GHG	Greenhouse Gas
GLC	Ground Level Concentration
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
HARP2	Hotspots Analysis and Reporting Program, Version 2
HHV	Higher Heating Value
HIA	Hazard Index – Acute
HIC	Hazard Index – Chronic
HP	High-Pressure
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
°K	Degree Kelvin
km	Kilometer
lb	Pound
m	Meter
MEIR	Maximum Exposed Individual Resident
MEIW	Maximum Exposed Individual Worker
MICR	Maximum Individual Cancer Risk

MMBTU	Million British Thermal Units
MMSCF	Million Standard Cubic Feet
MW	Megawatt
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NAD83	North American Datum 1983
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxide
NSPS	New Source Performance Standards
NSR	New Source Review
OEHHA	Office of Environmental Health Hazard Assessment
$PM_{2.5}$	Particulate Matter Smaller Than 2.5 Micrometers
PM_{10}	Particulate Matter Smaller Than 10 Micrometers
PMI	Point of Maximum Impact
ppb	Parts per Billion
ppm	Parts per Million
PTO	Permit to Operate
PSD	Prevention of Significant Deterioration
RTC	RECLAIM Trading Credit
s	Second
SCAQMD	South Coast Air Quality Management District
SCGT	Simple-Cycle Gas Turbine
SCR	Selective Catalytic Reduction
SIL	Significant Impact Level
SO_x	Sulfur Oxide
STG	Steam Turbine Generator
T-BACT	Best Available Control Technology for Toxics
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds
WAF	Worker Adjustment Factor
X/Q (Chi/Q)	Average Pollutant Concentration Normalized by Source Strength
yr	Year
Yorke	Yorke Engineering, LLC
ZOI	Zone of Impact
$\mu g/m^3$	Microgram per Meter Cubed

Applications for Modification: Turbine Emission Limits

1.0 INTRODUCTION

AES Alamitos, LLC (AES) is requesting changes to the emission limits for the natural gas turbines at the Alamitos Energy Center (AEC) located at 690 North Studebaker Road in Long Beach, CA (SCAQMD Facility ID No. 115394).

AES has reconsidered the projected demand on the Combined-Cycle Gas Turbines (CCGTs) and simple-cycle gas turbines (SCGTs) and has determined that the utilization should be re-balanced in favor of more operating hours for the CCGTs, and less operating hours for the SSGTs. Accordingly, AES is requesting revised emission limits for the CCGTs and SCGTs to implement these proposed revisions in operating hours for each turbine type. Most of the emissions increases associated with the CCGTs will be offset by concurrent reductions from the four SCGTs.

Specifically, AES is proposing to revise the facility Title V permit to increase emissions from the CCGTs to reflect an operating profile based on an additional 1,905 hours per year of maximum output operation per turbine and reduce emissions from the SCGTs associated with an operating profile based on a reduction in operating hours of 1,300 hours per year, per turbine. The selection of the specific increase in CCGT operating hours and reduction in SCGT operating hours was designed to yield no net change in annual $PM_{2.5}$ emissions due to offset considerations, in accordance with Condition F2.1 and Rule 1325. The proposed modifications are summarized in Table 1-2.

The proposed modifications will not adversely impact short-term emissions (i.e., maximum hourly, daily or monthly emissions) of any pollutant because maximum hourly, daily and monthly fuel use for each unit does not change. The change in operating hours has the following impact on the annual facility-wide emissions:

- Annual $PM_{10}/PM_{2.5}$ emissions will decrease slightly;
- Annual CO emissions will increase by about 4 tons/yr;
- Annual NO_x emissions will increase by about 10 tons/yr;
- Annual SO_2 emissions will increase by about 2 tons/yr;
- Annual VOC emissions will increase by about 5 tons/yr; and
- Annual GHG emissions will have a net increase of 241,488 tons/yr.

The proposed permit modifications will comply with all applicable rules and regulations. Ambient air quality modeling demonstrates that the change in annual emissions complies with all National and California Ambient Air Quality Standards (NAAQS and CAAQS). The change in toxic air contaminants (TAC) emissions complies with the health risk standards established by Rule 1401.

This application package contains the information necessary for the SCAQMD to process and approve the applications, including facility information (Section 1.0), equipment and process description (Section 2.0), emission estimates (Section 3.0), modeling (Section 4.0) and rule applicability and compliance determinations (Section 5.0). Recommended permit wording is

provided in Section 6.0. Application forms, emission estimates and modeling files are provided in the appendices.

AES is requesting Expedited Permit Processing for these applications.

1.1 Facility Information

1.1.1 Facility Background

The AEC is a natural-gas-fired, air-cooled, combined-cycle and simple-cycle, electrical generating facility in Long Beach. The AEC was designed to meet the demand for new generation in the Los Angeles basin local electrical reliability area. The facility is comprised of both simple and combined-cycle natural gas-fired turbines with the capability of handling baseload, intermediate, and peak loads.

AEC consists of two gas turbine power blocks. One block consists of two General Electric (GE) 7FA.05 CCGTs fired on natural gas for combined-cycle cogeneration. Each turbine is rated at 236 MW (net). Each CCGT is equipped with a heat recovery steam generator (HRSG). In addition, there is a steam turbine generator (STG), an air-cooled condenser and auxiliary boiler to assist with the fast startup of the CCGTs. The shared steam turbine is rated at 219.615 MW-gross at 28°F. Each CCGT is equipped with a CO oxidation catalyst and selective catalytic reduction (SCR) to control CO and NO_x emissions. A 22,290-gallon ammonia storage tank will be utilized to store 19% aqueous ammonia to be used as a reducing agent in the SCR. Two oil/water separators are included in the facility permit to construct to collect equipment wash and rainfall. The first power block is under construction at the time of application submittal.

The second power block consists of four GE LMS-100 PB natural gas-fired SCGTs each rated at 100.438 MW-gross and 99.087 MW-net, at 59°F. Each SCGT is equipped with an emission control system which consists of a CO catalyst and SCR. A 40,000-gallon ammonia tank is included. Construction on the SCGT power block will begin after the first power block is operational.

1.1.2 Facility Contact Information

Facility and applicant contact information is provided in Table 1-1.

Table 1-1: Facility Information

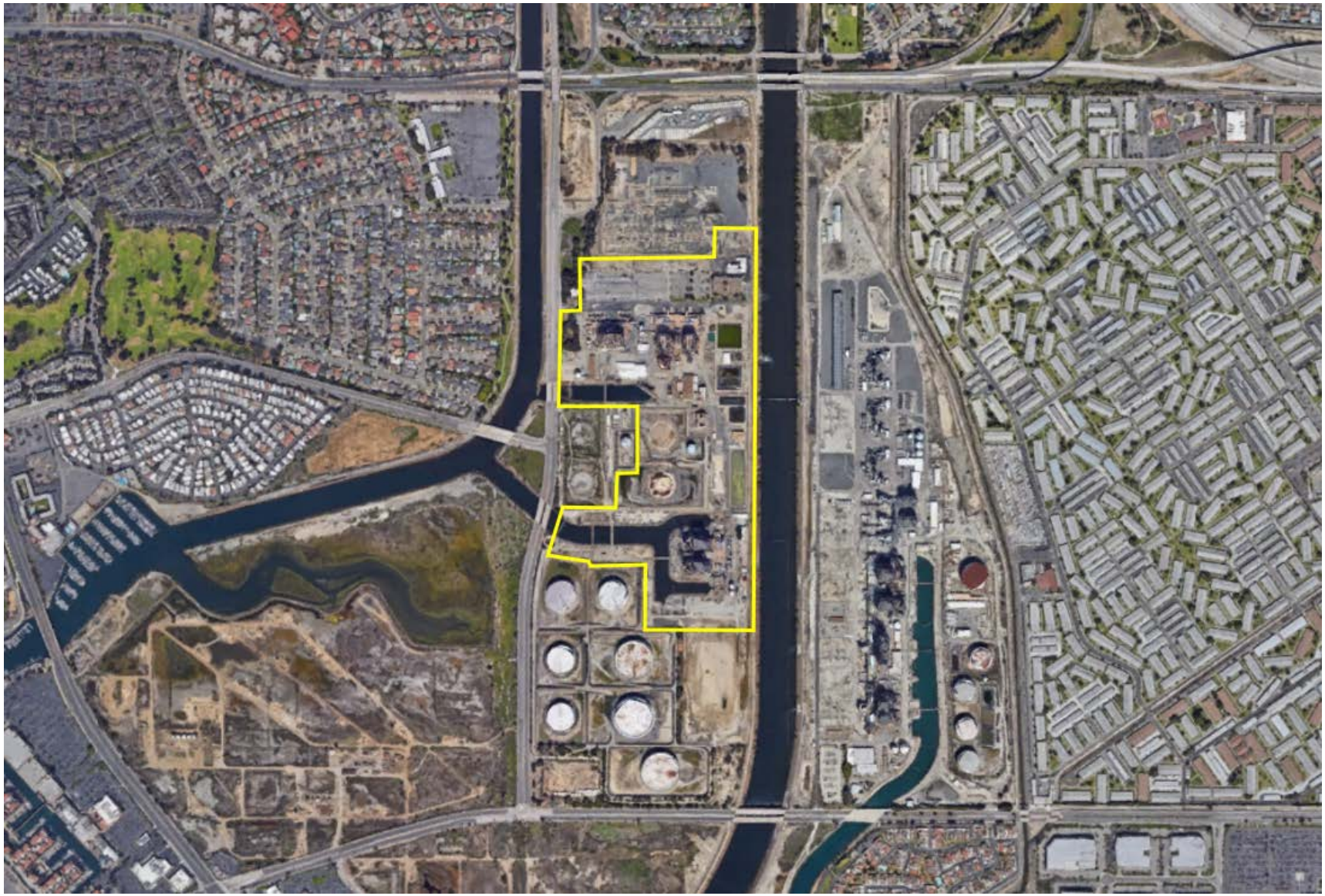
Applicant's Name:	AES Alamitos, LLC
Responsible Official Contact Information:	Stephen O'Kane Manager, Sustainability and Regulatory Compliance (562) 493-7840 Stephen.Okane@AES.com
Applicant Contact Information:	Stephen O'Kane Manager, Sustainability and Regulatory Compliance (562) 493-7840 Stephen.Okane@AES.com
Facility ID:	115394
Mailing Address:	690 North Studebaker Road Long Beach, CA 90803
Equipment Location:	690 North Studebaker Road Long Beach, CA 90803

1.1.3 Location Information

The AEC is located in Long Beach, CA on a parcel zoned for industrial use. The site is adjacent to a petroleum storage terminal to the south and west (Plains All American), electrical switchyard and transmission facilities to the north (Southern California Edison), and another power plant to the east (Los Angeles Department of Water and Power, Haynes Generating Station). The nearest residence to the AEC is located directly to the west (~150 meters) of the property's nearest boundary across the Los Cerritos flood control channel. The closest commercial facilities (Studebaker Self Storage) are located to the north (~300 meters) of the property's nearest boundary.

The closest sensitive receptor is the Rosie the Riveter Charter High School, a privately owned and operated school located on the AES Alamitos site, approximately 971 feet (296 meters) from the nearest proposed stack location (CCGT-1). The closest sensitive receptor outside the AEC property is Kettering Elementary, which is approximately 2,297 feet (700 meters) northwest of the nearest proposed stack location (CCGT-1). Apart from the Rosie the Riveter Charter High School and Kettering Elementary, there are no other schools within approximately 0.5 mile of the AEC site. A plot plan showing the facility and surrounding properties is provided as Figure 1-1.

Figure 1-1: Aerial View of the Alamitos Energy Center and Surrounding Area



1.2 Summary of Proposed Modifications

With this application, AES is requesting the following permit actions:

Table 1-2: Proposed Permit Modifications

Equipment	Requested Permit Action	Permit Condition	Modification
Combined-Cycle Gas Turbine Generator, Unit CCGT-1 (Device ID D165)	Alteration/ Modification	A63.2	Criteria emissions
		E193.14	CO_2 emissions and emission factor
		Administrative	Increase stack height to 150 ft as noted in Apr. 27, 2018 Administrative Change application
Combined-Cycle Gas Turbine Generator, Unit CCGT-2 (Device ID D173)	Alteration/ Modification	A63.2	Criteria emissions
		E193.14	CO_2 emissions and emission factor
		Administrative	Increase stack height to 150 ft as noted in Apr. 27, 2018 Administrative Change application
Simple-Cycle Gas Turbine Generator, Unit SCGT-1 (Device ID D185)	Alteration/ Modification	A63.3	Criteria emissions
		E193.15	CO_2 emissions and emission factor
		I297.3	NO_x RECLAIM Trading Credits (RTCs)
Simple-Cycle Gas Turbine Generator, Unit SCGT-2 (Device ID D191)	Alteration/ Modification	A63.3	Criteria emissions
		E193.15	CO_2 emissions and emission factor
		I297.4	NO_x RTCs
Simple-Cycle Gas Turbine Generator, Unit SCGT-3 (Device ID D197)	Alteration/ Modification	A63.3	Criteria emissions
		E193.15	CO_2 emissions and emission factor
		I297.5	NO_x RTCs
Simple-Cycle Gas Turbine Generator, Unit SCGT-4 (Device ID D203)	Alteration/ Modification	A63.3	Criteria emissions
		E193.15	CO_2 emissions and emission factor
		I297.6	NO_x RTCs
RECLAIM/Title V Facility Permit	Amendment	Title V/ RECLAIM Permit	Incorporate above modifications

In addition, AES is requesting that the minor permit amendments requested in the May 9, 2018 and November 9, 2018 applications for the CCGTs are also incorporated into the facility permit. Previously submitted permit applications requested changes to the manufacturer name of the auxiliary boiler, the size of the ammonia tank serving the CCGTs, an increase in stack height of the CCGTs to 150 feet, and the temperature range of the catalyst serving the CCGTs. It has been assumed in this permit application that the change in stack height from 140 feet to 150 feet has

already been incorporated. The forms included with this application package are listed in Table 1-3. The forms are included in Appendix A.

Table 1-3: SCAQMD Forms Accompanying This Application

Equipment	Requested Permit Action	Title
CCGT-1 (D165)	Alteration/ Modification	400-A Application Form for Permit or Plan Approval
		400-E-12 Gas Turbine
		400-PS Plot Plan and Stack Information Form
CCGT-2 (D173)	Alteration/ Modification	400-A Application Form for Permit or Plan Approval
		400-E-12 Gas Turbine
		400-PS Plot Plan and Stack Information Form
SCGT-1 (D185)	Alteration/ Modification	400-A Application Form for Permit or Plan Approval
		400-E-12 Gas Turbine
		400-PS Plot Plan and Stack Information Form
SCGT-2 (D191)	Alteration/ Modification	400-A Application Form for Permit or Plan Approval
		400-E-12 Gas Turbine
		400-PS Plot Plan and Stack Information Form
SCGT-3 (D197)	Alteration/ Modification	400-A Application Form for Permit or Plan Approval
		400-E-12 Gas Turbine
		400-PS Plot Plan and Stack Information Form
SCGT-4 (D203)	Alteration/ Modification	400-A Application Form for Permit or Plan Approval
		400-E-12 Gas Turbine
		400-PS Plot Plan and Stack Information Form
RECLAIM/Title V Facility Permit	Amendment	400-A Application Form for Permit or Plan Approval
		500-C1 Title V Compliance Status Report
		500-A2 Title V Application Certification
Project	---	400-CEQA California Environmental Quality Act (CEQA) Applicability
Project	Expediated Application Processing	400-XPP Express Permit Processing Request

1.3 Application Preparation

This permit application was prepared by Nicholas Gysel, Julie Mitchell, and Russell Kingsley of Yorke Engineering, LLC. If there are technical questions regarding this application, please use the contact information provided in Table 1-4.

Table 1-4: Application Preparers

Name:	Nicholas Gysel, PhD	Julie Mitchell	Russell Kingsley CPP #A1606
Company:	Yorke Engineering, LLC	Yorke Engineering, LLC	Yorke Engineering, LLC
Phone:	(562) 343-1919	(619) 880-1801	(805) 293-7756
Cellular:	(949) 606-3687	(619) 375-9142	(805) 844-7491
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2.0 EQUIPMENT AND PROCESS DESCRIPTION

2.1 Equipment Description

The AEC consists of two gas turbine power blocks. The first consists of two combined-cycle GE 7FA.05 CCGTs fired on natural gas, each equipped with a HRSG. At 100% load and 28°F (highest fuel consumption), each turbine is rated at 236.645 MW-gross and 235.907 MW-net. In addition, there is a steam turbine generator (STG), an air-cooled condenser and auxiliary boiler (Cleaver-Brooks, Model NB-200D-50 (70.8 MMBTU/hr) to assist with the fast startup of the CCGTs). The shared steam turbine is rated at 219.615 MW-gross at 28°F. Each CCGT is equipped with a CO oxidation catalyst and SCR to control CO and NO_x emissions.

The second power block consists of four GE LMS-100 PB natural gas-fired SCGTs each rated at 100.438 MW-gross and 99.087 MW-net, at 59°F. Each SCGT is equipped with an emission control system which consists of a CO catalyst and SCR. The equipment for which this modification is requested are listed in Table 2-1.

Table 2-1: List of Equipment to be Modified

Device ID#	Equipment Description
D165	GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-1
D173	GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-2
D185	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-1
D191	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-2
D197	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-3
D203	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-4

2.2 Process Description

2.2.1 Process Overview

AES is requesting a change to emission limits of the CCGTs and SSGTs at the AEC. AES has reconsidered the demand anticipated for the CCGT and SSGT at the facility and is requesting an increase in the emissions associated with an increase in operating hours for each CCGT of 1,960 additional hours per year per turbine. AES is requesting a decrease in the allowable emissions associated with a decrease in operating hours for each SSGT of 1,340 hours per year per turbine. The requested changes are designed to result in a no net change in facility-wide $PM_{2.5}$ emissions, which will remain below 70 tons/year.

2.2.2 Operating Schedule

AEC operates 24 hours/day, 7 days/week, and 365 days/year.

3.0 EMISSIONS

This section provides the basis for emission calculations and a summary of the monthly and annual emissions. The detailed emission calculation spreadsheet is included in Appendix B. It includes emissions calculations for criteria pollutant, TAC and GHG emissions and emission factors.

3.1 Criteria Pollutant Emissions

Emissions from the CCTGs and SCGTs were calculated using emissions data provided by the manufacturer using the same methodology used by SCAQMD in the final determination of compliance (FDOC) dated November 18, 2016. The maximum hourly, daily and monthly emissions for the CCGTs and SCGTs will not change due to this annual operating hour permit modification. Only the total annual emissions associated with the maximum output operating hours for the CCGTs and SCGTs are proposed to be changed with this application. Emissions associated with the maximum daily, monthly and annual start-up/shut-down events and hours remain unchanged and no changes to the commissioning hours are proposed with this application.

Table 3-1 outlines the revised annual operating profile for each turbine type that is used to determine the maximum annual emissions.

Table 3-1: Revised Annual Turbine Operating Schedule[1] for Emission Calculations

Turbine	Operating Mode	Pre-Application		Post-Application		Net Change	
		Duration (hours/ year)	Max. Number Events/ Year	Duration (hours/ year)	Max. Number Events/ Year	Duration (hours/ year)	Max. Number Events/ Year
Combined-Cycle	Maximum Output Operations	4,100	--	6,005	--	1,905	--
	Cold Starts	80	80	80	80	0	0
	Non-Cold Starts	210	420	210	420	0	0
	Shutdowns	250	500	250	500	0	0
	Total Hours of Operation	**4,640**	--	**6,545**	--	**1,905**	--
Simple-Cycle	Maximum Output Operations	2,000	--	700	--	-1,300	--
	Startup	250	500	250	500	0	0
	Shutdowns	110	500	110	500	0	0
	Total Hours of Operation	**2,360**	--	**1,060**	--	**-1,300**	--

Notes:

1. Hours are used for emission calculation purposes only. There is currently no permit condition limiting hours of operation and it is not AES' intention with this application to limit hours.

3.1.1 Combined-Cycle Emissions

The maximum hourly, daily and monthly operating profile for the CCGTs will not change due to the proposed modifications, although the increase in annual operating hours up to 6,545 (6,005 hours of maximum output operations plus 540 start-up and shutdown hours) will cause the annual CCGT operating emissions to increase. Annual emissions for each CCGT are based on 6,005 hours of maximum output operations (case 4), plus 80 cold starts, 420 non-cold starts, and 500 shutdowns, for a total of 540 hours of start-ups and shutdowns per year. Case 4, based on 100% load, 65.3°F ambient temperature, and with inlet cooling, is the worst-case operating scenario that yields the highest emission rates for the average annual temperature. Long-term SO_2 emissions are based on natural gas with a sulfur content of 0.25 grains/100 scf. Table 3-2 presents the change in the maximum annual operating emissions for each CCGT.

The maximum monthly emissions for each CCGT do not change due to this permit modification. The operating profile for each CCGT remains based on 674.5 hours of maximum output operations (case 1), plus 15 cold starts, 47 non-cold starts, and 62 shutdowns, for a total of 744 operating hours per month (674.5 normal plus 69.5 hours of start-ups and shutdowns). Case 1, based on 100% load, 28°F ambient temperature, and without inlet cooling, is the worst-case operating scenario that yields the highest controlled hourly emissions. Short-term SO_2 emissions are based on natural gas with a sulfur content of 0.75 grains/100 scf. Table 3-2 presents the maximum monthly commissioning, maximum operational and the maximum of either of these emissions for each CCGT for the pre- and post-application operating profile.

Condition A63.2 contains emission factors for CO, VOC, PM_{10}, and SO_x that limit emissions during commissioning and operations and are based on the maximum monthly emissions. Conditions A99.1 and A99.2 contains emission factors for NO_x that limit emissions during commissioning and operations, respectively, and are based on the maximum monthly emissions. As neither the commissioning nor monthly operational emissions for the CCGTs change due to this permit modification, the emission factors associated with Conditions A63.2, A99.1 and A99.2 do not change. The detailed emission factor calculations are presented in Appendix B.

The first year of turbine operations will include commissioning emissions and operational emissions. These emissions are based on a 6-month commissioning period, plus 6 months of operational emissions for each CCGT and are the basis for the NO_x RECLAIM RTCs required. As the maximum monthly operational emissions do not change, the maximum first year (commissioning plus operational) emissions do not change, thus there is no change to conditions I297.1 and I297.2 for CCGT1 and CCGT2, respectively. Table 3-3 presents the total commissioning year emissions for each CCGT showing that the pre-project and post-project emissions do not change.

3.1.2 Simple-Cycle Emissions

The maximum hourly, daily, and monthly operating profile for the SCGTs will not change due to the proposed modifications, although the decrease in annual operating hours to 1,060 (700 maximum output operational hours plus 360 start-up/shut-down hours) for the SCGTs will cause the annual emissions to decrease. Annual emissions for each SCGT are based

on 700 hours of maximum output operational hours, plus 500 starts and 500 shutdowns, for a total of 1,060 operating hours per year. Maximum monthly emissions for each SCGT are based on 700 hours of maximum output operations (case 4), plus 62 starts and 62 shutdowns, for a total of 744 operating hours per month (700 hours plus 44 hours of start-up and shutdown hours). Case 4, based on 100% load, 65.3°F ambient temperature, and with inlet cooling, is the worst-case operating scenario that yields the highest emission rates for the average annual temperature. Long-term SO_2 emissions are based on natural gas with a sulfur content of 0.25 grains/100 scf. Table 3-4 presents the change in the maximum annual operating emissions for each SCGT.

The maximum monthly emissions for each SCGT do not change due to this proposed permit modification. The monthly operating profile for each SCGT remains based on 744 operating hours per month (700 hours of maximum output operations (case 1), plus 62 starts, and 62 shutdowns, for a total of 44.6 hours of start-ups and shutdowns per month). Case 1, based on 100% load, 28°F ambient temperature, and without inlet cooling, is the worst-case operating scenario that yields the highest controlled hourly emissions. Short-term SO_2 emissions are based on natural gas with a sulfur content of 0.75 grains/100 scf. Table 3-4 presents the maximum monthly commissioning, maximum operational and the maximum of either of these emissions for each SCGT for the pre- and post-application operating profile.

Condition A63.3 contains emission factors for CO, VOC, PM_{10}, and SO_x that limit emissions during commissioning and operations that are based on the maximum monthly emissions. Conditions A99.3 and A99.4 contains emission factors for NO_x that limit emissions during commissioning and operations, respectively, and are based on the maximum monthly emissions. As neither the commissioning nor monthly operational emissions for the CCGTs change due to this permit modification, the emission factors associated with Conditions A63.3, A99.3 and A99.4 do not change. The detailed emission factor calculations are presented in Appendix B.

The first year of turbine operations will include commissioning emissions and operational emissions. These emissions are based on the 3-month commissioning period, plus 9 months of operational emissions for each SCGT and are the basis for the NO_x RECLAIM RTCs required. Due to the significant reduction in SCGT emissions, the maximum first year (commissioning plus operational) emissions were recalculated. The revised maximum emissions associated with each SCGT during the commissioning year consists of 3 months of commissioning plus total annual SCGT emissions, as all of the SCGT permitted annual operations could occur in the 9 months after commissioning. Table 3-5 presents the change in the total commissioning year emissions for each SCGT. This reduction in NO_x emissions is reflected in the revised conditions I297.3, I297.4, I297.5 and I297.6 for SCGT1, SCGT2, SCGT3, and SCGT4, respectively, presented in Section 6.

Table 3-6 presents the change in facility-wide maximum monthly emissions (maximum of either commissioning or operational emissions) and maximum annual operational emissions.

Table 3-2: Summary of Criteria Pollutant Emissions for Each CCGT

Pollutant	Period	Monthly Emissions (lb/mo)			Maximum Annual Operational Emissions (lb/yr)
		Commissioning	Operational	Maximum	
NO_x	Pre-Application	14,294	13,463	14,294	83,850
	Post-Application	14,294	13,463	14,294	114,902
	Net Change	**0**	**0**	**0**	**31,052**
CO	Pre-Application	95,023	24,639	95,023	180,544
	Post-Application	95,023	24,639	95,023	194,717
	Net Change	**0**	**0**	**0**	**14,173**
VOC	Pre-Application	13,314	7,577	13,314	52,668
	Post-Application	13,314	7,577	13,314	63,488
	Net Change	**0**	**0**	**0**	**10,820**
PM_{10}/ $PM_{2.5}$	Pre-Application	1,411	6,324	6,324	39,440
	Post-Application	1,411	6,324	6,324	55,633
	Net Change	**0**	**0**	**0**	**16,193**
SO_x	Pre-Application	809	3,616	3,616	7,435
	Post-Application	809	3,616	3,616	10,483
	Net Change	**0**	**0**	**0**	**3,048**

Table 3-3: Maximum Commissioning Year Emissions for Each CCGT

Pollutant	Period	Commissioning Emissions (lb/event)	Operational Emissions (lb/yr)	Total Commissioning Year Emissions (lb/yr)
NO_x	Pre-Application	27,597	80,780	108,377
	Post-Application	27,597	80,780	108,377
	Net Change	**0**	**0**	**0**
CO	Pre-Application	101,328	147,834	249,162
	Post-Application	101,328	147,834	249,162
	Net Change	**0**	**0**	**0**
VOC	Pre-Application	14,682	45,464	60,146
	Post-Application	14,682	45,464	60,146
	Net Change	**0**	**0**	**0**
PM_{10}/ $PM_{2.5}$	Pre-Application	8,466	37,944	46,410
	Post-Application	8,466	37,944	46,410
	Net Change	**0**	**0**	**0**
SO_x	Pre-Application	4,841	21,695	26,536
	Post-Application	4,841	21,695	26,536
	Net Change	**0**	**0**	**0**

Notes:

1. Pre-application and post-application operational emissions are based on 6 months of operations.

Table 3-4: Summary of Criteria Pollutant Emissions for Each SCGT

Pollutant	Period	Monthly Emissions (lb/mo)			Maximum Annual Operational Emissions (lb/yr)
		Commissioning	Operational	Maximum	
NO_x	Pre-Application	1,913	6,984	6,984	26,260
	Post-Application	1,913	6,984	6,984	15,600
	Net Change	**0**	**0**	**0**	**-10,660**
CO	Pre-Application	8,594	5,504	8,594	29,730
	Post-Application	8,594	5,504	8,594	24,543
	Net Change	**0**	**0**	**0**	**-5,187**
VOC	Pre-Application	285	1,973	1,973	7,510
	Post-Application	285	1,973	1,973	4,533
	Net Change	**0**	**0**	**0**	**-2,977**
PM_{10}/ $PM_{2.5}$	Pre-Application	583	4,638	4,638	14,695
	Post-Application	583	4,638	4,638	6,596
	Net Change	**0**	**0**	**0**	**-8,099**
SO_x	Pre-Application	151	1,207	1,207	1,275
	Post-Application	151	1,207	1,207	573
	Net Change	**0**	**0**	**0**	**-702**

Table 3-5: Maximum Commissioning Year Emissions for Each SCGT

Pollutant	Period	Commissioning Emissions (lb/event)	Operational Emissions (lb/yr)	Total Commissioning Year Emissions (lb/yr)
NO_x	Pre-Application	5,722	62,853	68,575
	Post-Application	5,722	15,600	21,322
	Net Change	**0**	**-47,253**	**-47,253**
CO	Pre-Application	25,395	49,536	74,931
	Post-Application	25,395	24,543	49,938
	Net Change	**0**	**-24,993**	**-24,993**
VOC	Pre-Application	836	17,760	18,596
	Post-Application	836	4,533	5,369
	Net Change	**0**	**-13,227**	**-13,227**
$PM_{10}/PM_{2.5}$	Pre-Application	1,744	41,743	43,487
	Post-Application	1,744	6,596	8,340
	Net Change	**0**	**-35,147**	**-35,147**

Pollutant	Period	Commissioning Emissions (lb/event)	Operational Emissions (lb/yr)	Total Commissioning Year Emissions (lb/yr)
SO_x	Pre-Application	454	10,859	11,313
	Post-Application	454	573	1,027
	Net Change	**0**	**-10,286**	**-10,286**

Notes:

1. Pre-application operational emissions are based on 9 months of operations.
2. Post-application operational emissions are based on total operational annual emissions.

Table 3-6: Summary of Facility-Wide Criteria Pollutant Emissions

Pollutant	Period	Maximum Monthly Emissions (lb/mo)	Maximum Annual Operational Emissions (lb/yr)	Maximum Annual Operational Emissions (ton/yr)
NO_x	Pre-Application	56,635.9	274,130.4	137.07
	Post-Application	56,635.9	293,593.4	146.80
	Net Change	**0.0**	**19,463.0**	**9.73**
CO	Pre-Application	225,025.9	487,373.6	243.69
	Post-Application	225,025.9	494,972.0	247.49
	Net Change	**0.0**	**7,598.4**	**3.80**
VOC	Pre-Application	34,623.2	136,613.9	68.31
	Post-Application	34,623.2	146,346.7	73.17
	Net Change	**0.0**	**9,732.8**	**4.87**
$PM_{10}/PM_{2.5}$	Pre-Application	31,314.0	139,042.3	69.52
	Post-Application	31,314.0	139,031.3	69.52
	Net Change	**0.0**	**-11.0**	**-0.01**
SO_x	Pre-Application	12,089.6	20,356.9	10.18
	Post-Application	12,089.6	23,644.9	11.82
	Net Change	**0.0**	**3,288.0**	**1.64**

3.2 Toxic Air Contaminants

Emissions from the CCGTs and SCGTs were calculated using the same emissions factors used by SCAQMD in the FDOC dated November 18, 2016. The hourly emissions for the CCGTs and SCGTs will not change due to this proposed permit modifications. The annual emissions calculation basis is the same as in the FDOC with the exception of the proposed operating hour modifications.

Each CCGT annual emission rate is based on the increase in maximum output operating hours to 6,005 hours, plus the same number of starts and shutdowns, for a total of 6,545 hours of operation a year. The annual emissions are based the average heat input rating of 2,250 MMBtu/hr. Hourly emissions are based the maximum heat input rating of 2,275 MMBtu/hr.

Each SCGT annual emission rate is based on the decrease in maximum output operating hours to 700 hours, plus the same number of starts and shutdowns, for a total of 1,060 hours of operation a year. The annual emissions are based the average heat input rating of 875.6 MMBtu/hr. Hourly emissions are based the maximum heat input rating of 878.9 MMBtu/hr.

The change in hourly and annual TAC emissions were compared on a unit basis for the CCGTs (Table 3-7), SCGTs (Table 3-8), and facility-wide (Table 3-9).

Table 3-7: Toxic Air Contaminant Emissions for Each CCGT

Pollutant	Pre-Application		Post-Application		Net Change	
	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Ammonia	15.74	72,226.47	15.74	101,879.79	0.00	29,653.32
Acetaldehyde	0.40	1,837.03	0.40	2,591.25	0.00	754.21
Acrolein	0.01	37.78	0.01	53.30	0.00	15.51
Benzene	0.01	34.03	0.01	48.00	0.00	13.97
1,3-Butadiene	0.00	4.49	0.00	6.33	0.00	1.84
Ethylbenzene	0.07	334.01	0.07	471.14	0.00	137.13
Formaldehyde	0.82	3,757.57	0.82	5,300.27	0.00	1,542.71
Naphthalene	0.00	13.57	0.00	19.14	0.00	5.57
PAHs (exc. Naph.)	0.00	4.70	0.00	6.63	0.00	1.93
Propylene Oxide	0.07	302.69	0.07	426.97	0.00	124.27
Toluene	0.30	1,356.90	0.30	1,913.99	0.00	557.09
Xylene	0.15	668.01	0.15	942.27	0.00	274.26

Table 3-8: Toxic Air Contaminant Emissions for Each SCGT

Pollutant	Pre-Application		Post-Application		Net Change	
	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Ammonia	6.08	14,299.90	6.08	6,422.84	0.00	-7,877.06
Acetaldehyde	0.15	363.71	0.15	163.36	0.00	-200.35
Acrolein	0.00	7.48	0.00	3.36	0.00	-4.12
Benzene	0.00	6.74	0.00	3.03	0.00	-3.71
1,3-Butadiene	0.00	0.89	0.00	0.40	0.00	-0.49
Ethylbenzene	0.03	66.13	0.03	29.70	0.00	-36.43
Formaldehyde	0.32	743.95	0.32	334.15	0.00	-409.80
Naphthalene	0.00	2.69	0.00	1.21	0.00	-1.48
PAHs (exc. Naph.)	0.00	0.93	0.00	0.42	0.00	-0.51
Propylene Oxide	0.03	59.93	0.03	26.92	0.00	-33.01
Toluene	0.11	268.65	0.11	120.66	0.00	-147.98
Xylene	0.06	132.26	0.06	59.40	0.00	-72.85

Table 3-9: Summary of Facility-Wide Toxic Air Contaminant Emissions

Pollutant	Pre-Application		Post-Application		Net Change	
	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Ammonia	55.98	202,076.53	55.98	229,874.92	0.00	27,798.39
Acetaldehyde	1.42	5,129.46	1.42	5,836.49	0.00	707.03
Acrolein	0.03	105.98	0.03	120.52	0.00	14.54
Benzene	0.03	96.05	0.03	109.14	0.00	13.10
1,3-Butadiene	0.00	12.53	0.00	14.26	0.00	1.73
Ethylbenzene	0.26	933.77	0.26	1,062.32	0.00	128.55
Formaldehyde	2.90	10,493.15	2.90	11,939.35	0.00	1,446.21
Hexane	0.00	0.83	0.00	0.83	0.00	0.00
Naphthalene	0.01	37.94	0.01	43.16	0.00	5.22
PAHs (exc. Naph.)	0.00	13.13	0.00	14.94	0.00	1.81
Propylene	0.04	95.46	0.04	95.46	0.00	0.00
Propylene Oxide	0.23	845.10	0.23	961.60	0.00	116.50
Toluene	1.05	3,793.17	1.05	4,315.41	0.00	522.24
Xylene	0.52	1,868.60	0.52	2,125.71	0.00	257.10

3.3 Greenhouse Gas Emissions

GHG emissions from the CCGTs and SCGTs were calculated using the same emissions factors used by SCAQMD in the FDOC dated November 18, 2016. The annual GHG emissions calculation basis is the same as in the FDOC with the exception of the proposed operating hour modifications.

Each CCGT annual emission rate is based on the increase in maximum output operating hours to 6,005 hours, plus the same number of starts and shutdowns, for a total of 6,545 hours, multiplied by the average heat input rating of 2,250 MMBtu/hr for an annual heat input rating of 14,722,986 MMBtu/yr.

Each SCGT annual emission rate is based on the decrease in maximum output operating hours to 700 hours, plus the same number of starts and shutdowns, for a total of 1,060 hours times the average heat input rating of 875.6 MMBtu/hr for an annual heat input rating of 928,186 MMBtu/yr.

The modification to the facility's annual operational hours caused the GHG emissions associated with the CCGTs to increase (Table 3-10), while a reduction is predicted for the SCGTs (Table 3-11), and an overall facility-wide net increase in GHG emissions (Table 3-12).

Table 3-10: Annual GHG Emissions for Each CCGT

Greenhouse Gas	Annual Emissions (ton/yr)		
	Pre-Application	Post-Application	Net Change
CO_2	610,480	861,119	250,639
CH_4	11.51	16.23	4.72
N_2O	1.15	1.62	0.47
CO_2e	611,110	862,008	250,898

Table 3-11: Annual GHG Emissions for Each SCGT

Greenhouse Gas	Annual Emissions (ton/yr)		
	Pre-Application	Post-Application	Net Change
CO_2	120,867	54,288	-66,579
CH_4	2.28	1.02	-1.25
N_2O	0.23	0.10	-0.13
CO_2e	120,992	54,344	-66,648

Table 3-12: Summary of Facility-Wide GHG Emissions

Equipment	Period	CO_2e Emissions (ton/yr)
CCGT (total, 2 units)	Pre-Application	1,222,221
	Post-Application	1,724,016
	Net Change	**501,795**
SCGT (total, 4 units)	Pre-Application	483,968
	Post-Application	217,375
	Net Change	**-266,592**
Boiler	Pre-Application	11,073
	Post-Application	11,073
	Net Change	**0**
Transformers	Pre-Application	74
	Post-Application	74
	Net Change	**0**
Facility-wide	Pre-Application	1,717,335
	Post-Application	1,952,538
	Net Change	**235,203**

4.0 MODELING

This section describes the updated dispersion modeling associated with the proposed AEC emission limit permit modifications. The modeling from the Authority to Construct (ATC) application that was presented, reviewed and accepted by SCAQMD in the FDOC Engineering Evaluation dated November 18, 2016 was the basis or starting point for the modeling. The modeling for this proposed permit modification was conducted based on EPA's 2017 Guideline on Air Quality Models [1], and following the methodology outlined in the modeling protocol provided to SCAQMD dated November 7, 2018 and subsequent comments from SCQAMD on December 20, 2018. Appendix C presents the modeling protocol and SCQAMD comments on the modeling protocol.

The proposed modifications do not affect the maximum hourly, 3-hour, 8-hour, or daily emissions, as the maximum daily and short-term operating schedule and emission rates for startups and shutdowns and maximum output operations will remain the same for the CCGTs and SCGTs. Only the annual number of maximum output operating hours for the CCGTs and SCGTs will change. Since short-term emissions will not change for any of the sources, no modeling revisions were conducted for any short-term standards.

Based on the revised criteria pollutant emissions for the total facility, the change in the operating hours will have the following net impacts:

- Annual $PM_{10}/PM_{2.5}$ emissions will decrease slightly;
- Annual CO emissions will increase by about 4 tons/yr;
- Annual NO_x emissions will increase by about 10 tons/yr;
- Annual SO_2 emissions will increase by about 2 tons/yr; and
- Annual VOC emissions will increase by about 5 tons/yr.

Based on the annual emissions modifications, modeling was conducted for annual NO_2, PM_{10}, and $PM_{2.5}$ standards in the air quality impact analysis (AQIA), and the health risk assessment (HRA) for TAC emissions was updated.

All AQIA and HRA modeling input and output files are provided electronically with this permit application.

4.1 Air Dispersion Modeling Methodology

Air dispersion models calculate the atmospheric transport and fate of pollutants from the emission source. The models calculate the concentration of selected pollutants at specific downwind ground-level points, such as residential or off-site workplace receptors. The transformation (fate) of an airborne pollutant, its movement with the prevailing winds (transport), its crosswind and vertical movement due to atmospheric turbulence (dispersion), and its removal due to dry and wet deposition are influenced by the pollutant's physical and chemical properties and meteorological and environmental conditions. Factors such as distance from the source to the receptor, meteorological conditions, intervening land use and terrain, pollutant release characteristics, and background pollutant concentrations affect the predicted concentration of an air pollutant. Air

[1] EPA Guideline on Air Quality Models. Jan 17, 2017.
https://www3.epa.gov/ttn/scram/appendix_w/2016/AppendixW_2017.pdf.

dispersion models take these factors into consideration when calculating downwind ground-level pollutant concentrations.

The following describes the dispersion modeling used for the AQIA and HRA.

4.1.1 Model Selection

The air dispersion model used was the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) Version 18081, with the Lakes Environmental Software implementation/user interface, AERMOD View™ Version 9.6.5. For the HRA, AERMOD was run with all sources emitting unit emissions [1 gram/second (g/s)] to obtain the X/Q (Chi/Q) values that are necessary for input into the Hotspots Analysis and Reporting Program, version 2 (HARP2). For the AQIA, actual emissions for each criteria pollutant and source are used in AERMOD.

4.1.2 Modeling Options

Regulatory defaults, the "Urban" modeling option, and "Elevated" terrain were used for the analyses. Urban areas typically have more surface roughness and structures and low-albedo surfaces that absorb more sunlight, and thus more heat, relative to rural areas. According to SCAQMD guidelines, the urban dispersion option was selected using the population of 9,818,605 for Los Angeles County.

4.1.3 Meteorological Data

The most recent AERMOD-ready pre-processed meteorological data files were downloaded directly from the SCAQMD website for the Long Beach station. This is the nearest meteorological station and most representative of conditions at the facility, and the same station used in the previous ATC modeling. The meteorological files contain data for the years 2012-2016.

4.1.4 Receptors

Modeling results were obtained for various locations around the facility. These receptor locations were identified as a grid of receptors to establish the potential impact area and discrete receptors that were positioned at specific locations of interest.

The same receptor grid used in the ATC application was used in this modeling revision. The grid consists of property boundary receptors placed at 30-meter intervals. Beyond the property boundary, receptor spacing was as follows:

- 50-meter spacing from property boundary to 500 meters;
- 100-meter spacing from beyond 500 meters to 3 kilometer (km);
- 500-meter spacing from beyond 3 km to 10 km;
- 1,000-meter spacing from beyond 10 km to 25 km; and
- 5,000-meter spacing from beyond 25 km to 50 km.

Class I Area Receptors

The nearest Class I area is the San Gabriel Wilderness, which is approximately 53 km from the AEC site. To address Prevention of Significant Deterioration (PSD) Class I Increment Standards, a ring of receptors was set at 50 km from the facility, which is the farthest

distance at which AERMOD can reliably estimate concentrations. The ring was spaced in 5-degree increments centered on the AEC site location. The same Class I receptors used in the ATC application was used in this modeling revision.

HRA Receptors

For the HRA, in addition to the using same receptor grid out to 50 km, additional discrete Cartesian receptors within 6-miles were used to evaluate the impacts at the locations of the sensitive receptors. Furthermore, the census receptors based on 2010 data within 6 miles were included. The same sensitive and census receptors used in the ATC application were used in this modeling revision.

4.1.5 On-Site Buildings

The on-site buildings close to the emission sources were included in the modeling. The same buildings used in the ATC application were used in this modeling revision. Building downwash effects were assessed using EPA's Building Profile Input Program – Plume Rise Model Enhancement (BPIPPRM). The buildings included in the modeling are shown in blue in Figure 3-1.

4.1.6 Elevation Data

As none of the sources, buildings or receptors moved, AERMAP was not updated. Receptor elevations and hill heights were estimated using AERMAP Version 11103 in for the ATC application. All receptors and source locations were expressed in a Universal Transverse Mercator (UTM) North American Datum (NAD83), Zone 11 coordinate system.

4.1.7 NO_2 Modeling

Per EPA's 2017 Guideline on Air Quality Models, and the recommendations from SCQAMD, annual NO_2 annual modeling used the Ambient Ratio Method 2 (ARM2) to convert NO_x to NO_2.

4.1.8 Criteria Pollutant Emissions and Stack Parameters

An operating scenario analysis was conducted for the ATC to determine the combination of load, emission rates and stack parameters that caused the highest predicted annual concentrations. Based on this analysis, the emissions and stack parameters associated with case 7 (minimum load at average ambient temperature) for both the CCGTs and SCGTs were used in all annual analyses.

A revised operating scenario analysis was not necessary, since the annual emission profiles for each CCGT case increase proportionally and decrease proportionally for each SCGT case, thus CCGT case 7 and SCGT case 7 continue to have the maximum impacts.

The CCGT stack parameters that were included in the revised modeling are the same as in the ATC based on operating case 7, except the stack height is now 150 feet (45.7 m) as described in the Administrative Change application dated May 9, 2018.

Each CCGT annual emission rate is based on the increase in operating hours to 6,005 hours, plus the same number of starts and shutdowns. The revised CCGT annual emissions used in the modeling are based on a total of 6,545 hours of operation (6,005 hours of operation

per year at minimum (44%) load (case 7), plus 80 cold starts, 420 non-cold starts, and 500 shutdowns, for a total of 540 hours of start-ups and shutdowns per year).

The SCGT stack parameters that were included in the revised modeling are the same as in the ATC based on operating case 7. Each SCGT annual emission rate is based on the decrease in operating hours to 700 hours per year, plus the same number of starts and shutdowns. The revised SCGT annual emissions used in the modeling are based on a total of 1,060 hours of operation (700 hours at minimum (50%) load (case 7), plus 500 starts and 500 shutdowns, for a total of 360 hours of start-ups and shutdowns per year).

The same auxiliary boiler stack parameters and emission rates were used in the revised modeling as in the ATC. The emissions are based on the maximum annual firing rate for 8760 hours total at 30% load or 21.23 MMBtu/hr, including 24 cold starts, 48 warm starts, 48 hot starts.

Table 4-1 presents the stack parameters and emission rates that were used in the annual criteria pollutant modeling. Detailed emission calculations are presented in Appendix B.

Table 4-1: Stack Parameters and Emission Rates for Annual Modeling

Source	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (°K)	NO_x Emission Rate (g/s)	$PM_{10}/PM_{2.5}$ Emission Rate (g/s)
CCGT1	45.7	6.1	11.8	350	1.071	0.808
CCGT2	45.7	6.1	11.8	350	1.071	0.808
SCGT1	24.4	4.11	23.6	746	0.191	0.091
SCGT2	24.4	4.11	23.6	746	0.191	0.091
SCGT3	24.4	4.11	23.6	746	0.191	0.091
SCGT4	24.4	4.11	23.6	746	0.191	0.091
Auxiliary Boiler	24.4	0.91	21.2	432	0.019	0.019

4.2 Air Quality Impact Analysis

4.2.1 Background Air Quality

In response to SCAQMD's comments on the modeling protocol, the most recent background air quality data were included in the AQIA. Data were obtained from the same monitoring stations as identified in the ATC application. These are the South Coastal Los Angeles County 1 – North Long Beach, South Coastal Los Angeles County 2 – South Long Beach, and South Coastal Los Angeles County 3 – 2425 Webster Street, Long Beach. Table 4-2 presents the annual NO_2, PM_{10}, and $PM_{2.5}$ ambient data collected at these stations from 2014 to 2016. The maximum concentration measured for each pollutant from any of the stations was used in the AQIA.

The monitoring data indicate that the air quality in the Project area is below the NAAQS and CAAQS for NO_2 and $PM_{2.5}$. However, the CAAQS is exceeded in the Project area for PM_{10}.

Table 4-2: Background Ambient Air Quality Data in Long Beach

Pollutant	Averaging Time	Monitoring Station Location	Ambient Background Data				CAAQS	NAAQS
			2014	2015	2016	Max		
NO_2 (ppb)	Annual	South Coastal Los Angeles County 3 – 2425 Webster Street, Long Beach	20.7	19.8	18.5	20.7	30	53
PM_{10} ($\mu g/m^3$)	Annual	South Coastal Los Angeles County 2 – South Long Beach	26.6	26.5	27.8	27.8	20	-
		South Coastal Los Angeles County 3 – 2425 Webster Street, Long Beach	29.6	31.5	31.9	31.9	20	-
$PM_{2.5}$ ($\mu g/m^3$)	Annual	South Coastal Los Angeles County 1 – North Long Beach	11.4	10.8	10.4	11.4	12	12
		South Coastal Los Angeles County 2 – South Long Beach	10.7	10.3	9.6	10.7	12	12

Sources: SCAQMD. http://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year and CARB. https://arb.ca.gov/adam.

4.2.2 Rule 1303

Although Rule 1304 provides an exemption for Rule 1303 modeling, the ATC provided this modeling, and it has been subsequently requested for this permit modification by SCAQMD.

This analysis predicts the total facility annual NO_2, PM_{10}, and $PM_{2.5}$ model concentrations. It included annual emissions from the two CCGTs, four SCGTs and auxiliary boiler.

This analysis predicted the maximum total facility annual NO_2 modeled concentration and summed it with the highest ambient background NO_2 concentration for comparison to the annual NO_2 CAAQS and NAAQS. The maximum total facility annual PM_{10} and $PM_{2.5}$ modeled concentrations were predicted and compared to the Rule 1303 significant change thresholds. The total facility annual $PM_{2.5}$ modeled concentration was also summed with the background $PM_{2.5}$ concentration for comparison to the annual $PM_{2.5}$ CAAQS and NAAQS.

Table 4-3 presents the results of this analysis which shows there are no exceedances of any thresholds.

Table 4-3: Modeled Results – Annual Operations for Total Facility

Pol	Avg. Time	Modeled Conc. (µg/m³)	Max. Back-ground Conc. (µg/m³)	Modeled + Back-ground Conc. (µg/m³)	CAAQS (µg/m³)	NAAQS (µg/m³)	Rule 1303 Thresholds (µg/m³)	Exceed Threshold?
NO_2	Annual	0.365	39.6	40.0	57	100	-	No
PM_{10}	Annual	0.300	-	-	20	-	1	No
$PM_{2.5}$	Annual	0.300	11.4	11.7	12	12	-	No

Notes:

1. This table revises FDOC Table 57.
2. The NO_2 concentration included conversion of NO_x to NO_2 using ARM2.
3. The PM_{10} background concentration is greater than the CAAQS.

4.2.3 Rule 2005

This analysis estimated the maximum annual NO_2 concentrations for each CCGT and each SCGT and combined it with the highest ambient background NO_2 concentration for comparison to the annual NO_2 CAAQS and NAAQS for each turbine.

Table 4-4 presents the results of the maximum predicted annual NO_2 concentration for any CCGT. Table 4-5 presents the results of the maximum predicted annual NO_2 concentration for any SCGT. This analysis showed there are no exceedances of any thresholds.

Table 4-4: Rule 2005 Modeled Results – Annual Operations for a Single CCGT

Pol	Avg. Time	Modeled Conc. (µg/m³)	Max. Back-ground Conc. (µg/m³)	Modeled + Back-ground Conc. (µg/m³)	CAAQS (µg/m³)	NAAQS (µg/m³)	Rule 1303 Thresholds (µg/m³)	Exceed Threshold?
NO_2	Annual	0.165	39.6	39.8	57	100	-	No

Notes:

1. This table revises FDOC Table 88.
2. Maximum modeled concentration predicted for either CCGT.
3. The NO_2 concentration included conversion of NO_x to NO_2 using ARM2.

Table 4-5: Rule 2005 Modeled Results – Annual Operations for a Single SCGT

Pol	Avg. Time	Modeled Conc. (µg/m³)	Max. Back-ground Conc. (µg/m³)	Modeled + Back-ground Conc. (µg/m³)	CAAQS (µg/m³)	NAAQS (µg/m³)	Rule 1303 Thresholds (µg/m³)	Exceed Threshold?
NO_2	Annual	0.016	39.6	39.6	57	100	-	No

Notes:

1. This is a new FDOC Table 88A for SCGTs.
2. Maximum modeled concentration predicted for any SCGT.
3. The NO_2 concentration included conversion of NO_x to NO_2 using ARM2.

4.2.4 PSD Analyses

Class II Analysis

For compliance with Rule 1703 PSD, annual NO_2 and PM_{10} modeling was conducted for the entire facility (two CCGTs, four SCGTs and the auxiliary boiler) for comparison to the Class II Significant Impact Levels (SILs) and increments.

Table 4-6 shows that the model-predicted NO_2 and PM_{10} annual concentrations are less than the SILs and increments, thus the impacts are less than significant, and no further PSD analysis is required.

Table 4-6: Total Facility Model-Predicted Impacts Compared to Class II SILs and PSD Increments

Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Class II Significant Impact Level (SIL) ($\mu g/m^3$)	Exceed SIL?	PSD Class II Increment ($\mu g/m^3$)	Exceed Increment?
NO_2	Annual	0.36	1.0	No	25	No
PM_{10}	Annual	0.30	1.0	No	17	No

Notes:

1. This table revises FDOC Table 82.
2. The NO_2 concentration included conversion of NO_x to NO_2 using ARM2.

Class I Analysis

For compliance with Rule 1703 PSD, annual NO_2 and PM_{10} modeling was conducted for the entire facility (two CCGTs, four SCGTs and the auxiliary boiler) for comparison to the Class I SILs. The Class I modeling estimated concentrations at the 50 km receptor ring.

Table 4-7 shows that the model-predicted NO_2 and PM_{10} annual concentrations are less than the Class I SILs, thus the impacts are less than significant, and no further PSD analysis is required.

Table 4-7: Total Facility Model-Predicted Impacts Compared to Class I SILs

Pollutant	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Class I Significant Impact Level (SIL) ($\mu g/m^3$)	Exceed SIL?
NO_2	Annual	0.007	0.3	No
PM_{10}	Annual	0.005	0.2	No

Notes:

1. This table revises FDOC Table 84.
2. The NO_2 concentration included conversion of NO_x to NO_2 using ARM2.
3. Maximum modeled concentrations predicted at 50 kilometers from facility.

4.3 Health Risk Assessment

The HRA modeling from the ATC application that was presented, reviewed and accepted by SCAQMD in the FDOC Engineering Evaluation dated November 18, 2016 was the basis or starting point modeling for these permit modifications.

The HRA modeling in these permit modifications was conducted based on the Office of Environmental Health Hazard Assessment (OEHHA) 2015 guidelines[2] Tier 1 and SCAQMD Tier 4 techniques[3] to estimate the health risk impacts at all receptors, including the nearby residential, sensitive, and off-site worker receptors.

The health risk calculations were performed using the HARP2 Air Dispersion Modeling and Risk Tool (ADMRT, version 18159). The X/Q values that were determined for each source using AERMOD were imported into HARP2 and used in conjunction with hourly and annual emissions to determine the Ground-Level Concentration (GLC) for each pollutant. The GLCs were then used to estimate the long-term cancer health risk to an individual and non-cancer chronic and acute health indices.

A description of the parameters used in the HARP2 modeling is provided below. The HARP2 summary report and results are presented in Appendix D.

4.3.1 TAC Emissions and Stack Parameters

The CCGT stack parameters that were included in the revised modeling are the same as in the ATC based on operating case 7, except the stack height is now 150 feet (45.7 m) as described in the Administrative Change application dated Apr. 27, 2018.

The annual emissions calculation basis is the same as in the ATC with the exception of the operating hour modification, as described herein.

Each CCGT annual emission rate is based on the increase in maximum output operating hours to 6,005 hours, plus the same number of starts and shutdowns as the ATC, for a total of 6,545 hours. The annual emissions are based the average heat input rating of 2,250 MMBtu/hr. Hourly emissions are based the maximum heat input rating of 2,275 MMBtu/hr.

Each SCGT annual emission rate is based on the decrease in maximum output operating hours to 700 hours, plus the same number of starts and shutdowns as the ATC, for a total of 1,060 hours. The annual emissions are based the average heat input rating of 875.6 MMBtu/hr. Hourly emissions are based the maximum heat input rating of 878.9 MMBtu/hr.

The same auxiliary boiler stack parameters and emission rates were used in the revised modeling as in the ATC. The emissions are based on the maximum annual firing rate for 8,760 hours total at 30% load or 21.23 MMBtu/hr, including 24 cold starts, 48 warm starts, 48 hot starts. Hourly emissions are based the maximum heat input rating of 70.8 MMBtu/hr.

[2] https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

[3] http://www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/riskassessproc-v8-1.pdf?sfvrsn=12.

Table 4-1 presents the stack parameters that were used in the HRA modeling. Detailed emission calculations are presented in Appendix B.

4.3.2 Cancer Risk

Maximum Individual Cancer Risk (MICR) is the estimated probability of a maximally exposed individual contracting cancer as a result of exposure to TACs over a period of 30 years for residential receptor locations and 25 years for off-site worker receptor locations. Sensitive receptors, such as schools, hospitals, convalescent homes, and daycare centers, were evaluated the same as residences.

Workplace risks were evaluated at the point of maximum impact (PMI) as a conservative estimate since workplaces border the facility. The PMI is a location within the modeling grid where the model calculates the highest (worst-case) pollutant concentrations. The PMI may or may not be a habitable location. Fenceline receptors were evaluated for the worker risk analysis since workplace receptors immediately surround the AEC site.

Residential and off-site worker cancer risks were estimated at all receptors, including the grid (0-50km), census and sensitive receptors. Peak residential risk was determined by examining the highest predicted HRA results in residential areas.

Per SCAQMD guidance, the exposure pathways used to estimate the MICR for both residential/sensitive receptors and off-site workplace receptors are listed in Table 4-8. Any exposure pathways not explicitly shown in Table 4-8 were not included in this HRA.

Table 4-8: Exposure Pathways

Exposure Pathway	Grid/Residential/Sensitive	Workplace
Inhalation	Yes	Yes
Soil Ingestion	Yes	Yes
Dermal	Yes	Yes
Mother's Milk	Yes	No
Homegrown Produce	Yes	No
Drinking Water and Fish	No	No
Beef and Dairy Cows	No	No
Pigs, Chickens, and Eggs	No	No

Per SCAQMD guidelines, the MICR estimates assumed a deposition velocity of 0.02 meters per second (m/s) and a warm climate for the dermal pathway. Residential/sensitive estimates were calculated using the "RMP Using the Derived Method," and off-site workplace MICR estimates used the "OEHHA Derived" calculation method. The RMP uses high-end breathing rates (95th percentile) for children from the 3rd trimester through age 2 and 80th percentile breathing rates for all other ages for residential exposures. The "OEHHA Derived" method uses high-end exposure parameters for the top two exposure pathways and mean exposure parameters for the remaining pathways for cancer risk estimates. The "RMP Using the Derived Method" combines the two approaches. The facility can operate continuously, thus no Worker Adjustment Factor (WAF) was applied in HARP2.

4.3.3 Chronic Hazard Index

Some TACs increase non-cancer health risk due to long-term (chronic) exposures. The Chronic Hazard Index (HIC) is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. The HIC estimates for all receptor types used the "OEHHA Derived" calculation method. The reported HIC is for the maximally affected target organ system.

4.3.4 Acute Hazard Index

Some TACs increase non-cancer health risk due to short-term (acute) exposures. The Acute Hazard Index (HIA) is the sum of the individual substance acute hazard indices for all TACs affecting the same target organ system. Acute risk is calculated from a 1-hour exposure. The reported HIA is for the maximally affected target organ system.

4.3.5 Cancer Burden

Cancer burden is the estimated increase in the occurrence of cancer cases in a population subject to a MICR of greater than or equal to 1 in 1 million (1.0×10^{-6}) based on a 70-year exposure to TACs. The cancer burden was determined for the population located within the zone of impact (ZOI), which is defined as the area within the 1 in 1 million cancer risk isopleth for a 70-year exposure. HARP2 is able to generate an isopleth, a line of a constant value, showing the area exposed to a cancer risk above 1 in 1 million. The distance to the furthest receptor within the 1 in 1 million isopleth was used as the radius of a zone of impact. A conservative population density of 7,000 persons per square km was assumed based on SCAQMD HRA guidance.

4.3.6 HRA Results

To determine compliance with Rule 1401, the HRA was updated to present the results per permit unit and for the total facility.

Best Available Control Technology for Toxics (T-BACT) for combustion turbines was determined to be an oxidation catalyst, which will be installed on the CCGTs and SCGTs. Since T-BACT will be met, the MICR limit is ten in one million for each CCGT and SCGT.

Table 4-9 presents a summary of the HRA results from each permit unit at the MEIR, MEIW and maximally exposed sensitive receptor. As shown in the table, the health risk from the emissions from each permit unit are below the Rule 1401 thresholds. Notably, the MICR for either CCGT is less than 1 in a million and well below 1 in a million for each SCGT and the auxiliary boiler. The maximum predicted HIC and HIA for any unit is well below the threshold of 1.

Table 4-9: HRA Results by Permit Unit

Sources	Maximally Exposed Individual Resident (MEIR)	Sensitive Receptor	Maximally Exposed Individual Worker (MEIW)	Rule 1401 Threshold	Exceed Threshold?
CCGT-1					
MICR	0.78 in a million	0.48 in a million	0.04 in a million	10 in 1 million	No
HIC	0.0020	0.0012	0.0031	1	No
HIA	0.0052	0.0055	0.0056	1	No
CCGT-2					
MICR	0.73 in a million	0.53 in a million	0.04 in a million	10 in 1 million	No
HIC	0.0019	0.0013	0.0031	1	No
HIA	0.0046	0.0057	0.0051	1	No
SCGT-1					
MICR	0.026 in a million	0.007 in a million	0.0004 in a million	10 in 1 million	No
HIC	0.0001	0.00002	0.00003	1	No
HIA	0.0012	0.0017	0.0014	1	No
SCGT-2					
MICR	0.025 in a million	0.007 in a million	0.0004 in a million	10 in 1 million	No
HIC	0.0001	0.00002	0.00003	1	No
HIA	0.0012	0.0016	0.0014	1	No
SCGT-3					
MICR	0.023 in a million	0.007 in a million	0.001 in a million	10 in 1 million	No
HIC	0.0001	0.00002	0.00005	1	No
HIA	0.0011	0.0010	0.0018	1	No
SCGT-4					
MICR	0.022 in a million	0.007 in a million	0.001 in a million	10 in 1 million	No
HIC	0.0001	0.00002	0.00005	1	No
HIA	0.0011	0.0010	0.0018	1	No
Auxiliary Boiler					
MICR	0.004 in a million	0.005 in a million	0.0003 in a million	1 in 1 million	No
HIC	0.00001	0.00002	0.00003	1	No
HIA	0.0002	0.0001	0.0002	1	No

Notes:

1. This table revises FDOC Tables 68, 69 and 70.
2. All receptors were included in the worker analysis.

For CEQA purposes and at the request of the SCAQMD, Table 4-10 presents a summary of the HRA results from the total facility emissions at the MEIR, MEIW and maximally exposed sensitive receptor. The HRA predicted that the MICR at each receptor type is less than 10 in one million, and the HIC and HIA are well below than 1. The MICR for the MEIR was predicted to occur within the residences north of East 7th Street. The peak MICR at a sensitive receptor was predicted to occur at Rosie the Riveter Charter High School located immediately adjacent to the AEC site. The peak MICR at a worker receptor was predicted to occur on the northern property line.

Table 4-10: Total Facility HRA Results

Health Risk	Maximally Exposed Individual Resident (MEIR)	Maximum Sensitive Receptor	Maximally Exposed Individual Worker (MEIW)	Threshold	Exceed Threshold?
MICR	1.61 in a million	1.05 in a million	0.09 in a million	10 in a million	No
HIC	0.0041	0.0027	0.0064	1	No
HIA	0.0146	0.0166	0.0173	1	No
Cancer Burden	0.0283			0.5	No

Notes:

1. This table revises FDOC Table 70A.
2. All receptors were included in the worker analysis.

Figure 4-1 shows the 70-year cancer risk isopleth for determination of the ZOI for the cancer burden calculation. Table 4-11 summarizes the cancer burden and the parameters used in estimating this value.

Figure 4-1: 70-Year Cancer Risk Isopleth and ZOI

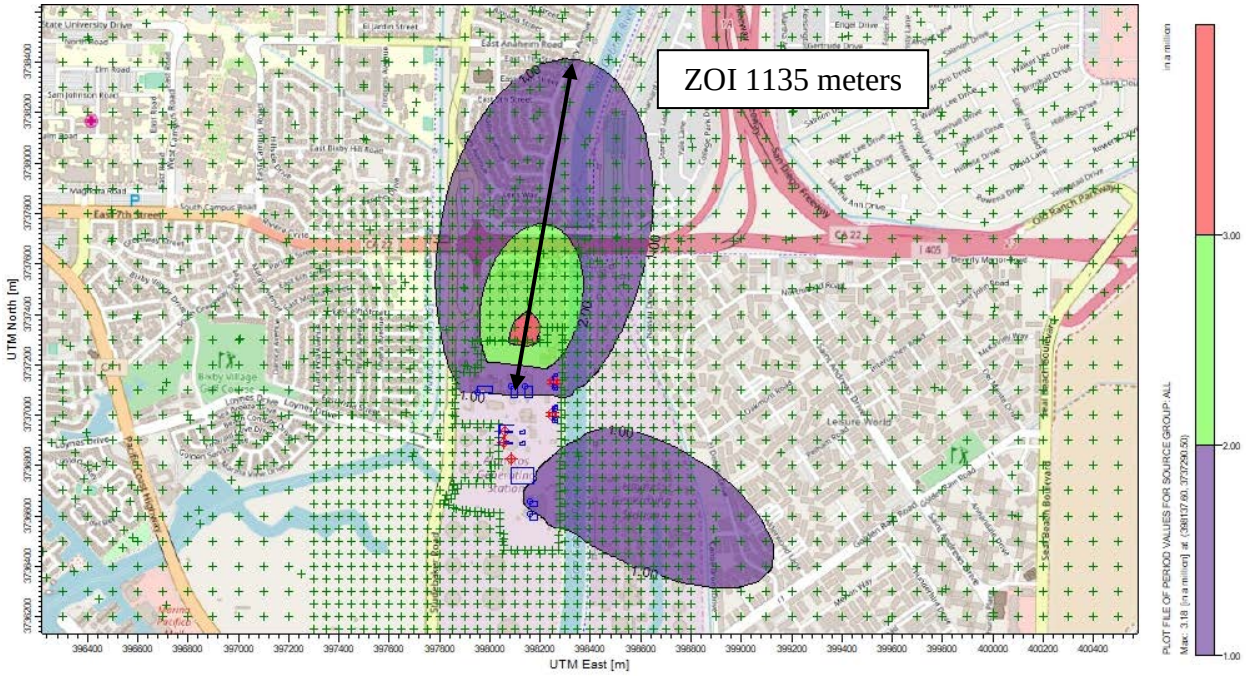

Table 4-11: Cancer Burden Estimation

Parameter	Value
MICR	1.00E-06
Maximum Radius of ZOI (m)	1135
ZOI Area (km^2)	4.045
Population Estimate (person/km^2)	7000
Cancer Burden	**0.0283**

Notes:

1. 7000 persons/km^2 is the SCAQMD maximum density default.
2. Cancer burden MICR is based on 70-year exposure.

5.0 RULE COMPLIANCE EVALUATION

5.1 Regulation II – Permits

5.1.1 Rule 212 – Standards for Approving Permits and Issuing Public Notice

Public notice is required for any new or modified equipment under Regulation XXX that may emit air contaminants located within 1,000 feet from the outer boundary of a school, unless the modification will result in a reduction of emissions of air contaminants from the facility and no increase in health risk at any receptor location. The nearest K-12 school, Rosie the Riveter Charter High School, is located within 1,000 feet. Due to the expected increase in toxic air contaminants; public notice is required.

5.1.2 Rule 218 – Continuous Emissions Monitoring

The CCGTs and SCGTs are equipped with CO CEMS that comply with the requirements of Rule 218 (c), (e), and (f). The changes in operating limits will not affect compliance with this rule.

5.2 Regulation III – Fees; Rule 301

The processing fees were determined using Rule 301. Fees are summarized in Table 5-1. The applicant is requesting expedited permit processing for these applications.

Table 5-1: Permit Processing Fees

Equipment	Rule 301 Table IA/IB	Schedule	Permit Action	Fee
CCGT-1 (D165)	Gas Turbine, > 50 MW, other fuel	G, FY 2018-19, Title V	Alteration/ Modification	$19,779.97
CCGT-2 (D173)	Gas Turbine, > 50 MW, other fuel	G, FY 2018-19, Title V, identical equipment	Alteration/ Modification	$9,889.99
Expedited Processing (50% of base fee)				$14,834.99
SCGT-1 (D185)	Gas Turbine, > 50 MW, other fuel	G, FY 2018-19, Title V	Alteration/ Modification	$19,779.97
SCGT-2 (D191)	Gas Turbine, > 50 MW, other fuel	G, FY 2018-19, Title V, identical equipment	Alteration/ Modification	$9,889.99
SCGT-3 (D197)	Gas Turbine, > 50 MW, other fuel	G, FY 2018-19, Title V, identical equipment	Alteration/ Modification	$9,889.99
SCGT-4 (D203)	Gas Turbine, > 50 MW, other fuel	G, FY 2018-19, Title V, identical equipment	Alteration/ Modification	$9,889.99
Expedited Processing (50% of base fee)				$24,724.99
RECLAIM/Title V Permit Revision	---	Rule 301(m)(5) and Table VII	Amendment	$2,496.24
			Total	**$121,176.12**

5.3 Regulation IV – Prohibitions

5.3.1 Rule 401 – Visible Emissions

The subject equipment is not expected to result in visible emissions. Compliance with this rule is expected.

5.3.2 Rule 402 – Nuisance

This project is not expected to cause injury, detriment, nuisance, or annoyance to the public, based on the control systems and mitigation measures being employed as part of the project.

5.3.3 Rule 403 – Fugitive Dust

The fugitive dust emissions requirements set forth in Rule 403 will be adhered to by AES during operation. No significant fugitive dust emissions are expected from the facility during normal operations or due to the proposed changes in the operating limits. Therefore, compliance with this rule is expected.

5.3.4 Rule 407 – Liquid and Gaseous Air Contaminants

This rule prohibits an operator from discharging into the atmosphere from any equipment:

1. Carbon monoxide (CO) exceeding 2,000 ppm by volume measured on a dry basis, averaged over 15 consecutive minutes.
2. Sulfur compounds which would exist as liquid or gas at standard conditions, calculated as sulfur dioxide (SO_2) and averaged over 15 consecutive minutes, exceeding:
   (A) In the South Coast Air Basin, 500 ppm by volume, effective July 1, 1982.
   (B) In the Southeast Desert Air Basin portion of Riverside County:
      (i) 500 ppm by volume for equipment which is issued a permit to construct or permit to operate after July 1, 1982.
      (ii) 1,500 ppm by volume until January 1, 1984, and 500 ppm by volume thereafter for equipment that has been issued a permit to construct or permit to operate prior to July 1, 1982.

The SCGTs and CCGTs are equipped with oxidization catalysts to meet CO BACT requirements, which are well below the 2,000 ppmv limit. The gas turbines combust only pipeline quality natural gas and, therefore, SO_x emissions are less than the 500 ppmv limit required by Rule 407. The requested change in emission limits will not adversely impact continued compliance with this rule.

5.3.5 Rule 409 – Combustion Contaminants

This rule prohibits an owner/operator from discharging into the atmosphere from any equipment combustion contaminants exceeding 0.1 grain per cubic foot of gas calculated to 12 percent of CO_2 at standard conditions averaged over a minimum of 15 consecutive minutes. The gas turbines combust only pipeline quality natural gas. The requested change in emission limits will not adversely impact continued compliance with this rule.

5.3.6 Rule 431.1 – Sulfur Content of Gaseous Fuels

The natural gas supplied to the gas turbines and auxiliary boiler is unchanged (4 ppmv average sulfur content) and, therefore, is expected to comply with the 16 ppmv sulfur limit.

5.3.7 Rule 474 – Fuel Burning Equipment-Oxides of Nitrogen

The rule is superseded by NO_x RECLAIM, Rule 2001, Table I.

5.3.8 Rule 475 – Electric Power Generating Equipment

The facility-wide PM emissions from the change in operating limits is expected to slightly decrease; therefore, compliance with this rule is expected.

5.4 Regulation IX – New Source Performance Standards

Regulation IX, New Source Performance Standards (NSPS), was adopted by reference to the appropriate section of the Code of Federal Regulations (CFR). These regulations are periodically updated to reflect actions published in the Federal Register (FR) by the Environmental Protection Agency (EPA).

5.4.1 40 CFR 60, Subpart GG – Standards of Performance for Stationary Gas Turbines

This rule applies to stationary gas turbines that were constructed, modified or reconstructed after October 3, 1977. Subpart GG imposes emission standards for NO_x and SO_x from combustion turbines. The CCGTs and SCGTs are subject to 40 CFR Subpart KKKK and are thus exempt from requirements of Subpart GG (60.4305(b)).

5.4.2 40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

Each CCGT and SCGT is subject to 40 CFR 60 Subpart KKKK, *Standards of Performance for Stationary Combustion Turbines*, because the heat input rating of the unit is greater than 10 MMBtu/hr and the unit is being constructed after February 18, 2005. This subpart states that the natural gas limits apply when the total heat input is greater than 50% natural gas.

It is expected that each CCGT and SCGT will meet the standards of this subpart because of the use of SCR for NO_x control and the use of pipeline-quality natural gas. In addition to the emission standards, the rule outlines monitoring, recordkeeping and reporting requirements. Compliance will be demonstrated by operation of a CEMS to monitor NO_x emissions. The proposed changes to emission limits do not adversely impact continued compliance.

5.4.3 40 CFR 60, Subpart TTTT – GHG Emissions from Electric Generating Units

This rule applies to steam generating units, integrated gasification combined-cycle, and stationary gas turbines that commenced construction, modification, or reconstruction after January 8, 2014. Changes in emission limits proposed by these applications do not impact rule compliance.

5.5 Regulation X – National Emission Standards for Hazardous Air Pollutants

Regulation X, National Emission Standards for Hazardous Air Pollutants (NESHAP), was adopted by reference to the appropriate section of the CFR. These regulations are periodically updated to reflect actions published in the FR by the EPA.

5.5.1 NESHAPS for Stationary Gas Turbines – 40 CFR Part 63 Subpart YYYY

This regulation applies to gas turbines located at major sources of HAP emissions. A major source is defined as a facility with emissions of 10 tpy or more of a single HAP or 25 tpy or more of a combination of HAPs. The facility is not a major source of HAP; therefore, the requirements of this regulation do not apply.

5.6 Regulation XI – Source Specific Standards

5.6.1 Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

The rule is superseded by NO_x RECLAIM, Rule 2001, Table I.

5.6.2 Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Stations

The rule is superseded by NO_x RECLAIM, Rule 2001, Table I.

5.7 Regulation XIII – New Source Review

Since there is an emission increase of non-attainment air contaminants from the CCGTs, new source review is required. Since AEC is subject to Regulation XX – RECLAIM for NO_x, Regulation XIII is not applicable for NO_x.

5.7.1 Rule 1303 – Requirements

Rule 1303 requires use of best available control technology (BACT), emissions modeling and emission offsets unless otherwise exempt.

5.7.1.1 Best Available Control Technology (BACT)

All new and modified equipment that results in a net increase in emissions of greater than or equal to 1 lb/day must operate in accordance with the current BACT. The proposed modifications will increase CO, VOC, and SO_x emissions on an annual basis; however, the maximum daily controlled (MDC) emissions will remain unchanged. Therefore, BACT is not triggered.

5.7.1.2 Protection of Visibility

Modification to the emission limits will result in an increase in annual PM_{10} emissions from the CCGTs and a reduction in PM_{10} annual emissions from the SCGTs. Net facility-wide PM_{10} emissions will decrease slightly. The emissions increase associated with the CCGTs are well below 15 ton/year for PM_{10} for any one permit unit; therefore, modeling and analysis for plume visibility is not required.

5.7.1.3 Modeling

Total facility annual CO emissions will increase by 4 tons per year while $PM_{10}/PM_{2.5}$ emissions will decrease slightly. Table 4-3 presents the results of this analysis which shows there are no exceedances of any thresholds. Compliance is demonstrated.

5.7.1.4 Offsets

SCAQMD Regulation XIII requires that a facility with PM_{10}, SO_x, or VOC emissions greater than four tons per year provide emission offsets, unless the project qualifies for a Rule 1304 exemption or credits from the Rule 1309.1 Priority Reserve. The AEC, as currently permitted, is exempt from the requirement to purchase emission offsets pursuant to the provision of Rule 1304(a)(2), Offset Exemption for Electric Utility Steam Boiler Replacement. In accordance with Rule 1304.1, AES was required to pay an offset fee for the offsets provided by the SCAQMD pursuant to Rule 1304.

5.7.2 Rule 1304.1– Electrical Generating Facility Fee for Use of Offset Exemption

This rule, which was adopted in September 2013, applies to repower projects using Rule 1304(a)(2) for offset exemption. A fee is levied for the emissions of NO_x, VOC, PM, and SO_x. Fees for NO_x emissions are excluded if a repowering facility participates in the RECLAIM program. Fees are calculated based on emissions and generation capacity factors.

The fee amounts are calculated based on the formula in subsection (c)(2)(B)(ii) of the rule and the calculations are provided in Appendix B. AES will continue to pay the fees as annual payments for the emissions of VOC, PM, and SO_x. The pre-project and post-project fees for the CCGT, SCGTs and the total facility are summarized in Table 5-2. Overall, a difference in the total annual facility fees (adjusted to 2017) is a net reduction of $1,266,447 per year.

Table 5-2: Rule 1304.1 Annual Fees

Pol.	Mitigation Fee ($)								
	CCGT			SCGT			Total Facility		
	Pre	Post	Net	Pre	Post	Net	Pre	Post	Net
PM_{10}	1,381,769	1,415,787	34,018	1,191,050	196,119	-994,931	2,572,819	1,611,906	-960,913
SO_x	628,314	643,783	15,468	246,771	40,633	-206,137	875,085	684,416	-190,669
VOC	162,123	166,114	3,991	28,264	4,654	-23,610	190,387	170,768	-19,619
TOTAL	2,172,206	2,225,683	53,477	1,466,085	241,406	-1,224,678	3,638,291	2,467,090	-1,171,201
TOTAL Adjusted to 2017	2,348,857	2,406,683	57,826	1,585,312	261,038	-1,324,273	3,934,168	2,667,721	-1,266,447
TOTAL Adjusted to 2020	2,566,659	2,629,847	63,188	1,732,313	285,244	-1,447,069	4,298,972	2,915,091	-1,383,881

5.8 Regulation XIV – Toxics and Other Non-Criteria Pollutants

5.8.1 Rule 1401 – New Source Review for Air Toxics

As described in Section 4.3, an updated HRA was conducted for this permit modification at the request of SCAQMD. The HRA modeling predicted that the MICR, HIC and HIA from each permit unit would remain below the appropriate Rule 1401 thresholds (Table 4-10).

5.9 Regulation XVII – Prevention of Significant Deterioration

To demonstrate compliance with SCAQMD Rule 1703, annual NO_2 modeling was conducted for the entire facility (2 CCGTs, 4 SCGTs, auxiliary boiler) for comparison to the SIL. The results of this analysis showed that the total facility annual NO_2 and PM_{10} concentration was predicted to be less than the Class II SILs (Table 4-6) and Class I SIL (Table 4-7).

SCAQMD Rule 1714 applies to PSD for GHGs. Compliance is shown through the GHG BACT analysis presented in the FDOC. To show that the CCGTs will still meet the NSPS, Subpart TTTT of Part 60, CO_2 Emission Standards for Stationary Combustion Turbines of 450 kg of CO_2 per MWh of gross energy output (1,000 lb CO_2/MWh) a GHG Efficiency Demonstration is presented in Appendix B. It showed that the gross GHG efficiency including an 8% degradation is 916.1 lb CO_2/MWh-HHV. The SCGTs will continue to comply with the standard of 120 lb CO_2/MMBtu of heat input through the exclusive use of natural gas, although the gross GHG efficiency including an 8% degradation was calculated to be 1503.6 lb CO_2/MWh-HHV.

5.10 Regulation XX – RECLAIM

The AEC is subject to the NO_x RECLAIM regulations. The proposed project is expected to increase NO_x emissions by approximately 10 tons/year.

5.10.1 Rule 2005 – New Source Review for RECLAIM

Rule 2005(b)(B) requires demonstration that new or modified source(s) will not exceed NO_2 ambient air quality standards. Therefore, for compliance with Rule 2005, annual NO_2 modeling was conducted per permit unit for comparison to the significant change threshold, and presented for the units with revised operating hours, for each CCGT and SCGT.

Table 4-4 presents the results of the maximum predicted annual NO_2 concentration for any CCGT. Table 4-5 presents the results of the maximum predicted annual NO_2 concentration for any SCGT. This analysis showed there are no exceedances of any thresholds.

Rule 2005(c)(2) requires RECLAIM facilities to hold sufficient RTCs to offset the initial year of an emissions increase from a new, relocated, or modified source before the change commences. The first year of operations includes the commissioning of the CCGTs and SCGTs. The increase in CCGT operating hours and reduction in SCGT operating hours will not affect the commissioning year emissions associated with the CCGTs and, therefore, the RTCs will remain the same for the CCGTs (as noted in conditions I297.1-I297.2) and presented in Table 3-3. However, the change in operating hours will reduce the commissioning year emissions associated with the SCGTs, as described in Section 3.1.2 and presented in Table 3-5. Less RTCs will be required as reflected in revised Conditions I297.3-I297.6 presented in Section 6. Emission calculation details are provided in Appendix B.

Rule 2005(c)(1)(A) requires BACT for NO_x for RECLAIM facilities. The proposed modifications will increase NO_x emissions on an annual basis; however, the maximum daily controlled (MDC) emissions will remain unchanged. Therefore, BACT is not triggered.

Modification to the emission limits will result in an increase in annual NO_x emissions from the CCGTs and a reduction in NO_x annual emissions from the SCGTs. The emissions

increase associated with the CCGTs are well below 40 tons/year for NO_x for any one permit unit; therefore, modeling and analysis for plume visibility is not required.

5.11 Regulation XXX – Title V

The AEC facility is currently a Title V facility for VOC, NO_x, CO, and PM_{10}. This project will also increase the NO_x emissions over the Title V threshold of 10 tons per year. Therefore, the District will issue a public notice for this proposed facility modification per Rule 3006 for facilities with significant permit modifications.

In addition, EPA adopted the Greenhouse Gas (GHG) Tailoring Rule that includes guidance for implementation of the Title V and PSD program for GHG emissions. The first phase of the Tailoring Rule went into effect January 2, 2011. During the first phase, new or modified facilities that are subject to Title V for pollutants other than GHGs are subject to the Title V requirements for GHGs. These facilities are required to follow applicable monitoring, recordkeeping and reporting requirements related to their GHG emissions as well as certify compliance on a semi-annual basis. The applicable GHG MRR requirements for the facility are the USEPA and CARB GHG Monitoring and Reporting requirements. The facility will comply with these requirements.

5.12 Regulation XXXI – Acid Rain Permit Program

The facility is subject to the requirements of the federal acid rain program because the turbines are utility units greater than 25 MW. Under this program, NO_x and SO_x emissions will be reported directly to the USEPA. Increases in NO_x and SO_x emissions are expected with this modification, however, continued compliance is anticipated.

6.0 PROPOSED PERMIT CONDITIONS

Following is proposed permit language for the permit modification. Additions are marked in underline, and deletions are marked by strike-through.

Permit Condition A63.2 for each CCGT:

Contaminant	Emissions Limit
CO	Less than or equal to 95023 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~180544~~ 194717 LBS IN ANY ONE YEAR
VOC	Less than or equal to 13314 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~52668~~ 63488 LBS IN ANY ONE YEAR
PM_{10}	Less than or equal to 6324 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~39440~~ 55633 LBS IN ANY ONE YEAR
SO_x	Less than or equal to 3616 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~7435~~ 10483 LBS IN ANY ONE YEAR

Permit Condition A63.3 for each SCGT:

Contaminant	Emissions Limit
CO	Less than or equal to 8594 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~29730~~ 24543 LBS IN ANY ONE YEAR
VOC	Less than or equal to 1973 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~7510~~ 4533 LBS IN ANY ONE YEAR
PM_{10}	Less than or equal to 4638 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~14695~~ 6596 LBS IN ANY ONE YEAR
SO_x	Less than or equal to 1207 LBS IN ANY CALENDAR MONTH
	Less than or equal to ~~1275~~ 573 LBS IN ANY ONE YEAR

[RULE 1303(a)(l)-BACT, 5-10-1996; RULE 1303(a)(l)-BACT, 12-6-2002; RULE 1304.1, 9-6-2013; RULE 1703(a)(2)- PSD-BACT, 10-7-1988]
[Devices subject to this condition: D185, D191, D197, D203]

Permit Condition E193.14 for each CCGT:

The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The operator shall record the total net power generated in a calendar month in megawatt-hours.

The operator shall calculate and record greenhouse gas emissions for each calendar month using the following formula:

GHG = 61.41 * FF

Where GHG is the greenhouse gas emissions in tons of CO_2 and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO_2 emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO_2 emissions from this equipment shall not exceed ~~610,480~~

861,119 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO_2 emissions shall not exceed 937.88 lbs per gross megawatt-hours (inclusive of equipment degradation).

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

[RULE 1714, 12-10-2012]
[Devices subject to this condition: D165, D173]

Permit Condition E193.15 for each SCGT:

The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The operator shall record the total net power generated in a calendar month in megawatt-hours.

The operator shall calculate and record greenhouse gas emissions for each calendar month using the following formula:

GHG = 61.41 * FF

Where GHG is the greenhouse gas emissions in tons of CO_2 and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO_2 emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO_2 emissions from this equipment shall not exceed ~~120,765~~ 54,288 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO_2 emissions shall not exceed ~~1356.03~~ 1503.6 lbs per gross megawatt-hours (inclusive of equipment degradation).

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

[RULE 1714, 12-10-2012]
[Devices subject to this condition: D185, Dl91, Dl97, D203]

Permit Condition I297.3 for SCGT1:

This equipment shall not be operated unless the facility holds ~~68575~~ 21322 pounds of NO_x RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]
[Devices subject to this condition: D185]

Permit Condition I297.4 for SCGT2:

This equipment shall not be operated unless the facility holds ~~68575~~ 21322pounds of NO_x RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]
[Devices subject to this condition: D191]

Permit Condition I297.5 for SCGT3:

This equipment shall not be operated unless the facility holds ~~68575~~ 21322pounds of NO_x RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]
[Devices subject to this condition: D197]

Permit Condition I297.6 for SCGT4:

This equipment shall not be operated unless the facility holds ~~68575~~ 21322pounds of NO_x RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]
[Devices subject to this condition: D203]

APPENDIX A – APPLICATION FORMS

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane Manager
Contact Name Title

5624937840 Ext. 5624937737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane Manager
Contact Name Title

(562) 493-7840 Ext. (562) 493-7737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
571942

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2020

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2020

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-1

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 1

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Stephen O'Kane

21. Date:
02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane Manager
Contact Name Title

5624937840 Ext. 5624937737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane Manager
Contact Name Title

(562) 493-7840 Ext. (562) 493-7737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 571943

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2020

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2020

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-2

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 1

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: S Kane

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane Manager
Contact Name Title

5624937840 Ext. 5624937737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane Manager
Contact Name Title

(562) 493-7840 Ext. (562) 493-7737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
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- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

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- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 571945

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-1

10. For identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: S Kane

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 571947

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-2

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System) 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: S Kane

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 571950

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-3

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: 

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
571952

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-4

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Stephen O'Kane

21. Date:
02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- (●) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule): Title V Permit Amendment

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 5

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 500-C1

Title V Compliance Status Report

To provide the compliance status of your facility with applicable federally enforceable requirements and identify other local-only requirements, complete this form and attach it to a completed compliance certification Form 500-A2. As appropriate, all submittals of Form 500-C2 as appropriate should also be attached to this form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

PROCEDURES FOR DETERMINING COMPLIANCE STATUS

1. **Equipment verification:** Review the list of pending applications, and either the preliminary Title V facility permit or the list of current permits to operate that the AQMD provided you, to determine if they completely and accurately describe all equipment operating at the facility. Attach a statement to describe any discrepancies.
2. **Identify applicable requirements*:** Use the checklist in Section II to identify all applicable and federally-enforceable local, state, and federal rules and regulations, test methods, and monitoring, recordkeeping and reporting (MRR) requirements that apply to any equipment or process (including equipment exempt from a permit by Rule 219) at your facility.
   The potential applicable requirements, test methods and MRR requirements are identified and listed adjacent to each given equipment/process description. Check off each box adjacent to the corresponding requirement as it applies to your particular equipment/process.
   Note: Even if there is only one piece of equipment that is subject to a particular requirement, the appropriate box should be checked.
3. **Identify additional applicable requirements*:** Use Section III to identify any additional requirements not found in Section II. Section II is not a complete list of all applicable requirements. It does not include recently adopted NESHAP regulations by EPA or recent amendments to AQMD rules. Do not add rules listed in Section V here.
4. **Identify any requirements that do not apply to a specific piece of equipment or process:** Also use Section III to identify any requirements that are listed in Section II but that do not apply to a specific piece of equipment or process. Fill out Section III of this form and attach a separate sheet to explain the reason(s) why the identified rules do not apply. Note: Listing any requirement that does not apply to a specific piece of equipment will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and is approved by AQMD.
5. **Identify SIP-approved rules that are not current AQMD rules:** Use Section IV to identify older versions of current AQMD rules that are the EPA-approved versions in the State Implementation Plan (SIP), and that are still applicable requirements as defined by EPA. The facility is not required to certify compliance with the items checked in Section IV provided that the non-SIP approved rule in Section II is at least as stringent as the older SIP-approved version in Section IV. **
6. **Identify Local-Only Enforceable Regulatory Requirements:** Use Section V to identify AQMD rules that are not SIP-approved and are not federally enforceable.
7. **Determine compliance:** Determine if all equipment and processes are complying with all requirements identified in Sections II and III. If each piece of equipment complies with all applicable requirements, complete and attach Form 500-A2 to certify the compliance status of the facility. If any piece of equipment is not in compliance with any of the applicable requirements, complete and attach Form 500-C2 in addition to Form 500-A2.

* The following AQMD rules and regulations are not required to be included in Section II and do not have to be added to Section III: Regulation I, List and Criteria in Regulation II, Rule 201, Rule 201.1, Rule 202, Rule 203, Rule 205, Rule 206, Rule 207, Rule 208, Rule 209, Rule 210, Rule 212, Rule 214, Rule 215, Rule 216, Rule 217, Rule 219, Rule 220, Rule 221, Regulation III, Regulation V, Regulation VIII, Regulation XII, Regulation XV, Regulation XVI, Regulation XIX, Regulation XXI, Regulation XXII, and Regulation XXX.

** Emission units adversely affected by the gap between current and SIP-approved versions of rules may initially be placed in a non-Title V portion of the permit

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ All Air Pollution Control Equipment Using Combustion (RECLAIM & non-RECLAIM sources)	☐ Rule 480 (10/07/77)	N/A	N/A
☐ All Coating Operations (12/15/00)	☐ Rule 442	☐ Rule 442(f)	☐ Rule 442(g)
☐ All Combustion Equipment, ≥ 555 Mmbtu/Hr (except for NOx RECLAIM sources)	☐ Rule 474 (12/04/81)	☐ AQMD TM 7.1 or 100.1	
☑ All Combustion Equipment Except Internal Combustion Engines (RECLAIM & non-RECLAIM sources)	☑ Rule 407 (04/02/82) ☑ Rule 409 (08/07/81)	☑ AQMD TM 100.1 or 10.1, 307-91 ☑ AQMD TM 5.1, 5.2, or 5.3	
☑ All Combustion Equipment Using Gaseous Fuel (except SOx RECLAIM sources)	☑ Rule 431.1 (06/12/98)	☑ Rule 431.1(f)	☑ Rule 431.1(d) & (e)
☐ All Combustion Equipment Using Liquid Fuel (except SOx RECLAIM sources)	☐ Rule 431.2 (09/15/00)	☐ Rule 431.2(g)	☐ Rule 431.2(f)
☐ All Combustion Equipment Using Fossil Fuel (except SOx RECLAIM sources)	☐ Rule 431.3 (05/07/76)		
☑ All Equipment	☑ Rule 401 (11/09/01) ☑ Rule 405 (02/07/86) ☑ Rule 408 (05/07/76) ☑ Rule 430 (07/12/96) ☑ Rule 701 (06/13/97) ☑ New Source Review, BACT ☑ Rule 1703 (10/07/88) ☑ 40 CFR68 - Accidental Release Prevention	☐ California Air Resources Board Visible Emission Evaluation ☑ AQMD TM 5.1, 5.2, or 5.3 N/A See Applicable Subpart	☑ Rule 430(b) See Applicable Subpart
☐ All Equipment Processing Solid Materials	☐ Rule 403 (06/03/05)	☐ Rule 403(d)(3)	☐ Rule 403(f)
☑ All Equipment With Exhaust Stack (except cement kilns subject to Rule 1112.1)	☑ Rule 404 (02/07/86)	☑ AQMD TM 5.1, 5.2, or 5.3	
☐ All Facilities Using Solvents to Clean Various Items or Equipment	☑ Rule 109 (05/02/03) ☑ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☑ Rule 109(g) ☑ Rule 1171(e) See Applicable Subpart	☑ Rule 109(c) ☑ Rule 1171(c)(6) See Applicable Subpart
☑ All RECLAIM Equipment (NOx & SOx)	☑ Reg. XX - RECLAIM	☑ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)	☑ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)
☑ Abrasive Blasting	☑ Rule 1140 (08/02/85)	☑ Rule 1140(d) & (e), AQMD Visible Emission Method	

KEY ABBREVIATIONS: **Reg.** = AQMD Regulation; **Rule** = AQMD Rule; **App.** = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Aggregate and Related Operations	☐ Rule 1157 (09/08/06)	☐ Rule 1157(f)	☐ Rule 1157(e)
☐ Appliances Containing Ozone Depleting Substances (except Motor Vehicle Air Conditioners): Manufacturing, Repair, Maintenance, Service, & Disposal	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Asphalt	See Manufacturing, Asphalt Processing & Asphalt Roofing		
☐ Asphalt Concrete/Batch Plants	☐ 40 CFR60 SUBPART I	See Applicable Subpart	See Applicable Subpart
☐ Benzene Emissions, Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, & Coke By-Product Recovery Plants	☐ Rule 1173 (02/06/09) ☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART Y ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) ☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Benzene Transfer Operations	☐ Rule 1142 (07/19/91) ☐ 40 CFR61 SUBPART BB ☐ 40 CFR63 SUBPART Y	☐ Rule 1142(e) See Applicable Subpart See Applicable Subpart	☐ Rule 1142(h) See Applicable Subpart See Applicable Subpart
☐ Benzene Waste Operations	☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART FF ☐ 40 CFR63 SUBPART CC	☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart
☐ Beryllium Emissions	☐ 40 CFR61 SUBPART C	See Applicable Subpart	See Applicable Subpart
☐ Beryllium Emissions, Rocket Motor Firing	☐ 40 CFR61 SUBPART D	See Applicable Subpart	See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 1146.1 (09/05/08) ☐ Rule 1146.2 (05/05/06) ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) N/A See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) N/A See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 1146.1 (09/05/08) - excluding NOx requirements ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, ≥ 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☑ Boiler, ≥ 5 Mmbtu/Hr (RECLAIM sources)	☑ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) - excluding NOx requirements ☑ Rule 1146 (09/05/08) - excluding NOx requirements ☑ Rule 2011 (05/06/05) ☑ or Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☑ 40 CFR63 SUBPART DDDDD	☑ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☑ Rule 1146(d) ☑ Rule 2011, App. A (05/06/05) or ☑ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, Petroleum Refining (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 475 (08/07/78) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 431.1(f) ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, Petroleum Refining (RECLAIM sources)	☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Boilers, Electric Utility (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 1135 (07/19/91) ☐ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart
☑ Boilers, Electric Utility (RECLAIM sources)	☑ Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART Db ☑ 40 CFR63 SUBPART DDDDD	☑ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Bulk Loading Of Organic Liquids	☐ Rule 462 (05/14/99) ☐ 40 CFR60 SUBPART XX ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART EEEE	☐ Rule 462(f) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 462(g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Cadmium Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Calciner, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Calciner, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ Rule 1119 (03/02/79) ☐ 40 CFR63 SUBPART L	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 6.1 or 100.1 See Applicable Subpart	See Applicable Subpart
☐ Charbroilers	☐ Rule 1174 (10/05/90) ☐ Rule 1138 (11/14/97)	☐ AQMD Test Protocol ☐ Rule 1138(g)	☐ Rule 1138(d)
☐ Chrome Plating & Chromic Acid Anodizing Operation	☐ Rule 1426 (05/02/03) ☐ Rule 1469 (12/05/08)	☐ Rule 1469(e)	☐ Rule 1426(e) ☐ Rule 1469(g), (j) & (k)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Adhesive Application Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1168 (01/07/05) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART RR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1168(f) & (e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1168(d) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Aerospace Assembly & Component Manufacturing	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1124 (09/21/01) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART GG	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1124(e) & (f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1124(j) & (d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Graphic Arts (Gravure, Letter Press, Flexographic & Lithographic Printing Process, Etc.)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1130 (10/08/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART QQ ☐ 40 CFR60 SUBPART RR ☐ 40 CFR60 SUBPART FFF ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART KK ☐ 40 CFR63 SUBPART JJJJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1130(h) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Magnet Wire Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1126 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1126(d) ☐ Rule 1132(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1126(c)(4) ☐ Rule 1132(g) ☐ Rule 1171(c)(6)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Marine Coating (Except for recreational equipment)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Metal Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1107 (01/06/06) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART EE ☐ 40 CFR60 SUBPART SS ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART MMMM ☐ 40 CFR63 SUBPART RRRR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1107(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1107(j) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Metal Containers, Closure, & Coil Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1125 (03/07/08) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TT ☐ 40 CFR60 SUBPART WW ☐ 40 CFR63 SUBPART KKKK ☐ 40 CFR63 SUBPART SSSS	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1125(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1125(c)(6) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Motor Vehicle & Mobile Equipment Non-Assembly Line Coating Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1151 (12/02/05) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1151(h) ☐ Rule 1171(e)	☐ Rule 109© ☐ Rule 1132(g) ☐ Rule 1151(f) ☐ Rule 1171(c)(6)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Motor Vehicle Assembly Line	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1115 (05/12/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART MM ☐ 40 CFR63 SUBPART IIII	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1115(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1115(g) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Paper, Fabric, & Film Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1128 (03/08/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART OOOO	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1128(f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1128(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Plastic, Rubber, & Glass	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1145 (12/04/09) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TTT ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART PPPP	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1145(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1145(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Pleasure Craft	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106.1 (02/12/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106.1(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106.1(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Coating Operation, Screen Printing	☐ Rule 109 (05/02/03) ☐ Rule 1130.1 (12/13/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART KK	☐ Rule 109(g) ☐ Rule 1130.1(g) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130.1(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☑ Coating Operation, Use Of Architectural Coating (Stationary Structures)	☑ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☑ Rule 1113 (07/13/07) ☐ Rule 1132 (05/05/06) ☑ Rule 1171 (05/01/09)	☑ Rule 109(g) ☐ Rule 481(d) ☑ Rule 1113(e) ☐ Rule 1132(f) ☑ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1171(c)(6)
☐ Coating Operation, Wood Flat Stock	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1104 (08/13/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1104(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1104(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Wood Products (Commercial Furniture, Cabinets, Shutters, Frames, Toys)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1136 (06/14/96) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART JJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1136(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1136(d) & (g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coater	See Coating Operations		
☐ Columns	See Petroleum Refineries, Fugitive Emissions		
☐ Composting Operation	☐ Rule 1133 (01/10/03) ☐ Rule 1133.1 (01/10/03) ☐ Rule 1133.2 (01/10/03)	☐ Rule 1133.1(e) ☐ Rule 1133.2(g)	☐ Rule 1133.1(d) ☐ Rule 1133.2(h)
☑ Compressors	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Concrete Batch Plants	See Nonmetallic Mineral Processing Plants		
☐ Consumer Product Manufacturing	See Manufacturing, Consumer Product		
☐ Cooling Tower, Hexavalent Chromium	☐ 40 CFR63 SUBPART Q	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Copper Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Crude Oil Production	See Oil Well Operations		
☐ Crusher	See Nonmetallic Mineral Processing Plants		
☐ Dairy Farms and Related Operations	☐ Rule 1127 (08/06/04)	☐ Rule 1127(h)	☐ Rule 1127(g)
☐ Degreasers	☐ Rule 109 (05/02/03) ☐ Rule 1122 (05/01/09) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☐ Rule 109(g) ☐ Rule 1122(h) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1122(i) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Dry Cleaning, Perchloroethlyene	☐ Rule 1421 (12/06/02)	☐ Rule 1421(e) & (i)	☐ Rule 1421(g) & (h)
☐ Dry Cleaning, Petroleum Solvent	☐ Rule 109 (05/02/03) ☐ Rule 1102 (11/17/00) ☐ 40 CFR60 SUBPART JJJ	☐ Rule 109(g) ☐ Rule 1102(g) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1102(f) See Applicable Subpart
☐ Dryers, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Ethylene Oxide Sterilizer	See Sterilizer, Ethylene Oxide		
☐ Flanges	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Fluid Catalytic Cracking Unit	☐ Rule 218 (05/14/99) ☐ Rule 1105 (09/01/84) ☐ Rule 1105.1 (11/07/03)	☐ AQMD TM 100.1 ☐ Rule 1105(c)(1) ☐ Rule 1105.1(f)	☐ Rule 218(e) & (f) ☐ Rule 1105(c)(2) ☐ Rule 1105.1(e)
☐ Foundries, Iron and Steel	☐ 40 CFR63 SUBPART EEEEE	See Applicable Subpart	See Applicable Subpart
☐ Friction Materials Manufacturing	See Manufacturing, Friction Materials		
☐ Fugitive Emissions, Benzene	☐ Rule 1173 (12/06/02) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART V ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Chemical Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART VV	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Natural Gas Processing Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART KKK	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Oil & Gas Production Facility	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Pipeline Transfer Station	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Basic Oxygen Process	☐ 40 CFR60 SUBPART Na	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After August 17, 1983	☐ 40 CFR60 SUBPART AAa	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After Oct. 21, 1974, & On Or Before Aug. 17, 1983	☐ 40 CFR60 SUBPART AA	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Glass Melting	☐ Rule 1117 (01/06/84)	☐ Rule 1117(c), AQMD TM 7.1 or 100.1	
	☐ 40 CFR60 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Lead Melting, Automotive Batteries	☐ Rule 1101 (10/07/77)	☐ AQMD TM 6.1	
	☐ 40 CFR63 SUBPART X	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Gasoline Transfer & Dispensing Operation	☐ Rule 461 (06/03/05)	☐ Rule 461(f)	☐ Rule 461(e)(6) & (e)(7)
☐ Glass Manufacturing	See Manufacturing, Glass		
☐ Grain Elevators	☐ 40 CFR60 SUBPART DD	See Applicable Subpart	See Applicable Subpart
☐ Halon-containing Equipment, Use for Technician Training, Testing, Maintenance, Service, Repair, or Disposal	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Hazardous Waste Combustors	☐ 40 CFR63 SUBPART EEE	See Applicable Subpart	See Applicable Subpart
☐ Heater, Asphalt Pavement	☐ Rule 1120 (08/04/78)	☐ AQMD Visible Emissions, AQMD TM 6.2	☐ Rule 1120(f)
☐ Heaters, Petroleum Refinery Process	☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	N/A ☐ Rule 431.1(f) ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart
☐ Heaters, Process	See Boilers		
☐ Incinerators	☐ 40 CFR60 SUBPART E ☐ 40 CFR60 SUBPART CCCC	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Inorganic Arsenic Emissions, Arsenic Trioxide & Metallic Arsenic Production Facilities	☐ 40 CFR61 SUBPART P	See Applicable Subpart	See Applicable Subpart
☑ Internal Combustion Engines, Reciprocating	☑ Rule 1110.2 (07/09/10) ☐ 40 CFR60 SUBPART IIII and JJJJ ☐ 40 CFR63 SUBPART ZZZZ	Rule 1110.2(g) See Applicable Subpart See Applicable Subpart	Rule 1110.2(f) See Applicable Subpart See Applicable Subpart
☐ Kiln, Cement Plant	☐ Rule 1112 (06/06/86) ☐ Rule 1112.1 (12/04/09) ☐ 40 CFR60 SUBPART F	N/A N/A See Applicable Subpart	N/A N/A See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Landfills	☐ Rule 1150 (10/15/82) ☐ Rule 1150.1 (03/17/00) ☐ 40 CFR60 SUBPART WWW ☐ 40 CFR63 SUBPART AAAA	☐ Rule 1150.1(j) See Applicable Subpart See Applicable Subpart	☐ Rule 1150.1(e) & (f) See Applicable Subpart See Applicable Subpart
☐ Lead Acid Battery Manufacturing Plants	See Manufacturing, Lead Acid Battery		
☐ Lead Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Manufacturing, Asphalt Processing & Asphalt Roofing	☐ Rule 470 (05/07/76) ☐ Rule 1108 (02/01/85) ☐ Rule 1108.1 (11/04/83) ☐ 40 CFR60 SUBPART UU ☐ 40 CFR63 SUBPART LLLLL	N/A ☐ Rule 1108(b) ☐ Rule 1108.1 (b) See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Brick & Structural Clay Products	☐ 40 CFR63 SUBPART JJJJJ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Cement	☐ Rule 1156 (03/06/09)	☐ Rule 1156(g)	☐ Rule 1156(f)
☐ Manufacturing, Clay Ceramics	☐ 40 CFR63 SUBPART KKKKK	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Coatings & Ink (SIC Code 2851)	☐ Rule 1141.1 (11/17/00) ☐ 40 CFR63 SUBPART HHHHH	N/A See Applicable Subpart	☐ Rule 1141.1(c) See Applicable Subpart
☐ Manufacturing, Consumer Product	☐ Title 17 CCR 94500		
☐ Manufacturing, Food Product	☐ Rule 1131 (06/06/03)	☐ Rule 1131(e)	☐ Rule 1131(d)
☐ Manufacturing, Friction Materials	☐ 40 CFR63 SUBPART QQQQQ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Glass	☐ Rule 1117 (01/06/84) ☐ 40 CFR60 SUBPART CC ☐ 40 CFR61 SUBPART N	☐ Rule 1117(c), AQMD TM 7.1 or 100.1 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Hydrochloric Acid	☐ 40 CFR63 SUBPART NNNNN	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Lead-Acid Battery	☐ 40 CFR60 SUBPART KK	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Manufacturing, Lime	☐ 40 CFR63 SUBPART AAAAA	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Magnetic Tape Industry	☐ 40 CFR60 SUBPART SSS ☐ 40 CFR63 SUBPART EE	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Miscellaneous Organic Chemical	☐ 40 CFR63 SUBPART FFFF	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Nitric Acid	☐ Rule 218 (05/14/99) ☐ Rule 1159 (12/06/85) ☐ 40 CFR60 SUBPART G	☐ AQMD TM 100.1 ☐ AQMD TM 7.1 or 100.1 See Applicable Subpart	☐ Rule 218(e) & (f) See Applicable Subpart
☐ Manufacturing, Plywood & Composite Wood Products	☐ Rule 1137 (02/01/02) ☐ 40 CFR63 SUBPART DDDD	N/A See Applicable Subpart	☐ Rule 1137(e) See Applicable Subpart
☐ Manufacturing, Polymer Industry	☐ 40 CFR60 SUBPART DDD ☐ 40 CFR63 SUBPART W ☐ 40 CFR63 SUBPART J	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Polymeric Cellular Foam	☐ Rule 1175 (09/07/07) ☐ 40 CFR63 SUBPART UUUU	☐ Rule 1175(f) See Applicable Subpart	☐ Rule 1175(e) See Applicable Subpart
☐ Manufacturing, Products Containing Halon Blends	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Products Containing Organic Solvents	☐ Rule 443.1 (12/05/86)	N/A	N/A
☐ Manufacturing, Products Containing Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART A ☐ 40 CFR82 SUBPART E	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Reinforced Plastic Composites	☐ 40 CFR63 SUBPART WWWW	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Refractory Products	☐ 40 CFR63 SUBPART SSSSS	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Resin	☐ Rule 1141 (11/17/00) ☐ 40 CFR63 SUBPART W	☐ Rule 1141(d) See Applicable Subpart	☐ Rule 1141(c) See Applicable Subpart
☐ Manufacturing, Rubber Tire	☐ 40 CFR63 SUBPART XXXX	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Semiconductors	☐ Rule 109 (05/02/03) ☐ Rule 1164 (01/13/95) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART BBBBB	☐ Rule 109(g) ☐ Rule 1164(e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1164(c)(5) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Manufacturing, Solvent	☐ Rule 443 (05/07/76)	N/A	N/A

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Manufacturing, Sulfuric Acid	☐ Rule 469 (02/13/81)	☐ AQMD TM 6.1 or 6.2	
	☐ 40 CFR60 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Cd	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Surfactant	☐ Rule 1141.2 (01/11/02)	☐ Rule 1141.2(e)	
		☐ AQMD TM 25.1	
☐ Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes	☐ 40 CFR60 SUBPART III	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART NNN	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes	☐ 40 CFR60 SUBPART RRR	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Vinyl Chloride	☐ 40 CFR61 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Water Heaters	☐ Rule 1121 (09/03/04)	N/A	N/A
☐ Manufacturing, Wool Fiberglass Insulation	☐ 40 CFR60 SUBPART PPP	See Applicable Subpart	See Applicable Subpart
☐ Manure Processing Operations	☐ Rule 1127 (08/06/04)	☐ Rule 1127(h)	☐ Rule 1127(g)
☐ Marine Tank Vessel Operations	☐ Rule 1142 (07/19/91)	☐ Rule 1142(e)	☐ Rule 1142(h)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR63 SUBPART Y	See Applicable Subpart	See Applicable Subpart
☐ Mercury Emissions	☐ 40 CFR61 SUBPART E	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART IIII	See Applicable Subpart	See Applicable Subpart
☐ Motor Vehicle Air Conditioners with Ozone Depleting Substances (ODS): Repair, Service, Manufacturing, Maintenance, or Disposal	☐ 40 CFR82 SUBPART B	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Municipal Waste Combustors	☐ 40 CFR60 SUBPART Cb	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Ea	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Eb	See Applicable Subpart	See Applicable Subpart
☐ Negative Air Machines/HEPA, Asbestos	☐ 40 CFR61 SUBPART M	See Applicable Subpart	See Applicable Subpart
☐ Nickel Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Nonmetallic Mineral Processing Plants	☐ Rule 404 (02/07/86)	☐ AQMD TM 5.1, 5.2, or 5.3	
	☐ Rule 405 (02/07/86)	☐ AQMD TM 5.1, 5.2, or 5.3	See Applicable Subpart
	☐ 40 CFR60 SUBPART OOO	See Applicable Subpart	
☐ Off-site Waste and Recovery Operation	☐ 40 CFR63 SUBPART DD	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Oil and Gas Well Operation	☐ Rule 1148 (11/05/82) ☐ Rule 1148.1 (03/05/04)	☐ AQMD TM 25.1 ☐ Rule 1148.1 (g)	☐ Rule 1148.1 (f)
☐ Onshore Natural Gas Processing, SO2 Emissions	☐ 40 CFR60 SUBPART LLL	See Applicable Subpart	See Applicable Subpart
☐ Open Fires	☐ Rule 444 (11/07/08)		
☐ Open Storage, Petroleum Coke	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04) ☐ Rule 1158 (06/11/99)	☐ Rule 403(d)(4) ☐ Rule 1158(h)	☐ Rule 403(f) ☐ Rule 403.1(h) ☐ Rule 1158(j)
☐ Open Storage	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04)	☐ Rule 403(d)(4)	☐ Rule 403(f) ☐ Rule 403.1(h)
☐ Outer Continental Shelf Platform	☐ Rule 1183 (03/12/93) ☐ 40 CFR55	☐ 40 CFR55 See Applicable Subpart	☐ 40 CFR55 See Applicable Subpart
☐ Oven, Commercial Bakery	☐ Rule 1153 (01/13/95)	☐ Rule 1153(h)	☐ Rule 1153(g)
☐ Oven, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ 40 CFR63 SUBPART L ☐ 40 CFR63 SUBPART CCCCC	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Ozone Depleting Substances (ODS) or Alternative ODS, Use	☐ 40 CFR82 Subpart G	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Petroleum Refineries	☐ Rule 218 (05/14/99)	☐ AQMD TM 100.1	☐ Rule 218(e) & (f)
	☐ Rule 465 (08/13/99)		
	☐ Rule 468 (10/08/76)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 469 (02/13/81)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 1118 (11/04/05)	☐ Rule 1118(j)	☐ Rule 1118(f), (g), (h), & (i)
	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
	☐ Rule 1189 (01/21/00)	☐ Rule 1189(f)	☐ Rule 1189(e)
	☐ 40 CFR60 SUBPART J	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
	☐ Title 13 CCR 2250		
☐ Petroleum Refineries, Fugitive Emissions	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ 40 CFR60 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Petroleum Refineries, Storage Tanks	☐ Rule 463 (05/06/05) ☐ Rule 1178 (04/07/06) ☐ 40 CFR60 SUBPART K ☐ 40 CFR60 SUBPART Ka ☐ 40 CFR60 SUBPART Kb ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC ☐ 40 CFR63 SUBPART EEEE	☐ Rule 463(g) ☐ Rule 1178(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 463(e)(5) ☐ Rule 1178(f) & (h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Petroleum Refineries, Wastewater Systems	☐ Rule 1176 (09/13/96) ☐ Rule 464 (12/07/90) ☐ 40 CFR60 SUBPART QQQ ☐ 40 CFR63 SUBPART CC	☐ Rule 1176(h) N/A See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart
☐ Pharmaceuticals & Cosmetics Manufacturing	☐ Rule 1103 (03/12/99) ☐ 40 CFR63 SUBPART GGG	☐ Rule 1103(f) See Applicable Subpart	☐ Rule 1103(e) See Applicable Subpart
☐ Polyester Resin Operation	☐ Rule 109 (05/02/03) ☐ Rule 1162 (07/08/05) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 1162(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1162(e) ☐ Rule 1171(c)(6)
☐ Primary Magnesium Refining	☐ 40 CFR63 SUBPART TTTTT	See Applicable Subpart	See Applicable Subpart
☐ Printing Press	See Coating Operations		
☐ Publicly Owned Treatment Works Operations	☐ Rule 1179 (03/06/92) ☐ 40 CFR60 SUBPART O	☐ Rule 1179(e) See Applicable Subpart	☐ Rule 1179(c) & (d) See Applicable Subpart
☐ Pumps	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Recycling & Recovery Equipment for Ozone Depleting Substances (ODS),	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Refrigerant Reclaimers for Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Rendering Plant	☐ Rule 472 (05/07/76)	N/A	☐ Rule 472(b)
☐ Rock Crushing	See Nonmetallic Mineral Processing Plants		
☐ Secondary Aluminum Production	☐ 40 CFR63 SUBPART LL	See Applicable Subpart	See Applicable Subpart
☐ Semiconductor Manufacturing	See Manufacturing, Semiconductors		
☐ Sewage Treatment Plants	See Publicly Owned Treatment Works Operation		
☐ Site Remediation	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Primary Copper	☐ 40 CFR63 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Secondary Lead	☐ 40 CFR60 SUBPART L ☐ 40 CFR63 SUBPART X	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Soil Decontamination / Excavation	☐ Rule 1166 (05/11/01) ☐ 40 CFR63 SUBPART GGGGG	☐ Rule 1166(e) See Applicable Subpart	☐ Rule 1166(c)(1)(C) See Applicable Subpart
☐ Spray Booth	See Coating Operations		
☐ Sterilizer, Ethylene Oxide	☐ 40 CFR63 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Storage Tank, Degassing Operation	☐ Rule 1149 (07/14/95) ☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Storage Tank, Greater Than 19,815 Gallon Capacity	☐ Rule 463 (05/06/05)	☐ Rule 463(g)	☐ Rule 463(e)(5)
	☐ Rule 1178 (04/07/06)	☐ Rule 1178(i)	☐ Rule 1178(h)
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART K	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Ka	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Kb	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40CFR63 SUBPART BBBBBB	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Synthetic Fiber Production Facilities	☐ 40 CFR60 SUBPART HHH	See Applicable Subpart	See Applicable Subpart
☐ Taconite Iron Ore Processing Facilities	☐ 40 CFR63 SUBPART RRRRR	See Applicable Subpart	See Applicable Subpart
☑ Turbine, Stationary Gas-Fired	☑ Rule 1134 (08/08/97)	☑ Rule 1134(e) & (g)	☑ Rule 1134(d) & (f)
	☑ Rule 475 (08/07/78)	☑ AQMD TM 5.1, 5.2, or 5.3	
	☐ 40 CFR60 SUBPART GG	See Applicable Subpart	See Applicable Subpart
	☑ 40 CFR60 SUBPART KKKK	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART YYYY	See Applicable Subpart	See Applicable Subpart
☐ Turbine, Stationary Oil-Fired	☐ 40 CFR63 SUBPART YYYY	See Applicable Subpart	See Applicable Subpart
☐ Valves	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Vessel, Refinery Process	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
☐ Vessels	See Petroleum Refineries, Fugitive Emissions		

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Wastewater, Chemical Plant	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR63 SUBPART CC	N/A ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Wastewater Treatment, Other	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96)	N/A ☐ Rule 1176(h)	☐ Rule 1176(f) & (g)
☐ Woodworking Operations	☐ Rule 1137 (02/01/02)	N/A	☐ Rule 1137(e)

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Section III - Supplemental Identification of Specific Requirements

Complete this section only if there is a specific requirement (i.e., rule reference, test method, or MRR requirement) that is:

1. Listed for a specific type of equipment or process in Section II of this form & **DOES NOT** pertain to a specific device at your facility*; OR,
2. Is **NOT** Listed for a specific type of equipment or process in Section II of this form but it **IS** applicable to a specific device at your facility.

NOTES:

1. For any specific requirement, test method, or MRR requirement that is identified as "Remove," attach additional sheets to explain the reasons why the specific requirement does not pertain to the device listed.
2. All boxes that are checked in Section II and any additional requirements identified in this section as "Add" will be used to determine the facility's compliance status. This information will be used to verify the certification statements made on Form 500-A2.
3. Do not use this section to identify equipment that is exempt from specific rule requirements. Your equipment is automatically considered to be in compliance with the rule that specifically exempts the equipment from those requirements.
4. Listing any requirement that does not apply to a specific piece of equipment in this section will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and approved by the AQMD.

* If this section is completed as part of the initial Title V application & there is no device number assigned, refer to the existing permit or application number in this column.

Device No.*	Specific Requirement (Rule Number & Date)	Add (A) or Remove (R) (Check one)	Test Method	Add (A) or Remove (R) (Check one)	MRR Requirement	Add (A) or Remove (R) (Check one)
		O A O R		O A O R		O A O R
		O A O R		O A O R		O A O R
		O A O R		O A O R		O A O R
		O A O R		O A O R		O A O R
		O A O R		O A O R		O A O R
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		O A O R		O A O R		O A O R
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		O A O R		O A O R		O A O R
		O A O R		O A O R		O A O R

Section IV - SIP-Approved Rules That Are Not The Most Current AQMD Rules					
Check off each SIP-Approved Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
401	03/02/84	☑			☐
431.2	05/04/90	☐			☐
461	6/3/05	☐			☐
466.1	05/02/80	☐			☐
469	04/07/76	☐			☐
475	10/08/76	☑			☐
1112	01/06/84	☐			☐
1112.1	2/7/86	☐			☐
1113	11/08/96	☑			☐
1117	1/6/83	☐			☐
1122	07/11/97	☑			☐
1132	03/05/04	☐			☐
1140	02/01/80	☐			☐
1146	11/17/00	☑			☐
1146.1	5/13/94	☑			☐
1151	12/11/98	☐			☐
1158	6/11/99	☐			☐
1162	11/17/00	☐			☐
1166	07/14/95	☐			☐
1171	11/07/03	☑			☐
1175	05/13/94	☐			☐
1186	09/10/99	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
53 Los Angeles Co.	N/A	☐	1192	06/16/00	☐
53 Orange Co.	N/A	☐	1193	07/09/10	☐
53 Riverside Co.	N/A	☐	1194	10/20/00	☐
53 San Bernardino Co.	N/A	☐	1195	05/05/06	☐
53A San Bernardino Co.	N/A	☐	1196	06/06/08	☐
402	05/07/76	☑	1401	09/10/10	☑
429	12/21/90	☐	1401.1	11/04/05	☐
430	07/12/96	☑	1402	03/04/05	☐
441	05/07/76	☐	1403	10/05/07	☐
473	05/07/76	☐	1404	04/06/90	☐
477	04/03/81	☐	1405	01/04/91	☐
480	10/07/77	☐	1406	07/08/94	☐
1109	08/05/88	☐	1407	07/08/94	☐
1110.2	07/09/10	☑	1411	03/01/91	☐
1116.1	10/20/78	☐	1414	05/03/91	☐
1127	08/06/04	☐	1415	10/14/94	☐
1143	07/09/10	☐	1418	09/10/99	☐
1147	12/05/08	☐	1420	09/11/92	☐
1148.1	03/05/04	☐	1420.1	11/05/10	☐
1150	10/15/82	☐	1421	12/06/02	☐
1155	12/04/09	☐	1425	03/16/01	☐
1156	03/06/09	☐	1426	05/02/03	☐
1157	09/08/06	☐			☐
1163	06/07/85	☐			☐
1170	05/06/88	☐			☐
1183	03/12/93	☐			☐
1186.1	01/09/09	☐			☐
1191	06/16/00	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
1469	12/05/08	☐	2009.1	05/11/01	☐
1469.1	03/04/05	☐	2501	05/09/97	☐
1470	06/01/07	☑	2506	12/10/99	☐
1472	03/07/08	☐			☐
2009	01/07/05	☑			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane Manager
Contact Name Title

5624937840 Ext. 5624937737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
☒ Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane Manager
Contact Name Title

(562) 493-7840 Ext. (562) 493-7737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
571942

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2020

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2020

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-1

10. For Identical equipment, how many additional applications are being submitted with this application?
(Form 400-A required for each equipment / process): 1

11. Are you a Small Business as per AQMD's Rule 102 definition?
(10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code?
(North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Manager

19. I wish to review the permit prior to issuance.
(This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Stephen O'Kane

21. Date:
02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: ☒ Authorized Signature/Date ☒ Form 400-CEQA ☒ Supplemental Form(s) (ie., Form 400-E-xx) ☒ Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 571943

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):	8b. Estimated End Date of Construction (mm/dd/yyyy):	8c. Estimated Start Date of Operation (mm/dd/yyyy):
07/01/2017	04/30/2020	05/01/2020

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-2

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 1

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: S Kane

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
571945

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-1

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Stephen O'Kane

21. Date:
02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
571947

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-2

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Stephen O'Kane

21. Date:
02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 571950

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-3

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane Manager
Contact Name Title

5624937840 Ext. 5624937737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane Manager
Contact Name Title

(562) 493-7840 Ext. (562) 493-7737
Phone # Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:
- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:
- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:
- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
571952

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-4

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: O'Kane

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach , CA 90803
City Zip

Stephen O'Kane — Manager
Contact Name — Title

5624937840 — Ext. — 5624937737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach , CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name — Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # — Ext. — Fax #

E-Mail: Stephen.OKane@AES.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- (●) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/30/2022

8c. Estimated Start Date of Operation (mm/dd/yyyy): 05/01/2022

9. Description of Equipment or Reason for Compliance Plan (list applicable rule): Title V Permit Amendment

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 5

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (●) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? ( ) No (●) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: O'Kane

18. Title of Responsible Official: Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name: Stephen O'Kane

21. Date: 02/08/2019

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No (●) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-CEQA
California Environmental Quality Act (CEQA) Applicability

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project [1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines § 15060(a)]. Form 400-CEQA and the instructions for guidance on completing this form are available at http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms or http://www.aqmd.gov/home/permits/permit-application-forms. For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one Form 400-CEQA is necessary for the entire project. If you need assistance completing this form, contact Permit Services at (909) 396-3385.

Section A – Facility Information

1. Facility Name (Business Name of Operator to Appear on the Permit): AES Alamitos, LLC

2. SCAQMD Facility ID: 115394

3. Project Description:

Add 1,960 hours of operation for the CCGTs through a concurrent facility modification reducing the permitted operating hours for the Simple-Cycle Gas Turbines (SCGTs).

Section B – Review For Exemption From Further CEQA Action

Check "Yes" or "No" as applicable. If "Yes" is checked for any question in Section B, skip Section C and proceed to page 2 and complete Section D - Signatures.

	Yes	No	Is this application for:
1.	○	◉	A request for a change of operator only (without equipment or process change modifications)?
2.	○	◉	A functionally identical permit unit replacement with no increase in equipment unit rating or emissions?
3.	○	◉	A change of daily VOC permit limit to a monthly VOC permit limit?
4.	○	◉	Equipment damaged as a result of a disaster during state of emergency?
5.	○	◉	A Title V (e.g., SCAQMD Regulation XXX) permit renewal without equipment or process change modifications?
6.	○	◉	A Title V administrative permit revision?
7.	○	◉	The conversion of an existing permit into an initial Title V permit?

Section C – Review of Impacts Which May Trigger Further CEQA Review

Check "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	
1.	○	○	**Is this project specifically evaluated in a previously certified or adopted CEQA document?** If "Yes" is checked, attach a copy of the signed Notice of Determination to this form.
2.	○	○	**Is this project specifically exempted from CEQA by another entity (e.g., city or agency)?** If "Yes" is checked, attach a copy of the signed Notice of Exemption or other documentation from the entity to this form.
3.	○	○	**Is this project part of a larger project?** If "Yes" is checked, attach a separate sheet to briefly describe the larger project.
4.	○	○	**Will the project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound listed on Form 400-CEQA, Table 1 - Regulated Substances List and Threshold Quantities for Accidental Release Prevention** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms]? If "Yes" is checked, attach a separate sheet to identify each hazardous material and corresponding quantity to be transported, stored, or used.
5.	○	○	**Will the project emit any air toxic listed on Form 400-CEQA, Table 2 - Other Air Toxics and Their Screening Levels** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms] [2]? If "Yes" is checked, attach a separate sheet to identify each air toxic and corresponding quantity to be emitted.
6.	○	○	**Will the project require any demolition, excavation, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] Form 400-CEQA, Table 2 – Other Air Toxics and Their Screening Levels, contains a list of air toxics that either do not have a cancer potency (CP) or reference exposure level (REL) approved by the Office of Environmental Health Hazards Assessment (OEHHA) or have a combination of OEHHA-approved and non-approved CPs or RELs.

Section C – Review of Impacts Which May Trigger Further CEQA (concluded)

	Yes	No	
7.	○	○	**Will the project utilize a boiler, engine, or other combustion equipment that uses fuel (e.g., gasoline, diesel, natural gas, liquefied petroleum gas (LPG), or landfill gas)?** If "Yes" is checked, then the applicant will need to calculate the amount of GHGs from fuel use via on the Greenhouse Gas (GHG) online estimator [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms], and attaching the printout or by conducting hand calculations and providing the documentation. Refer to the Instructions for Form 400-CEQA for guidance.
8.	○	○	**Will the project utilize other types of equipment not addressed in Question 7 that require the use of, or will generate, any chemicals listed on Form 400-CEQA, Table 3 - Greenhouse Gases** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms]**?** If "Yes" is checked, attach a separate sheet to identify each equipment unit, the chemical name(s), and the quantity of each chemical identified.
9.	○	○	**Will the project include the open outdoor storage of dry bulk solid materials that could generate dust?** If "Yes" is checked, include a plot plan with the application package.
10.	○	○	**Will the project result in or make worse noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, landfills, materials recovery/recycling facilities (MRF), and compost materials or other types of greenwaste (e.g., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to SCAQMD Rule 402 – Nuisance.
11.	○	○	**Will the project cause an increase of emissions from marine vessels, trains and/or airplanes?**
12.	○	○	**Will the project increase demand for potable water at the facility by more than 262,820 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "Yes" answer to this question: 1) a project that generates steam; 2) a project that uses water as part of operating air pollution control equipment; 3) a project that requires water as part of the production process; 4) a project that requires a new, or the expansion of an existing, sewage treatment facility, new water lines, sewage lines, sewage hook-ups etc.; 5) a project where the water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; 6) a project that requires new or the expansion of existing, water supply and conveyance facilities; and, 7) a project that requires water to hydrotest pipelines, storage tanks etc. for structural integrity.
13.	○	○	**Will the project create an increase in the mass inflow of effluents to a public wastewater treatment facility that would require a new, or revision to an existing, National Pollutant Discharge Elimination System (NPDES) or other related permit at the facility?**
14.	○	○	**Will the project result in the need for more than 350 new employees?**
15.	○	○	**Will the project result in an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
16.	○	○	**Will the project result in an increase in customer traffic by more than 700 visits per day?**
17.	○	○	**Will the project result in temporary or permanent noise or vibration in excess of what is allowed by the applicable local noise ordinance?**
18.	○	○	**Will the project create a permanent need for new or additional solid waste disposal?** Check "No" if the projected potential amount of solid waste to be generated by the project is less than five tons per day.
19.	○	○	**Will the project create a permanent need for new or additional hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes to be generated by the project is less than 42 cubic yards per day (or equivalent in pounds).
20.	○	○	**Will the project include equipment that after installation or modification will change the visual character of the site and its surroundings or block views?**
21.	○	○	**Will the project have equipment that will create a new source of external lighting that will be visible at the property line?**

Section D – SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

1. Signature of Responsible Official of Firm: S O'Kane		2. Title of Responsible Official of Firm: Manager
3. Print Name of Responsible Official of Firm: Stephen O'Kane		4. Date Signed: 02/08/2019
5. Phone # of Responsible Official of Firm: (562) 493-7840	6. Fax # of Responsible Official of Firm: (562) 493-7737	7. Email of Responsible Official of Firm: Stephen.OKane@AES.com
8. Signature of Preparer, (If prepared by person other than responsible official of firm): Paul Kim for Nick Gysel.		9. Title of Preparer: Environmental Engineer
10. Print Name of Preparer: Nicholas Gysel		11. Date Signed: 2/8/2019
12. Phone # of Preparer: (949) 606-3687	13. Fax # of Preparer: (949) 248-8490	14. Email of Preparer: NGysel@yorkeengr.com

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND ANY ATTACHMENTS WITH FORM 400-A.

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(•) Fixed Location ( ) Various Locations

Section B - Equipment Description

Turbine

Manufacturer: General Electric | Model: 7FA.05 | Serial No.:

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: 2,275.00 MMBTU/hr 235,907.00 kWh

Function (Check all that apply)

[x] Electrical Generation [ ] Driving Pump/Compressor [ ] Emergency Peaking Unit

[x] Steam Generation [ ] Exhaust Gas Recovery [ ] Other (specify): _____

Cycle Type

( ) Simply Cycle ( ) Regenerative Cycle

(•) Combined Cycle ( ) Other (specify): _____

Combustion Type

( ) Tubular (•) Can-Annular ( ) Annular

Fuel (Turbine)

[x] Natural Gas [ ] LPG [ ] Digester Gas*

[ ] Landfill Gas* [ ] Propane [ ] Refinery Gas* [ ] Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: 228.7 MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: 1077167 lb/hr @ 1044 °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: | Model:

Number of burners: _____ Rating of each burner (HHV): _____

Type: ( ) Low NOx (please attach manufacturer's specifications)

( ) Other: _____

Show all heat transfer surface locations with the HRSG and temperature profile.

Fuel (Duct Burner)

( ) Natural Gas ( ) LPG ( ) Digester Gas*

( ) Landfill Gas* ( ) Propane ( ) Refinery Gas* ( ) Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section B - Equipment Description (Cont.)

Air Pollution Control

- ○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*
- ◉ Oxidation Catalyst* ○ Other (specify)*: _____
- ○ Steam/Water Injection: Injection Rate: _____ lbs. water/lbs. fuel, or _____ mole water/mole fuel

* Separate application is required.

Capital Cost: _____ Installation Cost: _____ Annual Operating Cost: _____

Oxidation Catalyst Data (If Applicable)

Manufacturer: BASF Corp. Model: TBD

Catalyst Dimensions: Length: _____ ft. 2.1 in. Width: 26 ft. 2 in. Height: 71 ft. 9.6 in.

Catalyst Cell Density: _____ cells/sq.in. Pressure Drop Across Catalyst: _____

Manufacturer's Guarantee: CO Control Efficiency: 77.80 % Catalyst Life: 3 yrs

VOC Control Efficiency: 33.30 % Operating Temp. Range: 570 °F

Space Velocity (gas flow rate/catalyst volume): _____ Area Velocity (gas flow/wetted catalyst surface area): 73971.32

VOC Concentration into Catalyst: 1.3 PPMVD@ 15%O_2 CO Concentration inot Catalyst: 8.1 PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2.0	5.75
NOx			2.0	16.5
CO			1.5	7.53
PM_{10}				8.5
SOx				4.86
NH_3			5.0	15.3

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height: 150 ft. _____ in. Stack Diameter: 20 ft. _____ in.

Exhaust Temperature: 170.33 °F Exhaust Pressure: _____ inches water column

Exhaust Flow Rate: 730698.6927 CFM Oxygen Level: _____ %

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section C - Operation Information (cont.)

Startup Data

No. of Startups per day: 2 No. of Startups per year: 500 Duration of each startup: 1 hrs.

Shutdown Data

No. of Shutdowns per day: 2 No. of Shutdowns per year: 500 Duration of each Shutdown: 0.5 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		36		64.00
NOx		61		20.00
CO		325		266.00
PM_{10}		8.5		8.5
SOx		4.86		4.86
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: _____

CEMS Model: _____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? (•) Yes ( ) No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☒ O_2

☒ Fuel Flow Rate ☒ Ammonia Injection Rate ☐ Other (specify): _____

☒ Ammonia Stack Concentration: Ammonia CEMS Make: _____

Ammonia CEMS Model: _____

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: Paul Lin for Nick Gysel Date: 2/8/2019

Title: Env. Engineer Company Name: Yorke Engineering

Name: Nicholas Gysel

Phone #: (949) 606-3687 Fax #:

Email: ngysel@yorkeengr.com

Contact Info

Name: Stephen O'Kane

Title: Manager Company Name: AES

Phone #: (562) 493-7840 Fax #: (562) 493-7737

Email: Stephen.OKane@AES.com

THIS IS A PUBLIC DOCUMENT

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(●) Fixed Location ( ) Various Locations

Section B - Equipment Description

Turbine

Manufacturer: General Electric | Model: 7FA.05 | Serial No.:

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: 2,275.00 MMBTU/hr 235,907.00 kWh

Function (Check all that apply)

☒ Electrical Generation ☐ Driving Pump/Compressor ☐ Emergency Peaking Unit

☒ Steam Generation ☐ Exhaust Gas Recovery ☐ Other (specify): _____

Cycle Type

( ) Simply Cycle ( ) Regenerative Cycle

(●) Combined Cycle ( ) Other (specify): _____

Combustion Type

( ) Tubular (●) Can-Annular ( ) Annular

Fuel (Turbine)

☒ Natural Gas ☐ LPG ☐ Digester Gas*

☐ Landfill Gas* ☐ Propane ☐ Refinery Gas* ☐ Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: 228.7 MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: 1077167 lb/hr @ 1044 °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: _____ Model: _____

Number of burners: _____ Rating of each burner (HHV): _____

Type: ( ) Low NOx (please attach manufacturer's specifications)

( ) Other: _____

Show all heat transfer surface locations with the HRSG and temperature profile.

Fuel (Duct Burner)

( ) Natural Gas ( ) LPG ( ) Digester Gas*

( ) Landfill Gas* ( ) Propane ( ) Refinery Gas* ( ) Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section B - Equipment Description (Cont.)

Air Pollution Control

○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*

◉ Oxidation Catalyst* ○ Other (specify)*: _____

○ Steam/Water Injection: Injection Rate: _____ lbs. water/lbs. fuel, or _____ mole water/mole fuel

* Separate application is required.

Capital Cost: _____ Installation Cost: _____ Annual Operating Cost: _____

Oxidation Catalyst Data (If Applicable)

Manufacturer: BASF Corp. Model: TBD

Catalyst Dimensions: Length: _____ ft. 2.1 in. Width: 26 ft. 2 in. Height: 71 ft. 9.6 in.

Catalyst Cell Density: _____ cells/sq.in. Pressure Drop Across Catalyst: _____

Manufacturer's Guarantee: CO Control Efficiency: 77.80 % Catalyst Life: 3 yrs

VOC Control Efficiency: 33.30 % Operating Temp. Range: 570 °F

Space Velocity (gas flow rate/catalyst volume): _____ Area Velocity (gas flow/wetted catalyst surface area): 73971.32

VOC Concentration into Catalyst: 1.3 PPMVD@ 15%O_2 CO Concentration inot Catalyst: 8.1 PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2.0	5.75
NOx			2.0	16.5
CO			1.5	7.53
PM_{10}				8.5
SOx				4.86
NH_3			5.0	15.3

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height: 150 ft. _____ in. Stack Diameter: 20 ft. _____ in.

Exhaust Temperature: 170.33 °F Exhaust Pressure: _____ inches water column

Exhaust Flow Rate: 730698.6927 CFM Oxygen Level: _____ %

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section C - Operation Information (cont.)

Startup Data

No. of Startups per day: 2 No. of Startups per year: 500 Duration of each startup: 1 hrs.

Shutdown Data

No. of Shutdowns per day: 2 No. of Shutdowns per year: 500 Duration of each Shutdown: 0.5 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		36		64.00
NOx		61		20.00
CO		325		266.00
PM_{10}		8.5		8.5
SOx		4.86		4.86
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make:

CEMS Model:

Will the CEMS be used to measure both on-line and startup/shutdown emissions? (•) Yes ( ) No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☒ O_2

☒ Fuel Flow Rate ☒ Ammonia Injection Rate ☐ Other (specify):

☒ Ammonia Stack Concentration: Ammonia CEMS Make:

Ammonia CEMS Model:

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: Paul Kin for Nick Gysel Date: 2/8/2019

Title: Env. Engineer Company Name: Yorke Engineering

Name: Nicholas Gysel

Phone #: (949) 606-3687 Fax #:

Email: ngysel@yorkeengr.com

Contact Info

Name: Stephen O'Kane

Title: Manager Company Name: AES

Phone #: (562) 493-7840 Fax #: (562) 493-7737

Email: Stephen.OKane@AES.com

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South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(●) Fixed Location ( ) Various Locations

Section B - Equipment Description

Turbine

Manufacturer: General Electric | Model: LMS-100 PB | Serial No.:

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: 879.00 MMBTU/hr 98,966.00 kWh

Function (Check all that apply)

☒ Electrical Generation ☐ Driving Pump/Compressor ☐ Emergency Peaking Unit

☒ Steam Generation ☐ Exhaust Gas Recovery ☐ Other (specify): _____

Cycle Type

(●) Simply Cycle ( ) Regenerative Cycle

( ) Combined Cycle ( ) Other (specify): _____

Combustion Type

( ) Tubular (●) Can-Annular ( ) Annular

Fuel (Turbine)

☒ Natural Gas ☐ LPG ☐ Digester Gas*

☐ Landfill Gas* ☐ Propane ☐ Refinery Gas* ☐ Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: _____ MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: | Model:

Number of burners: _____ Rating of each burner (HHV): _____

Type: ( ) Low NOx (please attach manufacturer's specifications)

( ) Other: _____

Show all heat transfer surface locations with the HRSG and temperature profile.

Fuel (Duct Burner)

( ) Natural Gas ( ) LPG ( ) Digester Gas*

( ) Landfill Gas* ( ) Propane ( ) Refinery Gas* ( ) Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

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Section B - Equipment Description (Cont.)

Air Pollution Control

- ○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*
- ◉ Oxidation Catalyst* ○ Other (specify)*: _____
- ○ Steam/Water Injection: Injection Rate: _____ lbs. water/lbs. fuel, or _____ mole water/mole fuel

* Separate application is required.

Capital Cost: $619,038.00 Installation Cost: $46,818.00 Annual Operating Cost: _____

Oxidation Catalyst Data (If Applicable)

Manufacturer: BASF Corp. Model: Cament

Catalyst Dimensions: Length: 2 ft. 1.5 in. Width: _____ ft. 2.5 in. Height: 2 ft. _____ in.

Catalyst Cell Density: _____ cells/sq.in. Pressure Drop Across Catalyst: _____

Manufacturer's Guarantee: CO Control Efficiency: _____ % Catalyst Life: 3 yrs

VOC Control Efficiency: _____ % Operating Temp. Range: 500 °F

Space Velocity (gas flow rate/catalyst volume): 139539 Area Velocity (gas flow/wetted catalyst surface area): 29071

VOC Concentration into Catalyst: 4 PPMVD@ 15%O_2 CO Concentration Inot Catalyst: 125 PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2.0	2.30
NOx			2.5	8.23
CO			2.0	4.01
PM_{10}				6.23
SOx				1.62
NH_3			5.0	6.09

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height: 80 ft. _____ in. Stack Diameter: 13 ft. _____ in.

Exhaust Temperature: 883.13 °F Exhaust Pressure: _____ inches water column

Exhaust Flow Rate: 663425.7128 CFM Oxygen Level: _____ %

South Coast Air Quality Management District

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Section C - Operation Information (cont.)

Startup Data

No. of Startups per day: 2 No. of Startups per year: 500 Duration of each startup: 0.50 hrs.

Shutdown Data

No. of Shutdowns per day: 2 No. of Shutdowns per year: 500 Duration of each Shutdown: 0.22 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		5.60		13.91
NOx		33.20		14.18
CO		30.80		127.73
PM_{10}		6.24		6.14
SOx		1.64		1.59
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: _____

CEMS Model: _____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? (•) Yes ( ) No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☐ O_2

☒ Fuel Flow Rate ☐ Ammonia Injection Rate ☐ Other (specify): _____

☒ Ammonia Stack Concentration: Ammonia CEMS Make: _____

Ammonia CEMS Model: _____

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: Kathrin for Nick Gysel Date: 2/8/2019

Title: Env. Engineer Company Name: Yorke Engineering

Name: Nicholas Gysel

Phone #: (949) 606-3687 Fax #:

Email: ngysel@yorkeengr.com

Contact Info

Name: Stephen.OKane@AES.com

Title: Manager Company Name: AES

Phone #: (562) 493-7840 Fax #: (562) 493-7737

Email: Stephen.OKane@AES.com

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Form 400-E-12
Gas Turbine

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This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(•) Fixed Location ( ) Various Locations

Section B - Equipment Description

Turbine

Manufacturer: General Electric | Model: LMS-100 PB | Serial No.:

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: 879.00 MMBTU/hr 98,966.00 kWh

Function (Check all that apply)

[x] Electrical Generation [ ] Driving Pump/Compressor [ ] Emergency Peaking Unit

[x] Steam Generation [ ] Exhaust Gas Recovery [ ] Other (specify): _____

Cycle Type

(•) Simply Cycle ( ) Regenerative Cycle

( ) Combined Cycle ( ) Other (specify): _____

Combustion Type

( ) Tubular (•) Can-Annular ( ) Annular

Fuel (Turbine)

[x] Natural Gas [ ] LPG [ ] Digester Gas*

[ ] Landfill Gas* [ ] Propane [ ] Refinery Gas* [ ] Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: _____ MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: _____ Model: _____

Number of burners: _____ Rating of each burner (HHV): _____

Type: ( ) Low NOx (please attach manufacturer's specifications)

( ) Other: _____
Show all heat transfer surface locations with the HRSG and temperature profile

Fuel (Duct Burner)

( ) Natural Gas ( ) LPG ( ) Digester Gas*

( ) Landfill Gas* ( ) Propane ( ) Refinery Gas* ( ) Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

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Gas Turbine

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Section B - Equipment Description (Cont.)

Air Pollution Control

- ○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*
- ◉ Oxidation Catalyst* ○ Other (specify)*: _____
- ○ Steam/Water Injection: Injection Rate: _____ lbs. water/lbs. fuel, or _____ mole water/mole fuel

* Separate application is required.

Capital Cost: $619,038.00 Installation Cost: $46,818.00 Annual Operating Cost: _____

Oxidation Catalyst Data (If Applicable)

Manufacturer: BASF Corp. Model: Cament

Catalyst Dimensions: Length: 2 ft. 1.5 in. Width: _____ ft. 2.5 in. Height: 2 ft. _____ in.

Catalyst Cell Density: _____ cells/sq.in. Pressure Drop Across Catalyst: _____

Manufacturer's Guarantee: CO Control Efficiency: _____ % Catalyst Life: 3 yrs

VOC Control Efficiency: _____ % Operating Temp. Range: 500 °F

Space Velocity (gas flow rate/catalyst volume): 139539 Area Velocity (gas flow/wetted catalyst surface area): 29071

VOC Concentration into Catalyst: 4 PPMVD@ 15%O_2 CO Concentration inot Catalyst: 125 PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2.0	2.30
NOx			2.5	8.23
CO			2.0	4.01
PM_{10}				6.23
SOx				1.62
NH_3			5.0	6.09

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height: 80 ft. _____ in. Stack Diameter: 13 ft. _____ in.

Exhaust Temperature: 883.13 °F Exhaust Pressure: _____ inches water column

Exhaust Flow Rate: 663425.7128 CFM Oxygen Level: _____ %

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Section C - Operation Information (cont.)

Startup Data

No. of Startups per day: 2 No. of Startups per year: 500 Duration of each startup: 0.50 hrs.

Shutdown Data

No. of Shutdowns per day: 2 No. of Shutdowns per year: 500 Duration of each Shutdown: 0.22 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		5.60		13.91
NOx		33.20		14.18
CO		30.80		127.73
PM_{10}		6.24		6.14
SOx		1.64		1.59
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: _____

CEMS Model: _____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? (•) Yes ( ) No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☐ O_2

☒ Fuel Flow Rate ☐ Ammonia Injection Rate ☐ Other (specify): _____

☒ Ammonia Stack Concentration: Ammonia CEMS Make: _____

Ammonia CEMS Model: _____

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: for Nick Gysel Date: 2/8/2019

Title: Env. Engineer Company Name: Yorke Engineering

Name: Nicholas Gysel

Phone #: (949) 606-3687 Fax #:

Email: ngysel@yorkeengr.com

Contact Info

Name: Stephen.OKane@AES.com

Title: Manager Company Name: AES

Phone #: (562) 493-7840 Fax #: (562) 493-7737

Email: Stephen.OKane@AES.com

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Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

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(●) Fixed Location ( ) Various Locations

Section B - Equipment Description

Turbine

Manufacturer: General Electric | Model: LMS-100 PB | Serial No.:

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: 879.00 MMBTU/hr 98,966.00 kWh

Function (Check all that apply)

[X] Electrical Generation [ ] Driving Pump/Compressor [ ] Emergency Peaking Unit

[X] Steam Generation [ ] Exhaust Gas Recovery [ ] Other (specify): _____

Cycle Type

(●) Simply Cycle ( ) Regenerative Cycle

( ) Combined Cycle ( ) Other (specify): _____

Combustion Type

( ) Tubular (●) Can-Annular ( ) Annular

Fuel (Turbine)

[X] Natural Gas [ ] LPG [ ] Digester Gas*

[ ] Landfill Gas* [ ] Propane [ ] Refinery Gas* [ ] Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: _____ MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: _____ Model: _____

Number of burners: _____ Rating of each burner (HHV): _____

Type: ( ) Low NOx (please attach manufacturer's specifications)

( ) Other: _____
Show all heat transfer surface locations with the HRSG and temperature profile

Fuel (Duct Burner)

( ) Natural Gas ( ) LPG ( ) Digester Gas*

( ) Landfill Gas* ( ) Propane ( ) Refinery Gas* ( ) Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

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Gas Turbine

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Section B - Equipment Description (Cont.)

Air Pollution Control

○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*

◉ Oxidation Catalyst* ○ Other (specify)*: _____

○ Steam/Water Injection: Injection Rate: _____ lbs. water/lbs. fuel, or _____ mole water/mole fuel

* Separate application is required.

Capital Cost: $619,038.00 Installation Cost: $46,818.00 Annual Operating Cost: _____

Oxidation Catalyst Data (If Applicable)

Manufacturer: BASF Corp. Model: Cament

Catalyst Dimensions: Length: 2 ft. 1.5 in. Width: _____ ft. 2.5 in. Height: 2 ft. _____ in.

Catalyst Cell Density: _____ cells/sq.in. Pressure Drop Across Catalyst: _____

Manufacturer's Guarantee: CO Control Efficiency: _____ % Catalyst Life: 3 yrs

VOC Control Efficiency: _____ % Operating Temp. Range: 500 °F

Space Velocity (gas flow rate/catalyst volume): 139539 Area Velocity (gas flow/wetted catalyst surface area): 29071

VOC Concentration into Catalyst: 4 PPMVD@ 15%O_2 CO Concentration inot Catalyst: 125 PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2.0	2.30
NOx			2.5	8.23
CO			2.0	4.01
PM_{10}				6.23
SOx				1.62
NH_3			5.0	6.09

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height: 80 ft. _____ in. Stack Diameter: 13 ft. _____ in.

Exhaust Temperature: 883.13 °F Exhaust Pressure: _____ inches water column

Exhaust Flow Rate: 663425.7128 CFM Oxygen Level: _____ %

South Coast Air Quality Management District

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Section C - Operation Information (cont.)

Startup Data

No. of Startups per day: 2 No. of Startups per year: 500 Duration of each startup: 0.50 hrs.

Shutdown Data

No. of Shutdowns per day: 2 No. of Shutdowns per year: 500 Duration of each Shutdown: 0.22 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		5.60		13.91
NOx		33.20		14.18
CO		30.80		127.73
PM_{10}		6.24		6.14
SOx		1.64		1.59
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: _____

CEMS Model: _____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? (•) Yes ( ) No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☐ O_2

☒ Fuel Flow Rate ☐ Ammonia Injection Rate ☐ Other (specify): _____

☒ Ammonia Stack Concentration: Ammonia CEMS Make: _____

Ammonia CEMS Model: _____

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: [signature] Date: 2/8/2019

Title: Env. Engineer Company Name: Yorke Engineering

Name: Nicholas Gysel

Phone #: (949) 606-3687 Fax #:

Email: ngysel@yorkeengr.com

Contact Info

Name: Stephen.OKane@AES.com

Title: Manager Company Name: AES

Phone #: (562) 493-7840 Fax #: (562) 493-7737

Email: Stephen.OKane@AES.com

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Turbine

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Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: 879.00 MMBTU/hr 98,966.00 kWh

Function (Check all that apply)

[X] Electrical Generation [ ] Driving Pump/Compressor [ ] Emergency Peaking Unit

[X] Steam Generation [ ] Exhaust Gas Recovery [ ] Other (specify): _____

Cycle Type

(●) Simply Cycle ( ) Regenerative Cycle

( ) Combined Cycle ( ) Other (specify): _____

Combustion Type

( ) Tubular (●) Can-Annular ( ) Annular

Fuel (Turbine)

[X] Natural Gas [ ] LPG [ ] Digester Gas*

[ ] Landfill Gas* [ ] Propane [ ] Refinery Gas* [ ] Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: _____ MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: _____ Model: _____

Number of burners: _____ Rating of each burner (HHV): _____

Type: ( ) Low NOx (please attach manufacturer's specifications)

( ) Other: _____
Show all heat transfer surface locations with the HRSG and temperature profile

Fuel (Duct Burner)

( ) Natural Gas ( ) LPG ( ) Digester Gas*

( ) Landfill Gas* ( ) Propane ( ) Refinery Gas* ( ) Other*: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

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Section B - Equipment Description (Cont.)

Air Pollution Control

○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*

◉ Oxidation Catalyst* ○ Other (specify)*: _____

○ Steam/Water Injection: Injection Rate: _____ lbs. water/lbs. fuel, or _____ mole water/mole fuel

* Separate application is required.

Capital Cost: $619,038.00 Installation Cost: $46,818.00 Annual Operating Cost: _____

Oxidation Catalyst Data (if Applicable)

Manufacturer: BASF Corp. Model: Cament

Catalyst Dimensions: Length: 2 ft. 1.5 in. Width: _____ ft. 2.5 in. Height: 2 ft. _____ in.

Catalyst Cell Density: _____ cells/sq.in. Pressure Drop Across Catalyst: _____

Manufacturer's Guarantee: CO Control Efficiency: _____ % Catalyst Life: 3 yrs

VOC Control Efficiency: _____ % Operating Temp. Range: 500 °F

Space Velocity (gas flow rate/catalyst volume): 139539 Area Velocity (gas flow/wetted catalyst surface area): 29071

VOC Concentration into Catalyst: 4 PPMVD@ 15%O_2 CO Concentration inot Catalyst: 125 PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

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NOx			2.5	8.23
CO			2.0	4.01
PM_{10}				6.23
SOx				1.62
NH_3			5.0	6.09

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height: 80 ft. _____ in. Stack Diameter: 13 ft. _____ in.

Exhaust Temperature: 883.13 °F Exhaust Pressure: _____ inches water column.

Exhaust Flow Rate: 663425.7128 CFM Oxygen Level: _____ %

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Section C - Operation Information (cont.)

Startup Data

No. of Startups per day: 2 No. of Startups per year: 500 Duration of each startup: 0.50 hrs.

Shutdown Data

No. of Shutdowns per day: 2 No. of Shutdowns per year: 500 Duration of each Shutdown: 0.22 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		5.60		13.91
NOx		33.20		14.18
CO		30.80		127.73
PM_{10}		6.24		6.14
SOx		1.64		1.59
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make:

CEMS Model:

Will the CEMS be used to measure both on-line and startup/shutdown emissions? (•) Yes ( ) No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☐ O_2

☒ Fuel Flow Rate ☐ Ammonia Injection Rate ☐ Other (specify):

☒ Ammonia Stack Concentration: Ammonia CEMS Make:

Ammonia CEMS Model:

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: Paul Lin for Nick Gysel Date: 2/8/2019

Title: Env. Engineer Company Name: Yorke Engineering

Name: Nicholas Gysel

Phone #: (949) 606-3687 Fax #:

Email: ngysel@yorkeengr.com

Contact Info

Name: Stephen.OKane@AES.com

Title: Manager Company Name: AES

Phone #: (562) 493-7840 Fax #: (562) 493-7737

Email: Stephen.OKane@AES.com

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South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator To Appears On The Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(●) Fixed Location ( ) Various Locations

Section B - Location Data

Plot Plan

Please attach a site map for the project with distances and scales. Identify and locate the proposed equipment on the map. A copy of the appropriate Thomas Brothers page, a web-based map, or a sketch that shows the major streets and location of the equipment is acceptable.

Location of Schools Nearby

Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? (●) Yes ( ) No

If yes, please provide name(s) of school(s) below:

School Name: Rosie Riveter Charter High School

School Address: 690 North Studebaker Rd. Long Beach, CA 90803

Distance from stack or equipment vent to the outer boundary of the school: 971 feet

School Name: _____

School Address: _____

Distance from stack or equipment vent to the outer boundary of the school: _____ feet

CA Health & Safety Code 42301.9: "School" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.

Population Density

(●) Urban ( ) Rural (<50% of land within 3 km radius accounted for by urban land use categories, i.e., multi-family dwelling or industrial.)

Zoning Classification

(●) Mixed Use Residential Commercial Zone (M-U) ( ) Service and Professional Zone (C-S) ( ) Medium Commercial (C-3)

( ) Heavy Commercial (C-4) ( ) Commercial Manufacturing (C-M)

Section C - Emission Release Parameters - Stacks, Vents

Stack Data

Stack Height: 150.00 feet (above ground level)

What is the height of the closest building nearest the stack? 95 feet

Stack Inside Diameter: 240.16 inches

Stack Flow: 730,699 acfm

Stack Temperature: 170 °F

Rain Cap Present: ( ) Yes (●) No

Stack Orientation: (●) Vertical ( ) Horizontal

If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):

Building #/Name: See Appendix C

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

Building #/Name: See Appendix C

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

Receptor Distance From Equipment Stack or Roof Vents/Openings

Distance to nearest residence or sensitive receptor*: 971 feet

Distance to nearest business: 1,148 feet

Building Information

Are the emissions released from vents and/or openings from a building? ( ) Yes (●) No

If yes, please provide:

Building #/Name: _____

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

*AQMD Rule 1470 defines SENSITIVE RECEPTOR as meaning any residence including private homes, condominiums, apartments, and living quarters, schools as defined under paragraph (b)(57), preschools, daycare centers and health facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.

South Coast Air Quality Management District

Form 400-PS

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Section D - Authorization/Signature

I hereby certify that all information contained herein and information submittfgfed with this application is true and correct.

Signature of Preparer:	Title of Preparer:	Preparer's Phone #: (949) 606-3687 Preparer's Email: ngysel@yorkeengr.com
Paul Lin for Nick Gysel	Environmental Engineer	

Contact Person:	Contact's Phone#: (562) 493-7840	Date Signed:
Stephen O'Kane		02/08/2019
Contact's Email: Stephen.OKane@AES.com	Contact's Fax#: (562) 493-7737	

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Tel: (909) 396-3385
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Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(•) Fixed Location ( ) Various Locations

Section B - Location Data

Plot Plan

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Location of Schools Nearby

Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? (•) Yes ( ) No

If yes, please provide name(s) of school(s) below:

School Name: Rosie Riveter Charter High School

School Address: 690 North Studebaker Rd. Long Beach, CA 90803

Distance from stack or equipment vent to the outer boundary of the school: 1,099 feet

School Name: _____

School Address: _____

Distance from stack or equipment vent to the outer boundary of the school: _____ feet

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Population Density

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If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):

Building #/Name: See Appendix C

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

Building #/Name: See Appendix C

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

Receptor Distance From Equipment Stack or Roof Vents/Openings

Distance to nearest residence or sensitive receptor*: 1,099 feet

Distance to nearest business: 1,148 feet

Building Information

Are the emissions released from vents and/or openings from a building? ( ) Yes (•) No

If yes, please provide:

Building #/Name: _____

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

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South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

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I hereby certify that all information contained herein and information submittfgfed with this application is true and correct.

Signature of Preparer:	Title of Preparer:	Preparer's Phone #: (949) 606-3687 Preparer's Email: ngysel@yorkeengr.com
for Nick Gysel	Environmental Engineer	

Contact Person:	Contact's Phone#: (562) 493-7840	Date Signed:
Stephen O'Kane		02/08/2019
Contact's Email: Stephen.OKane@AES.com	Contact's Fax#: (562) 493-7737	

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Facility Name (Business Name of Operator To Appears On The Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(•) Fixed Location ( ) Various Locations

Section B - Location Data

Plot Plan

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Location of Schools Nearby

Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? (•) Yes ( ) No

If yes, please provide name(s) of school(s) below:

School Name: Rosie Riveter Charter High School
School Address: 690 North Studebaker Rd. Long Beach, CA 90803
Distance from stack or equipment vent to the outer boundary of the school: 1,125 feet

School Name:
School Address:
Distance from stack or equipment vent to the outer boundary of the school: feet

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Population Density

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Zoning Classification

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( ) Heavy Commercial (C-4) ( ) Commercial Manufacturing (C-M)

Section C - Emission Release Parameters - Stacks, Vents

Stack Data

Stack Height: 80.05 feet (above ground level)
What is the height of the closest building nearest the stack? 48 feet
Stack Inside Diameter: 161.81 inches
Stack Flow: 663,426 acfm
Stack Temperature: 883 °F
Rain Cap Present: ( ) Yes (•) No
Stack Orientation: (•) Vertical ( ) Horizontal

If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):

Building #/Name: See Appendix C
Building Height: feet (above ground level)
Building Width: feet
Building Length: feet

Building #/Name: See Appendix C
Building Height: feet (above ground level)
Building Width: feet
Building Length: feet

Receptor Distance From Equipment Stack or Roof Vents/Openings

Distance to nearest residence or sensitive receptor*: 1,125 feet
Distance to nearest business: 525 feet

Building Information

Are the emissions released from vents and/or openings from a building? ( ) Yes (•) No

If yes, please provide:

Building #/Name:
Building Height: feet (above ground level)
Building Width: feet
Building Length: feet

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South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

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I hereby certify that all information contained herein and information submittfgfed with this application is true and correct.

Signature of Preparer:	Title of Preparer:	Preparer's Phone #: (949) 606-3687
Paul Ngy for McGregor	Environmental Engineer	Preparer's Email: ngysel@yorkeengr.com

Contact Person:	Contact's Phone#: (562) 493-7840	Date Signed:
Stephen O'Kane		02/08/2019
Contact's Email: Stephen.OKane@AES.com	Contact's Fax#: (562) 493-7737	

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Facility Name (Business Name of Operator To Appears On The Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 690 North Studebaker Road Long Beach, CA 90803

(•) Fixed Location ( ) Various Locations

Section B - Location Data

Plot Plan

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Location of Schools Nearby

Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? (•) Yes ( ) No

If yes, please provide name(s) of school(s) below:

School Name: Rosie Riveter Charter High School

School Address: 690 North Studebaker Rd. Long Beach, CA 90803

Distance from stack or equipment vent to the outer boundary of the school: 1,135 feet

School Name: _____

School Address: _____

Distance from stack or equipment vent to the outer boundary of the school: _____ feet

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Zoning Classification

(•) Mixed Use Residential Commercial Zone (M-U) ( ) Service and Professional Zone (C-S) ( ) Medium Commercial (C-3)

( ) Heavy Commercial (C-4) ( ) Commercial Manufacturing (C-M)

Section C - Emission Release Parameters - Stacks, Vents

Stack Data

Stack Height: 80.05 feet (above ground level)

What is the height of the closest building nearest the stack? 48 feet

Stack Inside Diameter: 161.81 inches

Stack Flow: 663,426 acfm

Stack Temperature: 883 °F

Rain Cap Present: ( ) Yes (•) No

Stack Orientation: (•) Vertical ( ) Horizontal

If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):

Building #/Name: See Appendix C

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

Building #/Name: See Appendix C

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

Receptor Distance From Equipment Stack or Roof Vents/Openings

Distance to nearest residence or sensitive receptor*: 1,135 feet

Distance to nearest business: 525 feet

Building Information

Are the emissions released from vents and/or openings from a building? ( ) Yes (•) No

If yes, please provide:

Building #/Name: _____

Building Height: _____ feet (above ground level)

Building Width: _____ feet

Building Length: _____ feet

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Signature of Preparer:	Title of Preparer:	Preparer's Phone #: (949) 606-3687 Preparer's Email: ngysel@yorkeengr.com
for Nick Gysel	Environmental Engineer	

Contact Person:	Contact's Phone#:	Date Signed:
Stephen O'Kane	(562) 493-7840	02/08/2019
Contact's Email: Stephen.OKane@AES.com	Contact's Fax#: (562) 493-7737	

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Section A - Operator Information

Facility Name (Business Name of Operator To Appears On The Permit): AES Alamitos, LLC

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
690 North Studebaker Road Long Beach, CA 90803

(•) Fixed Location ( ) Various Locations

Section B - Location Data

Plot Plan

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Location of Schools Nearby

Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? (•) Yes ( ) No

If yes, please provide name(s) of school(s) below:

School Name: Rosie Riveter Charter High School
School Address: 690 North Studebaker Rd. Long Beach, CA 90803
Distance from stack or equipment vent to the outer boundary of the school: 1,257 feet

School Name:
School Address:
Distance from stack or equipment vent to the outer boundary of the school: feet

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Stack Orientation: (•) Vertical ( ) Horizontal

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Building Width: feet
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Receptor Distance From Equipment Stack or Roof Vents/Openings

Distance to nearest residence or sensitive receptor*: 1,257 feet
Distance to nearest business: 525 feet

Building Information

Are the emissions released from vents and/or openings from a building? ( ) Yes (•) No

If yes, please provide:

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School Name: Rosie Riveter Charter High School

School Address: 690 North Studebaker Rd. Long Beach, CA 90803

Distance from stack or equipment vent to the outer boundary of the school: 1,283 feet

School Name: _____

School Address: _____

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Building Width: _____ feet

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I hereby certify that all information contained herein and information submittfgfed with this application is true and correct.

Signature of Preparer:	Title of Preparer:	Preparer's Phone #: (949) 606-3687
Paul Lin for Mick Gysel	Environmental Engineer	Preparer's Email: ngysel@yorkeengr.com

Contact Person:	Contact's Phone#:	Date Signed:
Stephen O'Kane	(562) 493-7840	02/08/2019
Contact's Email: Stephen.OKane@AES.com	Contact's Fax#: (562) 493-7737	

THIS IS A PUBLIC DOCUMENT

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

South Coast Air Quality Management District

Form 400 - XPP

Express Permit Processing Request

Form 400-A, Form 400-CEQA and one or more 400-E-xx form(s) must accompany all submittals.

Mail To:
SCAQMD
P.O Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator To Appear On The Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

Section B - Equipment Location Address

3. (●) **Fixed Location** ( ) **Various Location**
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road
Street Address

Long Beach, CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # Ext. Fax #

Stephen.OKane@AES.com
E-Mail

Section C - Permit Mailing Address

4. Permit and Correspondence Information:
☑ Check here if same as equipment location address

690 North Studebaker Road
Address

Long Beach, CA 90803
City State Zip

Stephen O'Kane — Manager
Contact Name Title

(562) 493-7840 — Ext. — (562) 493-7737
Phone # Ext. Fax #

Stephen.OKane@AES.com
E-Mail

Section D - Authorization/Signature

I understand that the Expedited Permit Processing fees must be submitted at the time of application submittal, and that the application may be subject to additional fees per Rule 301. I understand that requests for Express Permit Processing neither guarantees action by any specific date nor does it guarantee permit approval; that Express Permit Processing is subject to availability of qualified staff; and that once Express Permit Processing has commenced, the expedited fees will not be refunded. I hereby certify that all information contained herein and information submitted with the application are true and correct.

5. Signature of Responsible Official:	6. Title of Responsible Official:
	Manager
7. Print Name of Responsible Official:	**8. Date:**
Stephen O'Kane	02/08/2019
9. Phone #:	**10. Fax #:**
(562) 493-7840	(562) 493-7737

AQMD USE ONLY	APPLICATION TRACKING #		TYPE B C	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $		VALIDATION
ENG. A R DATE		ENG. A R DATE	CLASS I III	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

South Coast Air Quality Management District

Form 500-A2
Title V Application Certification

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): AES Alamitos, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 115394

3. This Certification is submitted with a (Check one):
- a. (●) Title V Application (Initial, Revision or Renewal)
- b. ( ) Supplement/Correction to a Title V Application
- c. ( ) MACT Part 1

4. Is Form 500-C2 included with this Certification? ( ) Yes (●) No

Section II - Responsible Official Certification Statement

*Read each statement carefully and check each that applies – **You must check 3a or 3b.***

1. For Initial, Permit Renewal, and Administrative Application Certifications:

a. ( ) The facility, including equipment that are exempt from written permit per Rule 219, is currently operating and will continue to operate in compliance with all applicable requirement(s) identified in Section II and Section III of Form 500-C1,

i. [ ] except for those requirements that do not specifically pertain to such devices or equipment and that have been identified as "Remove" on Section III of Form 500-C1.

ii. [ ] except for those devices or equipment that have been identified on the completed and attached Form 500-C2 that will not be operating in compliance with the specified applicable requirement(s).

b. ( ) The facility, including equipment that are exempt from written permit per Rule 219, will meet in a timely manner, all applicable requirements with future effective dates.

2. For Permit Revision Application Certifications:

a. [✓] The equipment or devices to which this permit revision applies, will in a timely manner comply with all applicable requirements identified in Section II and Section III of Form 500-C1.

3. For MACT Hammer Certifications:

a. ( ) The facility is subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63), also known as the MACT "hammer." The following information is submitted with a Title V application to comply with the Part 1 requirements of Section 112(j).

b. (●) The facility is not subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63).

Section III - Authorization/Signature

I certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX and that based on information and belief formed after reasonable inquiry, the statement and information in this document and in all attached application forms and other materials are true, accurate, and complete.

1. Signature of Responsible Official:	2. Title of Responsible Official:
	Manager
3. Print Name:	**4. Date:**
Stephen O'Kane	02/08/2019
5. Phone #:	**6. Fax #:**
(562) 493-7840	(562) 493-7737

7. Address of Responsible Official:

690 North Studebaker Road	Long Beach	CA	90803
Street #	City	State	Zip

Acid Rain Facilities Only: Please Complete Section IV

Acid Rain facilities must certify their compliance status of the devices subject to applicable requirements under Title IV by an individual who meets the definition of Designated (or Alternate) Representative in 40 CFR Part 72.

Section IV - Designated Representative Certification Statement	
For Acid Rain Facilities Only: I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.	
1. Signature of Designated Representative or Alternate: 	2. Title of Designated Representative or Alternate: Manager
3. Print Name of Designated Representative or Alternate: Stephen O'Kane	4. Date: 02/08/2019
5. Phone #: (562) 493-7840	6. Fax #: (562) 493-7737

7. Address of Designated Representative or Alternate:

Street #	City	State	Zip
690 North Studebaker Road	Long Beach	CA	90803

APPENDIX B – EMISSION CALCULATIONS

AEC Criteria Pollutant Emissions Summary - Revised Operating Scenario

CCGT Operating Hours	**6,060**
SCGT Operating Hours	**660**

Total Facility	**NOx**	**CO**	**VOC**	**PM10**	**PM2.5**	**SO2**
Annual Emissions (tpy)	147.04	247.58	73.30	69.48	69.48	11.87
Permitted Emissions (tpy)	137.07	243.69	68.31	69.52	69.52	10.18
Increase/Decrease	9.97	3.89	5.00	-0.04	-0.04	1.69

Auxiliary Boiler

	Starts/Month	**Starts/Year**	**Duration Hours**	**NOx lb/event**	**CO lb/event**	**VOC lb/event**	**PM10 lb/event**	**PM2.5 lb/event**	**SO2 lb/event**
Cold Start	2	24	2.83	4.22	4.34	4.69	0.84	0.84	0.24
Warm Start	4	48	1.42	2.11	2.17	2.34	0.42	0.42	0.12
Hot Start	4	48	0.42	0.62	0.64	0.69	0.12	0.12	0.035
Startup/Shutdown Hours	13	156							
Heat input 30% load (MMBtu/hr)	21.23			5 ppm	50 ppm				
				lb/hr	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**
Hourly Emissions				0.13	0.8	0.11	0.15	0.15	0.042
				lb/MMBtu	**lb/MMBtu**	**lb/MMBtu**	**lb/MMBtu**	**lb/MMBtu**	**lb/MMBtu**
				0.0061	0.0377	0.0052	0.0071	0.0071	0.0020
Monthly Ops Hrs (No Start/Stop Hours)			730.98	**lb/month**	**lb/month**	**lb/month**	**lb/month**	**lb/month**	**lb/month**
Monthly Emissions				114.39	604.70	101.91	113.49	113.49	31.80
Annual Heat Input (MMBtu)			189,119.91	**tpy**	**tpy**	**tpy**	**tpy**	**tpy**	**tpy**
Annual Emissions				0.70	3.68	0.62	0.69	0.69	0.19

Simple Cycle Gas Turbine

	Starts/Month	**Starts/Year**	**Duration Hours**	**NOx lb/event**	**CO lb/event**	**VOC lb/event**	**PM10 lb/event**	**PM2.5 lb/event**	**SO2 lb/event**	**SO2 Long-term lb/event**
Startup	62	500	0.50	16.6	15.4	2.8	3.12	3.12	0.82	0.27
Shutdown	62	500	0.22	3.12	28.1	3.06	1.35	1.35	0.35	0.12
Startup/Shutdown Hours per SCGT	44.64	360								
Max Heat Input (MMBtu/hr)	879			2.5 ppm	2 ppm	2 ppm				
				lb/hr	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	
Hourly Emissions (Case 1)				8.23	4.01	2.3	6.23	6.23	1.62	
Monthly Ops Hours (No Start/Stop Hours)			660	**lb/month**	**lb/month**	**lb/month**	**lb/month**	**lb/month**	**lb/month**	
Monthly Emissions per SCGT				6,654.44	5,343.60	1,881.32	4,388.94	4,388.94	1,141.74	
Emission factor (lb/mmcf)			589.9 mmcf/mon	10.08	8.10	2.85	6.65	6.65	1.73	
Annual Ops Hours (No Start/Stop Hours) (Case 4)			660	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	
				8.2	3.99	2.29	6.23	6.23	0.54	
				tpy	**tpy**	**tpy**	**tpy**	**tpy**	**tpy**	
Annual Emissions - 4 SCGT				30.5	48.8	8.9	12.7	12.7	1.1	**Emission factor**
Each SCGT				7.64	12.19	2.22	3.17	3.17	0.28	**(lb/mmcf)**
Each SCGT (lb/yr)			853.9 mmcf/yr	15,272	24,383	4,441	6,347	6,347	551	0.65

Combined Cycle Gas Turbine

	Starts/Month	**Starts/Year**	**Duration Hours**	**NOx lb/event**	**CO lb/event**	**VOC lb/event**	**PM10 lb/event**	**PM2.5 lb/event**	**SO2 lb/event**	**SO2 Long-term lb/event**
Cold Start	15	80	1	61	325	36	8.5	8.5	4.86	1.62
Non-cold Start	47	420	0.5	17	137	25	4.25	4.25	2.43	0.81
Shutdown	62	500	0.5	10	133	32	4.25	4.25	2.43	0.81
Startup/Shutdown Hours per CCGT	69.5	540								
Max Heat Input (MMBtu/hr)	2275			2 ppm	1.5 ppm	2 ppm	8.5 lb/hr	8.5 lb/hr		
				lb/hr	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	
Hourly Emissions (Case 1)				16.5	7.53	5.75	8.5	8.5	4.86	
Monthly Ops Hours (No Start/Stop Hours)			674.5	**lb/month**	**lb/month**	**lb/month**	**lb/month**	**lb/month**	**lb/month**	
Monthly Emissions per CCGT				13,463.25	24,638.99	7,577.38	6,324.00	6,324.00	3,615.84	
Emission factor (lb/mmcf)			1612.0 mmcf/mon	8.35	15.28	4.70	3.92	3.92	2.24	
Annual Ops Hours (No Start/Stop Hours) (Case 4)			6,060	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**	
				16.3	7.44	5.68	8.5	8.5	1.6	
				tpy	**tpy**	**tpy**	**tpy**	**tpy**	**tpy**	
Annual Emissions - 2 CCGT				115.80	195.13	63.80	56.10	56.10	10.57	**Emission factor**
Annual Emissions - 1 CCGT				57.90	97.56	31.90	28.05	28.05	5.29	**(lb/mmcf)**
Each CCGT (lb/yr)			14300.0 mmcf/yr	115,798	195,126	63,801	56,100	56,100	10,571	0.74

Yorke ENGINEERING, LLC
www.YorkeEngr.com

AEC Hazardous Air Pollutants Summary - Revised Operating Scenario

Total Facility Hazardous Air Pollutants Emissions

Compound	CAS	TAC/HAP	Total CCGTs (ton/yr)	Total SCGTs (ton/yr)	Boiler (ton/yr)	Total Project (ton/yr)
Ammonia	7664417	TAC	102.7	12.4	0.2	115.3
Acetaldehyde	75070	HAP & TAC	2.6	0.3	0.0003	2.9
Acrolein	107028	HAP & TAC	0.1	0.01	0.0002	0.1
Benzene	71432	HAP & TAC	0.05	0.01	0.0005	0.1
1,3, Butadiene	106990	HAP & TAC	0.01	0.001	NA	0.01
Ethylbenzene	100414	HAP & TAC	0.5	0.1	0.0006	0.5
Formaldehyde	50000	HAP & TAC	5.3	0.6	0.001	6.0
Hexane	110543	HAP & TAC	NA	NA	0.0004	0.0004
Naphthalene	91203	HAP & TAC	0.02	0.002	0.00003	0.02
PAHs	1151	HAP & TAC	0.01	0.001	0.00001	0.01
Propylene	115071	TAC	NA	NA	0.05	0.05
Propylene Oxide	75569	HAP & TAC	0.4	0.1	NA	0.5
Toluene	108883	HAP & TAC	1.9	0.2	0.002	2.2
Xylene	1330207	HAP & TAC	1.0	0.1	0.002	1.1
Total Annual HAPs						**13.3**
Total Annual TACs						**128.7**
Highest Single HAP - Formaldehyde						**6.0**

Each CCGT Hazardous Air Pollutants Emissions

CCGT Operational Parameters

MMBtu/hr - Annual Average	2,250
MMBtu/hr - Maximum Hourly	2,275
MMBtu/year	14,846,709
Hours/year per CCGT	6,600

Compound	CAS	TAC/HAP	Emission Factor (lb/MMBtu)	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)	Annual Emissions (ton/yr)
Ammonia	7664417	TAC	NA	15.7	102,736	51.4
Acetaldehyde	75070	HAP & TAC	1.76E-04	0.40	2,613	1.31
Acrolein	107028	HAP & TAC	3.62E-06	0.0082	53.7	0.027
Benzene	71432	HAP & TAC	3.26E-06	0.0074	48.4	0.024
1,3, Butadiene	106990	HAP & TAC	4.30E-07	0.0010	6.38	0.0032
Ethylbenzene	100414	HAP & TAC	3.20E-05	0.073	475	0.24
Formaldehyde	50000	HAP & TAC	3.60E-04	0.82	5,345	2.67
Hexane	110543	HAP & TAC	NA	NA	NA	NA
Naphthalene	91203	HAP & TAC	1.30E-06	0.0030	19.3	0.010
PAHs	1151	HAP & TAC	4.50E-07	0.0010	6.68	0.0033
Propylene	115071	TAC	NA	NA	NA	NA
Propylene Oxide	75569	HAP & TAC	2.90E-05	0.066	431	0.22
Toluene	108883	HAP & TAC	1.30E-04	0.30	1,930	0.97
Xylene	1330207	HAP & TAC	6.40E-05	0.15	950	0.48
Total Annual HAPs per CCGT						**5.94**
Total Annual TACs per CCGT						**57.3**

Total Facility Hazardous Air Pollutants Emissions
Each SCGT Hazardous Air Pollutants Emissions

SCGT Operational Parameters

MMBtu/hr - Annual Average	875.6
MMBtu/hr - Maximum Hourly	878.9
MMBtu/year	893,160
Hours/year per SCGT	1,020

Compound	CAS	TAC/HAP	Emission Factor (lb/MMBtu)	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)	Annual Emissions (ton/yr)
Ammonia	7664417	TAC	NA	6.08	6,180	3.09
Acetaldehyde	75070	HAP & TAC	1.76E-04	0.15	157	0.079
Acrolein	107028	HAP & TAC	3.62E-06	0.0032	3.23	0.0016
Benzene	71432	HAP & TAC	3.26E-06	0.0029	2.91	0.0015
1,3, Butadiene	106990	HAP & TAC	4.30E-07	0.00038	0.38	0.00019
Ethylbenzene	100414	HAP & TAC	3.20E-05	0.028	28.6	0.014
Formaldehyde	50000	HAP & TAC	3.60E-04	0.32	322	0.16
Hexane	110543	HAP & TAC	NA	NA	NA	NA
Naphthalene	91203	HAP & TAC	1.30E-06	0.0011	1.16	0.00058
PAHs	1151	HAP & TAC	4.50E-07	0.00040	0.40	0.00020
Propylene	115071	TAC	NA	NA	NA	NA
Propylene Oxide	75569	HAP & TAC	2.90E-05	0.025	25.9	0.013
Toluene	108883	HAP & TAC	1.30E-04	0.11	116	0.058
Xylene	1330207	HAP & TAC	6.40E-05	0.056	57.2	0.029
Total Annual HAPs per SCGT						**0.36**
Total Annual TACs per SCGT						**3.45**

Boiler Hazardous Air Pollutants Emissions

Boiler Operational Parameters

MMBtu/hr - Maximum Hourly	70.8
MMBtu/year	189,119.9

Compound	CAS	TAC/HAP	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)	Annual Emissions (ton/yr)
Ammonia	7664417	TAC	NA	NA	0.16	424	0.21
Acetaldehyde	75070	HAP & TAC	0.0031	2.95E-06	2.09E-04	0.56	2.79E-04
Acrolein	107028	HAP & TAC	0.0027	2.57E-06	1.82E-04	0.49	2.43E-04
Benzene	71432	HAP & TAC	0.0058	5.52E-06	3.91E-04	1.04	5.22E-04
Ethylbenzene	100414	HAP & TAC	0.0069	6.57E-06	4.65E-04	1.24	6.21E-04
Formaldehyde	50000	HAP & TAC	0.0123	1.17E-05	8.29E-04	2.22	1.11E-03
Hexane	110543	HAP & TAC	0.0046	4.38E-06	3.10E-04	0.83	4.14E-04
Naphthalene	91203	HAP & TAC	0.0003	2.86E-07	2.02E-05	0.05	2.70E-05
PAHs	1151	HAP & TAC	0.0001	9.52E-08	6.74E-06	0.02	9.01E-06
Propylene	115071	TAC	0.53	5.05E-04	3.57E-02	95.5	4.77E-02
Toluene	108883	HAP & TAC	0.0265	2.52E-05	1.79E-03	4.77	2.39E-03
Xylene	1330207	HAP & TAC	0.0197	1.88E-05	1.33E-03	3.55	1.77E-03
Total Annual HAPs							**0.0074**
Total Annual TACs							**0.27**

Ammonia emissions based on a 5 ppmvd slip limit, a 3% O2 concentration for the boiler, and 15% O2 for the CCGT/SCGT.

AEC Greenhouse Gas Summary - Revised Operating Scenario

Total Facility GHG Annual Emissions (ton/yr)					
Greenhouse Gas	**All CCGTs**	**All SCGTs**	**Auxiliary Boiler**	**Transformers**	**Total**
CO2	1,736,710	208,957	11,061	-	**1,956,728**
CH4	32.73	3.94	0.21	-	**36.9**
N2O	3.27	0.39	0.02	-	**3.69**
SF6	-	-	-	0.00327	**0.003**
CO2e	**1,738,503**	**209,172**	**11,073**	**74.5**	**1,958,823**

Greenhouse Gas	Emission Factors	Units	Global Warming Potential
CO2	53.06	kg/MMBtu	1
CH4	1	gram/MMBtu	25
N2O	0.1	gram/MMBtu	298
SF6 Annual Leak Rate	0.5	Percent	22800
kg/lb Conversion	2.2046	lb/kg	
gram/lb Conversion	0.0022046	lb/gram	

GHG Emissions per Unit			
	Each CCGT	**Each SCGT**	**Auxiliary Boiler**
Fuel Consumption (MMBtu/year)	14,846,709	893,160	189,119.9
Greenhouse Gas	**Annual Emissions (ton/yr)**		
CO2	868,355	52,239	11,061
CH4	16.4	0.98	0.21
N2O	1.64	0.10	0.021
CO2e	869,252	52,293	11,073

CCGT Transformer SF6 Emissions		
Equipment	**SF6 in each transformer (lb)**	**SF6 Annual Leakage Emissions (ton/yr)**
CCGT transformers (3000A at 230 kV)	230	0.00058
CCGT 1 transformer (10000A at 18 kV)	25	0.00006
CCGT 2 transformer (10000A at 18 kV)	25	0.00006
STG transformer (10000A at 18 kV)	25	0.00006
Total	**305**	**0.00076**

SCGT Transformer SF6 Emissions		
Equipment	**SF6 in each transformer (lb)**	**SF6 Annual Leakage Emissions (ton/yr)**
SCGT-1: 1200A 230 kV	230	0.00058
SCGT-2: 1200A 230 kV	230	0.00058
SCGT-3: 1200A 230 kV	230	0.00058
SCGT-4: 2000A 230 kV	216	0.00054
SCGT-1: GCB 18 kV	24	0.00006
SCGT-2: GCB 18 kV	24	0.00006
SCGT-3: GCB 18 kV	24	0.00006
SCGT-4: GCB 18 kV	24	0.00006
Total	**1002**	**0.00251**

CCGT GHG Efficiency Demonstration				
Event	**Events/ Year**	**Duration per Event (hr)**	**Annual Duration (hr)**	**Heat rate w/o degredation (Btu/kWh-HHV-net)**
Cold Start - first fire to baseload	80	0.33	26.67	19,585
Cold Start - baseload to completion	80	0.67	53.33	7,162
Non-cold Start - first fire to baseload	420	0.25	105.00	19,585
Non-cold Start - baseload to completion	420	0.25	105.00	7,162
Shutdown	500	0.5	250.00	11,751
1-on-1 operations (hours/year)			1,330	7162
2-on-1 operations (hours/year)			4,730	7006
Total			**6600**	**7471.86**

Note: Approximately 22% of the time the CCGTs will operate in a 1-on-1 configuration

GHG Efficiency, net (without degradation) (lb CO2 /MWh-HHV) =	874.0
GHG Efficiency, gross (without degradation) (lb CO2 /MWh-HHV) =	847.8
AES assumed 8% degradation	
GHG Efficiency, net (with degradation) (lb CO2 /MWh-HHV) =	944.0
GHG Efficiency, gross (with degradation) (lb CO2 /MWh-HHV) =	**915.6**

SCGT GHG Efficiency Demonstration				
Event	**Events/ Year**	**Duration per Event (hr)**	**Annual Duration (hr)**	**Heat rate w/o degredation (Btu/kWh-HHV-net)**
Cold Start - first fire to baseload	500	0.17	83.3	28,746
Cold Start - baseload to completion	500	0.33	166.7	10,063
Shutdown	500	0.22	108.3	17,248
Normal operations (hours/year)			660	10,063
Total			**1018**	**12356.25**

GHG Efficiency, net (without degradation) (lb CO2 /MWh-HHV) =	1445.4
GHG Efficiency, gross (without degradation) (lb CO2 /MWh-HHV) =	1402.0
AES assumed 8% degradation	
GHG Efficiency, net (with degradation) (lb CO2 /MWh-HHV) =	1561.0
GHG Efficiency, gross (with degradation) (lb CO2 /MWh-HHV) =	**1514.2**

AEC Annual Modeling Criteria Pollutant Emissions Estimate - Revised Operating Scenario

CCGT Operating Hours	**6,060**
SCGT Operating Hours	**660**

Auxiliary Boiler

	Starts/Month	Starts/Year	Duration Hours	NOx lb/event	PM10 lb/event	PM2.5 lb/event
Cold Start	2	24	2.83	4.22	0.84	0.84
Warm Start	4	48	1.42	2.11	0.42	0.42
Hot Start	4	48	0.42	0.62	0.12	0.12
Startup/Shutdown Hours	13	156				
				lb/hr	**lb/hr**	**lb/hr**
Hourly Emissions				0.13	0.15	0.15
				lb/MMBtu	**lb/MMBtu**	**lb/MMBtu**
				0.0061	0.0071	0.0071
Annual Heat Input (MMBtu)			189,119.91	**tpy**	**tpy**	**tpy**
Annual Emissions				0.70	0.69	0.69
Average Annual Emissions (g/s)				0.020	0.020	0.020
Average Annual Emissions (g/s) Used in model				0.019	0.019	0.019

Simple Cycle Gas Turbine

	Starts/Month	Starts/Year	Duration Hours	NOx lb/event	PM10 lb/event	PM2.5 lb/event
Startup	62	500	0.50	16.6	3.12	3.12
Shutdown	62	500	0.22	3.12	1.35	1.35
Startup/Shutdown Hours per SCGT	44.64	360				
Annual Ops Hours (No Start/Stop Hours)			660	**lb/hr**	**lb/hr**	**lb/hr**
Case 7				5.12	6.23	6.23
				tpy	**tpy**	**tpy**
Annual Emissions - 4 SCGT				26.5	12.7	12.7
Average Annual Emissions per turbine (lb/hr)				**1.51**	**0.72**	**0.72**
Average Annual Emissions per turbine (g/s)				**0.191**	**0.091**	**0.091**

Combined Cycle Gas Turbine

Combined Cycle Gas Turbine	Starts/Month	Starts/Year	Duration Hours	NOx lb/event	PM10 lb/event	PM2.5 lb/event
Cold Start	15	80	1	61	8.5	8.5
Non-cold Start	47	420	0.5	17	4.25	4.25
Shutdown	62	500	0.5	10	4.25	4.25
Startup/Shutdown Hours per CCGT	69.5	540				
Annual Ops Hours (No Start/Stop Hours)			6,060	**lb/hr**	**lb/hr**	**lb/hr**
Case 7				9.47	8.5	8.5
				tpy	**tpy**	**tpy**
Annual Emissions - 2 CCGT				74.41	56.10	56.10
Annual Emissions - 1 CCGT				37.20	28.05	28.05
Average Annual Emissions per turbine (lb/hr)				**8.49**	**6.40**	**6.40**
Average Annual Emissions per turbine (g/s)				**1.071**	**0.808**	**0.808**

RULE 1304.1 EMISSIONS OFFSET FEE CALCULATOR – 100 MW or MORE Cumulatively

Effective 9/6/2013

SCQMD Rule 1304.1 Fee Calculator - Revised Operating Scenario for both CCGTs

Enter Values In These Shaded Cells Only =

Input Cumulative Project Profile Values:

a-Gross Rating of New Replacement Unit(s) (MW)	**692.951**	
b-Maximum Fraction of Time Allowed to Operate (%)	**75.34**	
Hours in a Year (hr/yr)	8,760	
c-Max Allowable Operating Hours Annually (hr/yr)	6,600	
d-Max Allowed Generation New Replacement Unit(s) Annually (MWhr/yr)	4,573,477	= C_{rep}*
e- Average Last 2 Years of Existing Unit(s) Actual Generation (MWh/yr)	**250,750**	= $C_{2YRAvgExisting}$

ANNUAL FEE PAYMENT (> 100 MW Cumulatively):

i	$PTEr_{PM10}$ (lbs/day)	$R_{PM10\ A1}$ ($ per lb/day)	$R_{PM10\ A2}$ ($ per lb/day)	$R_{PM10\ blended}$ ($ per lb/day)	OF_{PM10} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{PM10} ($)
PM10	**421.60**	997	3,986	3,555	1.00	4,573,477	250,750	0.945	**1,416,477**
	$PTEr_{SOx}$ (lbs/day)	$R_{SOx\ A1}$ ($ per lb/day)	$R_{SOx\ A2}$ ($ per lb/day)	$R_{SOx\ blended}$ ($ per lb/day)	OF_{SOx} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{SOx} ($)
SOx	**241.06**	793	3,170	2,827	1.00	4,573,477	250,750	0.945	**644,097**
	$PTEr_{VOC}$ (lbs/day)	$R_{VOC\ A1}$ ($ per lb/day)	$R_{VOC\ A2}$ ($ per lb/day)	$R_{VOC\ blended}$ ($ per lb/day)	OF_{VOC} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{VOC} ($)
VOC	**887.60**	47	185	165	1.20	4,573,477	250,750	0.945	**166,195**
	$PTEr_{NOx}$ (lbs/day)	$R_{NOx\ A1}$ ($ per lb/day)	$R_{NOx\ A2}$ ($ per lb/day)	$R_{NOx\ blended}$ ($ per lb/day)	OF_{NOx} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{NOx} ($)
NOx**		666	2,663	2,375	1.20	4,573,477	250,750	0.945	-

TOTAL ANNUAL FEE ($/yr)	**2,226,769**

** Only applicable project source is not in RECLAIM

* If C_{rep} is known it can be entered directly (in MWh)

100 MW OR MORE CUMULATIVE EGF REPOWERING - ONLY!

RULE 1304.1 EMISSIONS OFFSET FEE CALCULATOR – 100 MW or MORE Cumulatively

Effective 9/6/2013

Cumulative Project Profile Values:

a-Gross Rating of New Replacement Unit(s) (MW)	693	
b-Maximum Fraction of Time Allowed to Operate (%)	75	
Hours in a Year (hr/yr)	8,760	
c-Max Allowable Operating Hours Annually (hr/yr)	6,600	
d-Max Allowed Generation New Replacement Unit(s) Annually (MWhr/yr)	4,573,477	= C_{rep}
e- Average Last 2 Years of Existing Unit(s) Actual Generation (MWh/yr)	250,750	= $C_{2YRAvgExisting}$

SINGLE F E E P A Y M E N T (> 100 MW Cumulatively):

i	$PTEr_{PM10}$	$L_{PM10\ A1}$	$L_{PM10\ A2}$	$L_{PM10\ blended}$	OF_{PM10}	C_{rep}	$C_{2YRAvgExisting}$	Ratio	F_{PM10}
	(lbs/day)	($ per lb/day)	($ per lb/day)	($ per lb/day)	-	(MWhr/yr)	(MWhr/yr)	-	($)
PM10	421.60	24,911	99,643	88,858	1.00	4,573,477	250,750	0.945	**35,408,734**
	$PTEr_{SOx}$	$L_{SOx\ A1}$	$L_{SOx\ A2}$	$L_{SOx\ blended}$	OF_{SOx}	C_{rep}	$C_{2YRAvgExisting}$	Ratio	F_{SOx}
	(lbs/day)	($ per lb/day)	($ per lb/day)	($ per lb/day)	-	(MWhr/yr)	(MWhr/yr)	-	($)
SOx	241.06	19,816	79,262	70,683	1.00	4,573,477	250,750	0.945	**16,104,463**
	$PTEr_{VOC}$	$L_{VOC\ A1}$	$L_{VOC\ A2}$	$L_{VOC\ blended}$	OF_{VOC}	C_{rep}	$C_{2YRAvgExisting}$	Ratio	F_{VOC}
	(lbs/day)	($ per lb/day)	($ per lb/day)	($ per lb/day)	-	(MWhr/yr)	(MWhr/yr)	-	($)
VOC	887.60	1,159	4,635	4,133	1.20	4,573,477	250,750	0.945	**4,161,165**
		$L_{NOx\ A1}$	$L_{NOx\ A2}$	$L_{NOx\ blended}$	OF_{NOx}	C_{rep}	$C_{2YRAvgExisting}$	Ratio	F_{NOx}
	(lbs/day)	($ per lb/day)	($ per lb/day)	($ per lb/day)	-	(MWhr/yr)	(MWhr/yr)	-	($)
NOx**	-	16,643	66,571	59,366	1.20	4,573,477	250,750	0.945	**-**

TOTAL SINGLE FEE($) 55,674,361

** Only applicable project source is not in RECLAIM

* If C_{rep} is known it can be entered directly (in MWh)

100 MW OR MORE CUMULATIVE EGF REPOWERING - ONLY!

RULE 1304.1 EMISSIONS OFFSET FEE CALCULATOR – 100 MW or MORE Cumulatively

Effective 9/6/2013

SCQMD Rule 1304.1 Fee Calculator - Revised Operating Scenario for all four SCGTs

Enter Values In These Shaded Cells Only =

Input Cumulative Project Profile Values:

a-Gross Rating of New Replacement Unit(s) (MW)	**401.752**
b-Maximum Fraction of Time Allowed to Operate (%)	**11.6**
Hours in a Year (hr/yr)	8,760
c-Max Allowable Operating Hours Annually (hr/yr)	1,020
d-Max Allowed Generation New Replacement Unit(s) Annually (MWhr/yr)	409,787 = C_{rep}*
e- Average Last 2 Years of Existing Unit(s) Actual Generation (MWh/yr)	**384,172** = $C_{2YRAvgExisting}$

ANNUAL FEE PAYMENT (> 100 MW Cumulatively):

i	$PTEr_{PM10}$ (lbs/day)	$R_{PM10\ A1}$ ($ per lb/day)	$R_{PM10\ A2}$ ($ per lb/day)	$R_{PM10\ blended}$ ($ per lb/day)	OF_{PM10} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{PM10} ($)
PM10	**585.19**	997	3,986	3,242	1.00	409,787	384,172	0.063	**118,590**
	$PTEr_{SOx}$ (lbs/day)	$R_{SOx\ A1}$ ($ per lb/day)	$R_{SOx\ A2}$ ($ per lb/day)	$R_{SOx\ blended}$ ($ per lb/day)	OF_{SOx} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{SOx} ($)
SOx	**152.23**	793	3,170	2,578	1.00	409,787	384,172	0.063	**24,535**
	$PTEr_{VOC}$ (lbs/day)	$R_{VOC\ A1}$ ($ per lb/day)	$R_{VOC\ A2}$ ($ per lb/day)	$R_{VOC\ blended}$ ($ per lb/day)	OF_{VOC} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{VOC} ($)
VOC	**250.84**	47	185	151	1.20	409,787	384,172	0.063	**2,835**
	$PTEr_{NOx}$ (lbs/day)	$R_{NOx\ A1}$ ($ per lb/day)	$R_{NOx\ A2}$ ($ per lb/day)	$R_{NOx\ blended}$ ($ per lb/day)	OF_{NOx} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{NOx} ($)
NOx**		666	2,663	2,166	1.20	409,787	384,172	0.063	-

** Only applicable project source is not in RECLAIM

* If C_{rep} is known it can be entered directly (in MWh)

TOTAL ANNUAL FEE ($/yr) 145,960

100 MW OR MORE CUMULATIVE EGF REPOWERING - ONLY!

RULE 1304.1 EMISSIONS OFFSET FEE CALCULATOR – 100 MW or MORE Cumulatively

Effective 9/6/2013

Cumulative Project Profile Values:

a-Gross Rating of New Replacement Unit(s) (MW)	402	
b-Maximum Fraction of Time Allowed to Operate (%)	12	
Hours in a Year (hr/yr)	8,760	
c-Max Allowable Operating Hours Annually (hr/yr)	1,020	
d-Max Allowed Generation New Replacement Unit(s) Annually (MWhr/yr)	409,787	= C_{rep}
e- Average Last 2 Years of Existing Unit(s) Actual Generation (MWh/yr)	384,172	= $C_{2YRAvgExisting}$

SINGLE FEE PAYMENT (> 100 MW Cumulatively):

i	$PTEr_{PM10}$ (lbs/day)	$L_{PM10\ A1}$ ($ per lb/day)	$L_{PM10\ A2}$ ($ per lb/day)	$L_{PM10\ blended}$ ($ per lb/day)	OF_{PM10} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{PM10} ($)
PM10	585.19	24,911	99,643	81,041	1.00	409,787	384,172	0.063	**2,964,439**
	$PTEr_{SOx}$ (lbs/day)	$L_{SOx\ A1}$ ($ per lb/day)	$L_{SOx\ A2}$ ($ per lb/day)	$L_{SOx\ blended}$ ($ per lb/day)	OF_{SOx} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{SOx} ($)
SOx	152.23	19,816	79,262	64,465	1.00	409,787	384,172	0.063	**613,435**
	$PTEr_{VOC}$ (lbs/day)	$L_{VOC\ A1}$ ($ per lb/day)	$L_{VOC\ A2}$ ($ per lb/day)	$L_{VOC\ blended}$ ($ per lb/day)	OF_{VOC} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{VOC} ($)
VOC	250.84	1,159	4,635	3,770	1.20	409,787	384,172	0.063	**70,931**
	(lbs/day)	$L_{NOx\ A1}$ ($ per lb/day)	$L_{NOx\ A2}$ ($ per lb/day)	$L_{NOx\ blended}$ ($ per lb/day)	OF_{NOx} -	C_{rep} (MWhr/yr)	$C_{2YRAvgExisting}$ (MWhr/yr)	Ratio -	F_{NOx} ($)
NOx**	-	16,643	66,571	54,143	1.20	409,787	384,172	0.063	**-**

TOTAL SINGLE FEE($) 3,648,806

** Only applicable project source is not in RECLAIM

* If C_{rep} is known it can be entered directly (in MWh)

100 MW OR MORE CUMULATIVE EGF REPOWERING - ONLY!

APPENDIX C – MODELING PROTOCOL AND SCAQMD COMMENTS

Yorke
ENGINEERING, LLC
www.YorkeEngr.com

November 7, 2018

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21865 Copley Drive
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Phone: (909) 396-3902
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Subject: Alamitos Energy Center Modeling Protocol for Permit Modification

Dear Mr. Chandan:

As discussed during our Meeting on September 27, 2018, AES Southland (AES) intends to revise their permit to change the operating limits at the Alamitos Energy Center (AEC) located at 690 North Studebaker Road in Long Beach, CA (SCAQMD Facility ID No. 115394). Currently, the new Combined-Cycle Gas Turbine (CCGT) units are limited to 4,100 normal operating hours per year (not including startup and shutdown) to reserve sufficient $PM_{2.5}$ emissions for the second phase of AEC project development, which includes operating four simple-cycle General Electric (GE) LMS100 gas turbines and remain under the major source threshold for $PM_{2.5}$.

AES would like to revise the facility Title V permit to add approximately 2,000 hours of normal operation for the CCGTs through a concurrent facility modification reducing the permitted operating hours for the Simple-Cycle Gas Turbines (SCGTs). The AEC will continue to stay under the existing emissions limit for total particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) of 70 tons per year for the site (Rule 1325).

This letter serves as the modeling protocol describing how Yorke will update the dispersion modeling associated with the AEC operating hour permit revision. The modeling that was presented, reviewed and accepted by SCAQMD in the Engineering Evaluation dated June 30, 2016 will be the baseline or starting point modeling. Modifications to this modeling due to the operating hour revision are described in detail in this protocol letter.

The proposed modification would not affect the maximum hourly, daily or monthly emissions, as the operating schedule for startups and shutdowns will remain the same for the CCGTs and SCGTs. Only the annual number of normal steady-state operating hours for the CCGTs and SCGTs will change. Based on preliminary emission estimates for the total facility the change in the operating hours will have the following effect:

- Annual $PM_{10}/PM_{2.5}$ emissions will remain the same or decrease slightly;
- Annual CO emissions will decrease slightly;
- Annual NO_x emissions will increase by approximately 10 tons per year (tons/yr);
- Annual SO_2 emissions will increase by approximately 2 tons/yr; and

- Annual VOC emissions will increase by approximately 5 tons/yr.

Based on the annual emissions modifications, Yorke is proposing to only conduct modeling for annual standards, no modeling revisions will be conducted for any short-term standard. Annual modeling will be conducted for compliance with Rule 2005 (NO_2) and Rule 1703 PSD (NO_2), the facility is exempt from Rule 1303 modeling.

The following sources will be included in the modeling due to the proposed permit modifications:

Table 1: List of Equipment to be included in modeling and modifications

Application Number	Equipment Description	Permit Modification
579142	GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-1	Increase annual operating hours by 1960. Increase stack height to 150 ft as noted in Apr 27, 2018 Administrative Change application.
579143	GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-2	Increase annual operating hours by 1960. Increase stack height to 150 ft as noted in Apr 27, 2018 Administrative Change application.
579145	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-1	Reduction in operating hours by approximately 1340 hours.
579147	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-2	Reduction in operating hours by approximately 1340 hours.
579150	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-3	Reduction in operating hours by approximately 1340 hours.
579152	GE LMS100-PB Simple-Cycle Gas Turbine Generator, Unit SCGT-4	Reduction in operating hours by approximately 1340 hours.
578081	Boiler, Auxiliary, Water-Tube, Natural gas, Cleaver-Brooks, Model NB-200D-50, with Low NO_x Burner, Flue Gas Recirculation, 70.8 MMBtu/hr	No modifications to emissions or stack parameters.

Annual modeling analysis is described below.

NO_2 AND PM_{10} ANNUAL MODELING

NO_2 Annual Modeling

Annual NO_x emissions will increase by approximately 10 tons/yr. For compliance with Rule 2005, annual NO_2 modeling will be conducted per permit unit for comparison to the significant change threshold, and presented for the units with revised operating hours, i.e., each CCGT and SCGT.

For compliance with Rule 1703 PSD, annual NO_2 modeling will be conducted for the entire facility (2 CCGTs, 4 SCGTs and auxiliary boiler) for comparison to the SIL.

The maximum modeled annual NO_2 concentrations will include the NO_2 to NO_x conversion ratio 0.75, as approved by EPA and SCAQMD in the ATC.

Although Rule 1304 provides an exemption for Rule 1303 modeling, the ATC compared the total facility annual NO_2 modeled concentration plus a representative ambient background NO_2 concentration to the annual NO_2 NAAQS. This analysis showed that the annual concentration predicted from the total facility emissions added minimally to the high background and would not cause an exceedance of the annual NO_2 NAAQS. Thus, the minimal NO_x annual emission increase is not expected to cause an exceedance of the NAAQS, and this analysis will not be included in the revised modeling.

PM_{10} Annual Modeling

Annual PM_{10} emissions will remain approximately the same or decrease slightly, therefore modeling of the change in annual PM_{10} emissions from the CCGTs and the SCGTs is not proposed. Modeling performed for the ATC included an examination of the annual PM_{10} NAAQS (project plus background), and a comparison to the annual Rule 1303 significant change threshold for PM_{10} since SCAQMD is non-attainment for the annual PM_{10} CAAQS. The NAAQS analysis showed that the annual concentration predicted from the total facility PM_{10} emissions added minimally to the high background and would not cause an exceedance of the NAAQS.

The Rule 1303 analysis presented in the ATC showed the total facility annual PM_{10} concentration was well below the significant change threshold. Even though the CCGTs were the main contributors to the maximum annual PM_{10} concentration, the proposed 42% increase in CCGT emissions would not cause the annual PM_{10} concentration to increase to a level greater than the significant change threshold.

This modification is not expected to change the total facility annual PM_{10} concentration such that it would cause an exceedance of the NAAQS or the Rule 1303 significant change threshold, thus these analyses will not be included in the revised modeling.

CCGT and SCGT Modeling Parameters

An operating scenario analysis was conducted for the ATC to determine the combination of load, emission rates and stack parameters that caused the highest predicted annual concentrations. Based on this analysis, the emissions and stack parameters associated with scenario 7 (minimum load at average ambient temperature) for both the CCGTs and SCGTs will be used in all annual analyses associated with this permit revision.

A revised operating scenario analysis is not necessary, since the annual emission profiles for each CCGT scenario will increase proportionally and decrease proportionally for each SCGT scenario, thus CCGT scenario 7 and SCGT scenario 7 will continue to have the maximum impacts.

The CCGT stack parameters that will be included in the revised modeling are the same as in the ATC based on operating scenario 7, except the stack height is now 150 feet (45.7 m) as described in the Administrative Change application dated Apr 27, 2018.

Each CCGT annual emission rate is based on the increase in normal operating hours to 6,060 hours, plus the same number of starts and shutdowns. The revised CCGT emissions associated with scenario 7 are based on 6,060 hours of operation at minimum (44%) load, plus 80 cold starts, 88 warm starts, 332 hot starts, and 500 shutdowns, for a total of 38.5 hours of start-ups and 31 hours of shutdowns per year.

The SCGT stack parameters that will be included in the revised modeling are the same as in the ATC based on operating scenario 7. Each SCGT annual emission rate is based on the decrease in normal operating hours to 660 hours, plus the same number of starts and shutdowns. The revised SCGT emissions associated with scenario 7 are based 660 hours at minimum (50%) load, plus 500 starts and 500 shutdowns.

The same auxiliary boiler stack parameters and emission rates will be used in the revised modeling as in the ATC. The emissions are based on the maximum annual firing rate for 8760 hours total at 30% load or 21.23 MMBtu/hr, including 24 cold starts, 48 warm starts, 48 hot starts.

Table 2 presents the stack parameters and emission rates that will be used in the NO_2 and PM_{10} annual modeling.

Table 2: Stack Parameters and Emission Rates for Revised Modeling

Source	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	NO_x Emission Rate (g/s)
CCGT1	45.7	6.1	11.8	350	1.071
CCGT2	45.7	6.1	11.8	350	1.071
SCGT1	24.4	4.11	23.6	746	0.191
SCGT2	24.4	4.11	23.6	746	0.191
SCGT3	24.4	4.11	23.6	746	0.191
SCGT4	24.4	4.11	23.6	746	0.191
Auxiliary Boiler	24.4	0.91	21.2	432	0.019

Note: Emission rates are approximate and may change slightly for the modeling analysis.

PSD ANALYSES

No other PSD analyses, such as Class I SIL or AQRV analyses, will be conducted since the modeling for the ATC predicted facility-related annual NO_2 and PM_{10} concentrations were well below the appropriate thresholds, and the NO_x annual emission increase is minimal, plus there is no annual PM_{10} increase.

HEALTH RISK ASSESSMENT

The Rule 1401, health risk assessment (HRA) for toxics, presented in the ATC, showed that the per unit and total facility cancer risk (Table 2) and chronic hazard indices were well below the SCAQMD thresholds of 10 in a million and 1, respectively. The cancer risk from the CCGTs contributed the largest percentage to the total facility cancer risk.

Although, the total facility TAC emissions will increase by 14% due to this operating hour change, the TAC emissions from the CCGTs will increase by approximately 42% and the TAC emissions from the SCGTs will decrease by approximately 57% (or a scaling factor of 0.43). Table 3 presents a scaled estimation of the potential cancer risk that would be associated with the operating hour revision, as shows that the cancer risk would remain well below the SCAQMD threshold of 10 in a million. Likewise, the operating hour revision would have a similar effect on increasing the chronic hazard index, which was well below the SCAQMD threshold of one.

Table 3: Estimated Cancer Risk for Operating Hour Revision

Source	Cancer Risk per Unit (in a million)	Revised Emissions Scaling Factor	Potential Revised Cancer Risk per Unit (in a million)[1]
CCGT	0.5	1.42	0.71
SCGT	0.05	0.43	0.022
Auxiliary Boiler	0.009	1	0.009
Total Facility[2]	1.1	--	~1.52

Notes:

1. The Potential Revised Cancer Risk per Unit is estimated by multiplying the cancer risk per unit presented in the ATC by the revised emission scaling factor.
2. The total facility cancer risk presented in this table for the revised operating hours is an estimate calculated by summing the maximum cancer risk per unit. This may overestimate the cancer risk, as the impacts may not occur at the same receptor.

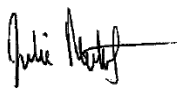
No additional HRA modeling is proposed for this permit modification.

CONCLUSION

The revised modeling analyses that will accompany the operating hour permit revision will include annual NO_2 for Rule 2005 and 1703 PSD compliance, and annual PM_{10} for Rule 1703 PSD compliance.

Should you have any questions or concerns, please contact me at (619) 880-1801.

Sincerely,



Julie Mitchell
Senior Air Quality Scientist
Yorke Engineering, LLC
JMitchell@YorkeEngr.com

cc: Stephen O'Kane, AES Southland
Greg Wolffe, Yorke Engineering, LLC
Vicky Lee, SCAQMD

From: Bhaskar Chandan
Sent: Thursday, December 20, 2018 5:41 PM
To: 'Julie Mitchell (JMitchell@YorkeEngr.com) '
Cc: Stephen O'Kane <stephen.okane@aes.com>; 'Greg Wolffe' <gwolffe@yorkeengr.com>; Vicky Lee <VLee1@aqmd.gov>; Rizaldy Calungcagin <RCalungcagin@aqmd.gov>; Andrew Lee <ALee@aqmd.gov>; Melissa Sheffer <msheffer@aqmd.gov>
Subject: FW: Alamitos Energy Center Modeling Protocol

Hi Julie,

Thanks for submitting the Modeling Protocol for the permit changes to the AES's Alamitos Energy Center. We have now completed our review of your November 7, 2018 protocol letter (attached). Our comments to your Modeling Protocol are provided in the email below from our permitting engineer Vicky Lee. Please let me know if you have any questions. Thanks.

Sincerely,

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Energy/Public Services/Waste Management/Terminals - Permitting
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Diamond Bar, CA 91765

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From: Vicky Lee
Sent: Thursday, December 20, 2018 5:01 PM
To: Bhaskar Chandan <BChandan@aqmd.gov>
Subject: FW: Alamitos Energy Center Modeling Protocol

Bhaskar,

I reviewed Yorke Engineering's submittal on behalf of AES Alamitos (AES) of the proposed dispersion modeling protocol for the Alamitos Energy Center (AEC) modification to increase the annual normal operating hours for the combined-cycle turbines and to decrease the same for the simple-cycle turbines. The Final Determination of Compliance (FDOC) was based on rigorous regulatory analyses which enabled the power plant project to be approved. The proposed modification will modify the applicable air dispersion modeling and health risk assessment tables in the FDOC. I reviewed the proposed protocol with Melissa Sheffer, the modeler who reviewed the original AEC project. Our recommendations and my clarifying questions are set forth below.

1. Rule 1303 Analysis
   a. The combined- and simple-cycle turbines are exempt from the modeling requirements of Rule 1303(b)(1) pursuant to the Rule 1304(a)(2) exemption for utility boiler repower projects. However, AES

provided a Rule 1303 modeling analysis of impacts for the entire project in support of the CEC's Final Staff Assessment (FSA). The results are shown in T*able 57 – Modeled Results – Normal Operation for Total Project (p. 187 of FDOC)*. Our understanding is that AES will submit a Petition to Amend to the CEC for the modification project. The qualitative reasoning provided in the protocol that the changes in annual emissions for NOx and PM_{10} will not result in total predicted concentrations that will exceed the CAAQS, NAAQS, or Rule 1303 thresholds is not sufficient reason to avoid remodeling. **Please provide re-modeling for NO_2, PM_{10} and $PM_{2.5}$ based on the total emissions from each turbine and the auxiliary boiler for the annual averaging period to update *Table 57***.

b. **Please base the air dispersion modeling and health risk assessment analysis on the most recent background concentrations, MET data, AERMOD version (air quality modeling), and AERMOD with HARP version (HRA).**

c. The protocol states that the maximum modeled annual NO_2 concentrations will include the NO_2 to NO_x conversion ratio 0.75, as approved by EPA and SCAQMD in the ATC. At the time the FDOC was approved, the ARM method was still a regulatory option for NO_2 modeling. However, as this option has not been allowed by the EPA since October 2017, this is no longer an approved method. **Please use the ARM2 method within the AERMOD model for all annual NO_2 modeling.**

2. Rule 1401 Health Risk Assessment

The FDOC includes *Table 68--Model Results for HRA for Combined-Cycle Turbine (pp. 220-221 of FDOC)* that provides the MICR, HIC, HIA for each of two combined-cycle turbines. *Table 70--Model Results for HRA for Simple-Cycle Turbine (pp. 222-223)* provides the MICR, HIC, and HIA for each of the four simple-cycle turbines. *Table 70A--Model Results for HRA for Facility (*p. 223 of the FDOC) provides the MICR, HIC, HIA, and cancer burden for the facility, including the auxiliary boiler. AES provided the facility health risk assessment in support of CEC's FSA. Our understanding is that AES will submit a Petition to Amend to the CEC for the modification project. **Please provide revised health risk assessments to update Tables 68, 70, and 70A based on the most recent risk values.**

3. PSD Analysis

a. For *Table 82 – Maximum Modeled Project Impacts Compared to Class II SILs and PSD Increment Standards (p. 255 of PDOC)*, the SCAQMD agrees with the protocol that re-modeling is required. **Please provide re-modeling for NO_2 and PM_{10} based on the total emissions from each turbine and the auxiliary boiler for the annual averaging period to update *Table 82***.

b. For *Table 84 – Maximum Modeled Impacts Compared to Class I SILs (p. 259 of FDOC)*, **please provide re-modeling for the NO2 and PM10 for the annual averaging period, using the ARM2 method**.

4. Rule 2005

Table 88 – Rule 2005 Modeled Results – Normal Operation for a Single Combined-Cycle Turbine (p. 283 of FDOC) shows modeling for the emission unit causing the highest modeled concentrations, which was a combined-cycle turbine. The protocol states: "For compliance with Rule 2005, annual NO2 modeling will be conducted per permit unit for comparison to the significant change threshold, and presented for the units with revised

operating hours, i.e., each CCGT and SCGT." For Rule 2005, the re-modeling is required for each of the four combined-cycle turbines only because the emissions will increase and the stack height will change. However, as the requested modeling for T*able 57 – Modeled Results – Normal Operation for Total Project (p. 187 of FDOC)* will require modeling for each of the simple-cycle turbines as well, **please provide remodeling for each combined-cycle turbine and simple-cycle turbine as proposed in the protocol.**

5. P. 1 of the protocol states: "Annual CO emissions will decrease slightly." Please confirm there will be a slight decrease, because my emissions calculations show that facility CO emissions will increase from 243.62 lb/yr to 247.48 lb/yr.

6. P. 3 of the protocol states: "The revised CCGT emissions associated with scenario 7 are based on 6,060 hours of operation at minimum (44%) load, plus 80 cold starts, 88 warm starts, 332 hot starts, and 500 shutdowns, for a total of 38.5 hours of start-ups and 31 hours of shutdowns per year." Please confirm the hours of start-ups and shutdowns are correct, because my calculations show 290 hours of start-ups and 250 hours of shutdowns per year per combined-cycle turbine.

7. *Table 2: Stack Parameters and Emission Rates for Revised Modeling (p. 4 of protocol)*
   a. NOx Emission Rate (g/s) Column
      i. Please show the derivation of the 1.071 g/s for CCGT1 & CCGT2 in the table with an equation that includes numerical values.
      ii. Please show the derivation of the 0.191 g/s for SCGT1 – SCGT4 in the table as requested above.

   b. Annual PM_{10} Emission Rate (g/s) Column
      i. Please add a column to the table for the annual PM_{10} emission rates.
      ii. Please provide the PM_{10} emission rate for each combined-cycle turbine, CCGT1 and CCGT2 in the table, and provide the derivation of the emission rate.
      iii. Please provide the PM_{10} emission rate for each simple-cycle turbine, SCGT1, SCGT2, SCGT3, and SCGT4, in the table, and provide the derivation of the emission rate.

Please let me know if there are any questions.

Vicky Lee
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South Coast Air Quality Management District
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909-396-2284

APPENDIX D – HEALTH RISK ASSESSMENT SUMMARY FILES

HARP Project Summary Report 1/28/2019 11:21:38 AM

PROJECT INFORMATION
HARP Version: 18159
Project Name: AEC
Project Output Directory: C:\HARP2\AEC
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):0
Y (m):0
Zone:1
No. of Sources:0
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:84
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
7FA0107	0	0	7664417	NH3	1	102000	15.7	1
7FA0107	0	0	75070	Acetaldehyde	1	2590	0.4	1
7FA0107	0	0	107028	Acrolein	1	53.3	0.00824	1
7FA0107	0	0	71432	Benzene	1	48	0.00742	1
7FA0107	0	0	106990	1,3-Butadiene	1	6.33	0.000978	1
7FA0107	0	0	100414	Ethyl Benzene	1	471	0.0728	1
7FA0107	0	0	50000	Formaldehyde	1	5300	0.819	1
7FA0107	0	0	91203	Naphthalene	1	19.1	0.00296	1
7FA0107	0	0	1151	PAHs-w/o	1	6.63	0.00102	1
7FA0107	0	0	75569	Propylene Oxide	1	427	0.066	1
7FA0107	0	0	108883	Toluene	1	1910	0.296	1
7FA0107	0	0	1330207	Xylenes	1	942	0.146	1
7FA0207	0	0	7664417	NH3	1	102000	15.7	1
7FA0207	0	0	75070	Acetaldehyde	1	2590	0.4	1
7FA0207	0	0	107028	Acrolein	1	53.3	0.00824	1
7FA0207	0	0	71432	Benzene	1	48	0.00742	1
7FA0207	0	0	106990	1,3-Butadiene	1	6.33	0.000978	1
7FA0207	0	0	100414	Ethyl Benzene	1	471	0.0728	1

7FA0207	0	0	50000	Formaldehyde	1	5300	0.819	1
7FA0207	0	0	91203	Naphthalene	1	19.1	0.00296	1
7FA0207	0	0	1151	PAHs-w/o	1	6.63	0.00102	1
7FA0207	0	0	75569	Propylene Oxide	1	427	0.066	1
7FA0207	0	0	108883	Toluene	1	1910	0.296	1
7FA0207	0	0	1330207	Xylenes	1	942	0.146	1
LMS0107	0	0	7664417	NH3	1	6420	6.08	1
LMS0107	0	0	75070	Acetaldehyde	1	163	0.155	1
LMS0107	0	0	107028	Acrolein	1	3.36	0.00318	1
LMS0107	0	0	71432	Benzene	1	3.03	0.00287	1
LMS0107	0	0	106990	1,3-Butadiene	1	0.399	0.000378	1
LMS0107	0	0	100414	Ethyl Benzene	1	29.7	0.0281	1
LMS0107	0	0	50000	Formaldehyde	1	334	0.316	1
LMS0107	0	0	91203	Naphthalene	1	1.21	0.00114	1
LMS0107	0	0	1151	PAHs-w/o	1	0.418	0.000396	1
LMS0107	0	0	75569	Propylene Oxide	1	26.9	0.0255	1
LMS0107	0	0	108883	Toluene	1	121	0.114	1
LMS0107	0	0	1330207	Xylenes	1	59.4	0.0562	1
LMS0207	0	0	7664417	NH3	1	6420	6.08	1
LMS0207	0	0	75070	Acetaldehyde	1	163	0.155	1
LMS0207	0	0	107028	Acrolein	1	3.36	0.00318	1
LMS0207	0	0	71432	Benzene	1	3.03	0.00287	1
LMS0207	0	0	106990	1,3-Butadiene	1	0.399	0.000378	1
LMS0207	0	0	100414	Ethyl Benzene	1	29.7	0.0281	1
LMS0207	0	0	50000	Formaldehyde	1	334	0.316	1
LMS0207	0	0	91203	Naphthalene	1	1.21	0.00114	1
LMS0207	0	0	1151	PAHs-w/o	1	0.418	0.000396	1
LMS0207	0	0	75569	Propylene Oxide	1	26.9	0.0255	1
LMS0207	0	0	108883	Toluene	1	121	0.114	1
LMS0207	0	0	1330207	Xylenes	1	59.4	0.0562	1
LMS0307	0	0	7664417	NH3	1	6420	6.08	1
LMS0307	0	0	75070	Acetaldehyde	1	163	0.155	1
LMS0307	0	0	107028	Acrolein	1	3.36	0.00318	1
LMS0307	0	0	71432	Benzene	1	3.03	0.00287	1
LMS0307	0	0	106990	1,3-Butadiene	1	0.399	0.000378	1
LMS0307	0	0	100414	Ethyl Benzene	1	29.7	0.0281	1
LMS0307	0	0	50000	Formaldehyde	1	334	0.316	1
LMS0307	0	0	91203	Naphthalene	1	1.21	0.00114	1
LMS0307	0	0	1151	PAHs-w/o	1	0.418	0.000396	1
LMS0307	0	0	75569	Propylene Oxide	1	26.9	0.0255	1
LMS0307	0	0	108883	Toluene	1	121	0.114	1
LMS0307	0	0	1330207	Xylenes	1	59.4	0.0562	1
LMS0407	0	0	7664417	NH3	1	6420	6.08	1
LMS0407	0	0	75070	Acetaldehyde	1	163	0.155	1

LMS0407	0	0	107028	Acrolein	1	3.36	0.00318	1
LMS0407	0	0	71432	Benzene	1	3.03	0.00287	1
LMS0407	0	0	106990	1,3-Butadiene	1	0.399	0.000378	1
LMS0407	0	0	100414	Ethyl Benzene	1	29.7	0.0281	1
LMS0407	0	0	50000	Formaldehyde	1	334	0.316	1
LMS0407	0	0	91203	Naphthalene	1	1.21	0.00114	1
LMS0407	0	0	1151	PAHs-w/o	1	0.418	0.000396	1
LMS0407	0	0	75569	Propylene Oxide	1	26.9	0.0255	1
LMS0407	0	0	108883	Toluene	1	121	0.114	1
LMS0407	0	0	1330207	Xylenes	1	59.4	0.0562	1
AUXBOIL	0	0	7664417	NH3	1	424	0.161	1
AUXBOIL	0	0	75070	Acetaldehyde	1	0.558	0.000209	1
AUXBOIL	0	0	107028	Acrolein	1	0.486	0.000182	1
AUXBOIL	0	0	71432	Benzene	1	1.04	0.000391	1
AUXBOIL	0	0	100414	Ethyl Benzene	1	1.24	0.000465	1
AUXBOIL	0	0	50000	Formaldehyde	1	2.22	0.000829	1
AUXBOIL	0	0	110543	Hexane	1	0.829	0.00031	1
AUXBOIL	0	0	91203	Naphthalene	1	0.054	2.02E-05	1
AUXBOIL	0	0	1151	PAHs-w/o	1	0.018	6.74E-06	1
AUXBOIL	0	0	115071	Propylene	1	95.5	0.0357	1
AUXBOIL	0	0	108883	Toluene	1	4.77	0.00179	1
AUXBOIL	0	0	1330207	Xylenes	1	3.55	0.00133	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1330207MAXHR.txt

1330207PER.txt
50000MAXHR.txt
50000PER.txt
71432MAXHR.txt
71432PER.txt
75070MAXHR.txt
75070PER.txt
75569MAXHR.txt
75569PER.txt
7664417MAXHR.txt
7664417PER.txt
91203MAXHR.txt
91203PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH18232
Official: True

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
7664417	NH3			3200	200		
75070	Acetaldehyde	0.01		470	140		300
107028	Acrolein			2.5	0.35		0.7
71432	Benzene	0.1		27	3		3
106990	1,3-Butadiene	0.6		660	2		9
100414	Ethyl Benzene	0.0087			2000		
50000	Formaldehyde	0.021		55	9		9
91203	Naphthalene	0.12			9		
1151	PAHs-w/o	3.9	12				
75569	Propylene Oxide	0.013		3100	30		
108883	Toluene			37000	300		
1330207	Xylenes			22000	700		
110543	Hexane				7000		
115071	Propylene				3000		

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274

AERPLOT: 13329

METEOROLOGICAL INFORMATION
Version:
Surface File:
Profile File:
Surface Station:
Upper Station:
On-Site Station:

LIST OF AIR DISPERSION FILES
AERMOD Input File:
AERMOD Output File:
AERMOD Error File:
Plotfile list

_____
01H1G001.PLT
01H1G002.PLT
01H1G003.PLT
01H1G004.PLT
01H1G005.PLT
01H1G006.PLT
01H1G007.PLT
PE00G001.PLT
PE00G002.PLT
PE00G003.PLT
PE00G004.PLT
PE00G005.PLT
PE00G006.PLT
PE00G007.PLT

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

_____
7FA0107.AEC-CancerRisk.csv
7FA0107.AEC-CancerRiskSumByRec.csv
7FA0107.AEC-GLCList.csv
7FA0107.AEC-HRAInput.hra
7FA0107.AEC-NCAcuteRisk.csv
7FA0107.AEC-NCAcuteRiskSumByRec.csv
7FA0107.AEC-NCChronicRisk.csv
7FA0107.AEC-NCChronicRiskSumByRec.csv
7FA0107.AEC-PathwayRec.csv
7FA0107.AEC-PolDB.csv

7FA0107.AEC-Wkr-CancerRisk.csv
7FA0107.AEC-Wkr-CancerRiskSumByRec.csv
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7FA0107.AEC-Wkr-PathwayRec.csv
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AEC-Burden-CancerRiskSumByRec.csv
AEC-Burden-GLCList.csv
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AEC-Burden-Output.txt
AEC-Burden-PathwayRec.csv
AEC-Burden-PolDB.csv
AEC-CancerRisk.csv
AEC-CancerRiskSumByRec.csv
AEC-GLCList.csv
AEC-HRAInput.hra
AEC-NCAcuteRisk.csv
AEC-NCAcuteRiskSumByRec.csv
AEC-NCChronicRisk.csv
AEC-NCChronicRiskSumByRec.csv
AEC-Output.txt
AEC-PathwayRec.csv
AEC-PolDB.csv
AEC-Wkr-CancerRisk.csv
AEC-Wkr-CancerRiskSumByRec.csv
AEC-Wkr-GLCList.csv
AEC-Wkr-HRAInput.hra

AEC-Wkr-Output.txt
AEC-Wkr-PathwayRec.csv
AEC-Wkr-PolDB.csv
AUXBOIL.AEC-CancerRisk.csv
AUXBOIL.AEC-CancerRiskSumByRec.csv
AUXBOIL.AEC-GLCList.csv
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AUXBOIL.AEC-NCAcuteRisk.csv
AUXBOIL.AEC-NCAcuteRiskSumByRec.csv
AUXBOIL.AEC-NCChronicRisk.csv
AUXBOIL.AEC-NCChronicRiskSumByRec.csv
AUXBOIL.AEC-PathwayRec.csv
AUXBOIL.AEC-PolDB.csv
AUXBOIL.AEC-Wkr-CancerRisk.csv
AUXBOIL.AEC-Wkr-CancerRiskSumByRec.csv
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AUXBOIL.AEC-Wkr-PolDB.csv
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LMS0107.AEC-NCAcuteRiskSumByRec.csv
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LMS0107.AEC-NCChronicRiskSumByRec.csv
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LMS0107.AEC-Wkr-CancerRiskSumByRec.csv
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LMS0107.AEC-Wkr-PolDB.csv
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LMS0207.AEC-CancerRiskSumByRec.csv
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LMS0207.AEC-NCAcuteRisk.csv
LMS0207.AEC-NCAcuteRiskSumByRec.csv
LMS0207.AEC-NCChronicRisk.csv
LMS0207.AEC-NCChronicRiskSumByRec.csv
LMS0207.AEC-PathwayRec.csv

LMS0207.AEC-PolDB.csv
LMS0207.AEC-Wkr-CancerRisk.csv
LMS0207.AEC-Wkr-CancerRiskSumByRec.csv
LMS0207.AEC-Wkr-GLCList.csv
LMS0207.AEC-Wkr-HRAInput.hra
LMS0207.AEC-Wkr-PathwayRec.csv
LMS0207.AEC-Wkr-PolDB.csv
LMS0307.AEC-CancerRisk.csv
LMS0307.AEC-CancerRiskSumByRec.csv
LMS0307.AEC-GLCList.csv
LMS0307.AEC-HRAInput.hra
LMS0307.AEC-NCAcuteRisk.csv
LMS0307.AEC-NCAcuteRiskSumByRec.csv
LMS0307.AEC-NCChronicRisk.csv
LMS0307.AEC-NCChronicRiskSumByRec.csv
LMS0307.AEC-PathwayRec.csv
LMS0307.AEC-PolDB.csv
LMS0307.AEC-Wkr-CancerRisk.csv
LMS0307.AEC-Wkr-CancerRiskSumByRec.csv
LMS0307.AEC-Wkr-GLCList.csv
LMS0307.AEC-Wkr-HRAInput.hra
LMS0307.AEC-Wkr-PathwayRec.csv
LMS0307.AEC-Wkr-PolDB.csv
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LMS0407.AEC-CancerRiskSumByRec.csv
LMS0407.AEC-GLCList.csv
LMS0407.AEC-HRAInput.hra
LMS0407.AEC-NCAcuteRisk.csv
LMS0407.AEC-NCAcuteRiskSumByRec.csv
LMS0407.AEC-NCChronicRisk.csv
LMS0407.AEC-NCChronicRiskSumByRec.csv
LMS0407.AEC-PathwayRec.csv
LMS0407.AEC-PolDB.csv
LMS0407.AEC-Wkr-CancerRisk.csv
LMS0407.AEC-Wkr-CancerRiskSumByRec.csv
LMS0407.AEC-Wkr-GLCList.csv
LMS0407.AEC-Wkr-HRAInput.hra
LMS0407.AEC-Wkr-PathwayRec.csv
LMS0407.AEC-Wkr-PolDB.csv

Spatial averaging files (\sa\)

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Residential 30-year Cancer Risk, Chronic and Acute Output File
HARP2 - HRACalc (dated 17023) 1/28/2019 11:36:48 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False

Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\AEC\hra\AEC-CancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\AEC\hra\AEC-CancerRiskSumByRec.csv
Cancer risk total by receptor and source saved to: C:\HARP2\AEC\hra\CancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\HARP2\AEC\hra\AEC-NCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\AEC\hra\AEC-NCChronicRiskSumByRec.csv

Chronic risk total by receptor and source saved to: C:\HARP2\AEC\hra\AEC-NCChronicRiskSumByRecBySrc.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\AEC\hra\AEC-NCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\AEC\hra\AEC-NCAcuteRiskSumByRec.csv
Acute risk total by receptor and source saved to: C:\HARP2\AEC\hra\AEC-NCAcuteRiskSumByRecBySrc.csv
HRA ran successfully

Worker 25-year Cancer Risk Output File
HARP2 - HRACalc (dated 17023) 1/28/2019 11:47:25 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False

Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\AEC\hra\AEC-Wkr-CancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\AEC\hra\AEC-Wkr-CancerRiskSumByRec.csv
Cancer risk total by receptor and source saved to: C:\HARP2\AEC\hra\CancerRiskSumByRec.csv
HRA ran successfully

Residential 70-year Cancer Risk Output File for Cancer Burden Calculation
HARP2 - HRACalc (dated 17023) 1/28/2019 11:09:10 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Population
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 70

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 0
16 to 70 Years Bin: 54

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False

Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\AEC\hra\AEC-Burden-CancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\AEC\hra\AEC-Burden-CancerRiskSumByRec.csv
HRA ran successfully