| DOCKETED | |
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| **Project Title:** | Alamitos Energy Center - Compliance |
| **TN #:** | 229735 |
| **Document Title:** | Alamitos Energy Center Statement of Staff Approval of Proposed Change |
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**CALIFORNIA ENERGY COMMISSION**
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Sacramento, California 95814

Main website: www.energy.ca.gov
CEC-57 (Revised 1/19)

# STATEMENT OF STAFF APPROVAL OF PROPOSED CHANGE

## ALAMITOS ENERGY CENTER
## (13-AFC-01C)

On July 5, 2018, AES Alamitos Energy, LLC (project owner) filed a petition for post-certification change to modify the Auxiliary Boiler commissioning parameters for the Alamitos Energy Center (AEC).

The 1,040-megawatt (MW), natural gas-fired, combined-cycle electric generating facility was certified by the California Energy Commission (CEC) on April 12, 2017, and began construction on June 9, 2017. The facility is located at 690 North Studebaker Road in the city of Long Beach.

## DESCRIPTION OF PROPOSED CHANGE

This petition proposes the following changes to conform the AEC conditions of certification to the recently approved minor revisions to the Title V Permit for the facility recently approved by the South Coast Air Quality Management District (SCAQMD) in consultation with United States Environmental Protection Agency:

- Increase the total number of auxiliary boiler commissioning hours from 30 to 100 with no change in air emissions.
- Minor changes to permit conditions affecting the auxiliary boiler commissioning.
- Increase the minimum ammonia injection rate for the auxiliary boiler.

The petition is available on the Energy Commission's AEC webpage at https://ww2.energy.ca.gov/sitingcases/alamitos/index.html

## ENERGY COMMISSION STAFF REVIEW AND CONCLUSIONS

Title 20, California Code of Regulations, section 1769, states that a project owner shall submit a post certification petition for (1) changes in project design, operation or performance, and (2) amendments to the Energy Commission Final Decision (Final Decision) or as previously amended.

CEC technical staff reviewed the petition for potential environmental effects and consistency with applicable laws, ordinances, regulations, and standards (LORS). Staff has determined that Air Quality is the only technical area affected by the proposed changes Staff concludes that with the adoption of the attached revised conditions of certification, the AEC would not result in significant adverse air quality related impacts. AEC would continue to comply with all applicable conditions of certification and air quality LORS. Staff has consulted with the SCAQMD and has determined that there is no possibility that the

change may have a significant effect on the environment and that no daily, quarterly, annual or other emission limit would be increased as a result of the change. The full Air Quality Analysis is included as Attachment A.

### *Environmental Justice*

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

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

**Environmental Justice – Table 1**
**Low Income Data within the Project Area**

| SCHOOL DISTRICTS IN SIX-MILE RADIUS | Enrollment Used for Meals | Free or Reduced Price Meals | |
|---|---|---|---|
| | | | |
| Long Beach Unified School District | 76,428 | 52,811 | 69.1% |
| ABC Unified School District | 20,768 | 10,247 | 49.3% |
| REFERENCE GEOGRAPHY | | | |
| Los Angeles County | 1,511,493 | 1,017,791 | 67.3% |
| | | | |
| Cypress Elementary School District | 3,969 | 1,280 | 32.2% |
| Los Alamitos Unified School District | 9,904 | 1,381 | 13.9% |
| Ocean View Elementary School District | 8,467 | 3,579 | 42.3% |
| Westminster Elementary School District | 9,338 | 6,619 | 70.9% |
| REFERENCE GEOGRAPHY | | | |
| Orange County | 490,431 | 230,464 | 47.0% |

**Source**: CDE 2017. California Department of Education, DataQuest, Free or Reduced Price Meals, District level data for the year 2016-2017, <http://dq.cde.ca.gov/dataquest/>.

Staff's EJ impact analysis evaluates the project's impacts on the EJ population living within a six-mile radius of the project site. Staff uses a six-mile radius around the project site based on the parameters for air dispersion modeling used in staff's air quality analysis to obtain data to gain a better understanding of the demographic makeup of the communities potentially impacted by the project. Air quality impacts are generally the type of project impacts that extend the furthest from a project site. Beyond a six-mile radius air emissions have either settled out of the air column or mixed with surrounding air to the extent the potential impacts are less than significant.

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

Staff determined the project change would not affect the technical areas listed above except Air Quality. For Air Quality, staff concluded impacts would be less than significant with implementation of the proposed and existing conditions of certification in the Final Decision. Therefore, impacts would be less than significant for any population in the project's six-mile radius, including the EJ population represented in **Environmental Justice - Figures 1** and **2**, and **Table 1**.

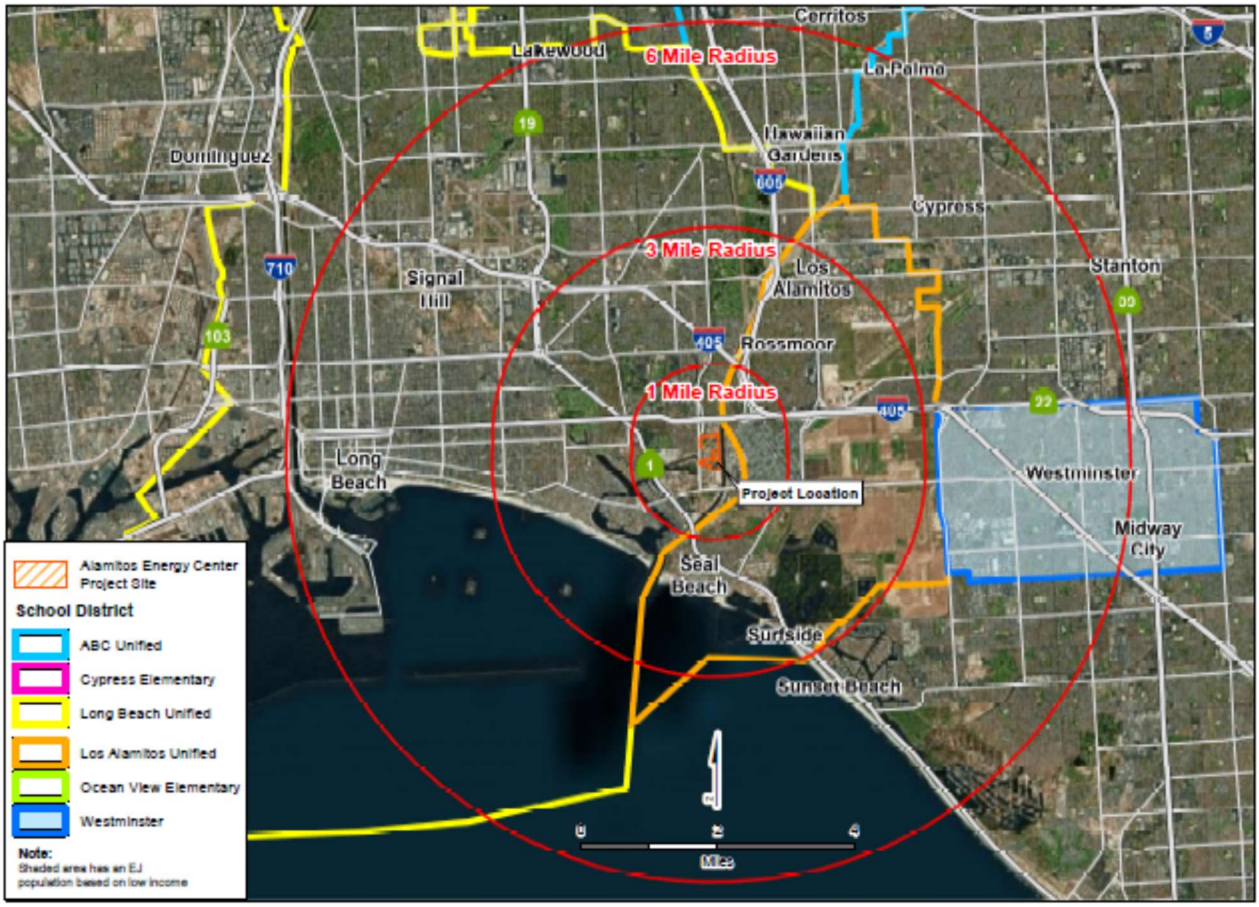
**ENVIRONMENTAL JUSTICE - FIGURE 1**

Alamitos Energy Center - Census 2010 Minority Population by Census Block


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Census 2010 PL 94-171 Data

**ENVIRONMENTAL JUSTICE - FIGURE 2**
Alamitos Energy Center - Environmental Justice Population Based on Low Income




CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: TIGER Data, B1701 ACS 5-Year Estimates

## RESPONSE TO COMMENTS

The CEC has received three comments concerning this project change:

- Comment 1 – Dorothy Johnson Comments on New Construction (TN# 228983, 7/15/2019)
- Comment 2 – Camille King Thompson Comments Increased hours of production time from proposal of 2013-2015 (TN# 228982, 7/15/2019)
- Comment 3– Jill Brennan Comments Increase in boiler hours from 30 hours to 100 hours (TN# 228975, 7/15/20190029

Staff's responses are below:

**Comment 1:**

*Dorothy Johnson Comments on New Construction (TN 228983)*

*"The new construction is much larger then was presented and is more intrusive looking. Now they want a battery field and more hours of operation. It is generally felt the public has been deceived."*

**Response to Comment 1:**

The battery facility construction and operation is not under the CEC's jurisdiction. However, its operation would not be expected to cause significant air quality or noise impacts as it would not include major mechanical equipment.

The effects of potential changes in hours for construction are addressed in the Responses to Comment 2 below.

**Comment 2:**

*Camille King Thompson Comments Increased hours of production time from proposal of 2013-2015 (TN 228982).*

*"There has been a request to increase the hours of production time from 30 to 100. Application states no more problems to mitigate with increased production, nitrous increases etc. Does this mean that horrible whine when machines go into use will increase? We are in the wind pattern here in Leisure World and we hear high whining noises, rumblings etc . Is this going to increase?"*

**Response to Comment 2:**

Air Quality: AES requested an increase from 30 hours to 100 hours for the commissioning of the new auxiliary boiler. Staff analyzed the requested increase in commissioning hours and determined the change is within the scope of the original analysis. AES would still be required to meet the emission limit and mitigation requirements included in the Final Decision. Staff concluded the potential air quality impacts, including those from oxides of nitrogen or nitrous oxide, from the proposed changes to the auxiliary boiler are less than significant, including impacts to environmental justice populations.

Noise: The increase in the commissioning period from 30 to 100 hours would not increase the noise level, only the duration of the activity. The new auxiliary boiler will comply with the manufacturer's sound rating that must comply with the project's threshold requirements established in Condition of Certification **NOISE-4** of the Final Decision. These thresholds have been established to ensure that the AEC's project operation does not cause disturbance in the surrounding communities, both in terms of loudness and tone. A noise survey at the surrounding residential communities will be completed at the commencement of project operation to ensure the project will meet these thresholds.

There is no doubt that the overlap of construction of new, and on-going operations of existing, power plant facilities is chaotic and at times noisy. The existing power plant (Alamitos Generating Station or AGS) was about 2,000 megawatts (MW) of steam boiler and combustion turbine units. The new power plant (AEC) currently under construction at the same site will be much smaller at 640 MW in phase 1 and 400 MW in phase 2 (not yet under construction), and predominately consist of combustion turbine units.

The Final Decision includes requirements for the AEC regarding noise control during construction, as well as operations. They require specific measures to reduce construction noise and require the project owner to address and resolve noise complaints during construction and operation. Condition of Certification **NOISE-1** requires a telephone hotline established by the AEC representatives for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. And, Condition of Certification **NOISE-2** describes the process of complaint investigation and resolution. The telephone number is required to be posted at the project site during construction, where it is visible to passersby. This telephone number must be maintained until the project has been operational for at least one year. The hotline would not be able to resolve noise emanating from AGS or Haynes operating equipment.

AEC will replace the AGS, an existing noise source. The new plant will operate at lower noise levels than the existing one since it will be smaller, will consist of newer, more modern equipment, and have less steam venting and use. Also, the major equipment for the new power plant will be placed in enclosures that help further reduce noise. The whining and rumbling noises are likely associated with either the AGS or the adjacent Los Angeles Department of Water and Power Haynes plant. Haynes is also modernizing. All AGS units and older units Haynes will be retired in order to comply with the statewide Once Through Cooling Policy.

**Comment 3:**

*Jill Brennan Comments Increase in boiler hours from 30 hours to 100 hours (TN 228975).*

*"Will this increase in boiler hours cause increased noise to the Leisure World Community? As construction has progressed at AES, numerous residents in Leisure World report an increase in noise, and noise in areas not previously impacted by AES. I personally was very concerned about the AES plant noise when I initially planned to buy in LW and took several months to find a quiet zone free from AES shrill noises. Now in the past 2-3 months, I and neighbors have noticed high pitched sounds emanating from the West where AES and DWP power plants exist. Never before in the nearly 3 years I have lived in Mutual One in the South portion of LW have we heard these very annoying and irritating sounds. What has changed and will the increased noise levels persist? It is impacting our property values and sales have been down from prior years."*

**Response to Comment 3:**

Noise: See Noise Response to Comment 2 above

## ENERGY COMMISSION STAFF DETERMINATION

Pursuant to Title 20, California Code of Regulations, section 1769(a)(3), staff has determined for this petition that approval by the full Commission is not required and the proposed changes meet the criteria for staff approval because:

(A)

i. there is no possibility that the change may have a significant impact on the environment, or the project is exempt from the California Environmental Quality Act;
ii. the change would not cause the project to fail to comply with any applicable laws, ordinances, regulations, or standards; and

(B)

ii. that no daily, quarterly, annual, or other emission limit will be increased as a result of the change.

## WRITTEN COMMENTS

This Statement of Staff Approval has been filed in the docket and posted to the CEC's webpage for this facility. Any person may file an objection to staff's determination within 14 days of the date of this statement on the grounds that the project change does not meet the criteria set forth in section 1769(a)(3)(A) or (B). Absent such objections, staff's approval of this petition will be effective 14 days after the filing of this statement.

An objection to staff's determination may be submitted using the Energy Commission's e-Commenting feature, as follows: Go to the Energy Commission's Alamitos Energy Center webpage and click on either the "Comment on this Proceeding," or "Submit e-Comment" link. Provide contact information—a full name, email address, comment title, and either a comment or attached document. The comment title should be "[Your Name]'s Comments re Alamitos Energy Center Determination." Type your comments into the "Comment Text" field, or upload a document with your comments. The maximum upload file size is 10MB, and only .doc, .docx, or .pdf attachments will be accepted. Enter the CAPTCHA that is used to prevent spamming. Then click on the "Agree and Submit your Comments" button to file your comments. When your comments are filed in the docket, you will receive an email with a link to them on the facility webpage.

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

California Energy Commission
Docket Unit, MS-4
Docket No. 13-AFC-01C
1516 Ninth Street
Sacramento, CA 95814-5512

All filed comments and materials will be added to the facility Docket Log and be publically accessible on the CEC's webpage for the facility.

If you have questions about this notice, please contact Jonathan Fong, Compliance Program Supervisor, at (916) 653-0900, or by fax to (916) 654-3882, or via e-mail at Jonathan.Fong@energy.ca.gov.

For information on participating in the CEC's review of the AEC petition, please contact the CEC's Public Advisor at (916) 654-4489, or at (800) 822-6228 (toll-free in California). The Public Advisor's Office can also be contacted via e-mail at publicadvisor@energy.ca.gov.

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

List Serve: Alamitos Energy Center listserv
ATTACHMENT A: Air Quality Analysis

# STAFF ANALYSIS
# ALAMITOS ENERGY CENTER (13-AFC-1C)
### Petition to Amend the Final Commission Decision
# AIR QUALITY

Nancy Fletcher

## INTRODUCTION

On July 5, 2019, AES Alamitos Energy, LLC (AES) filed a Petition (Alamitos 2019) with the California Energy Commission (CEC) requesting to modify the existing Alamitos Energy Center (AEC) Final Commission Decision.

AEC was certified by the CEC on April 12, 2017 (Final Commission Decision), and is currently under construction in the City of Long Beach. AEC consists of two natural gas-fired power blocks. Power Block 1 is a combined cycle gas turbine (CCGT) power block and Power Block 2 is a simple cycle gas turbine (SCGT) power block. Each power block is served by a separate oil water separator and ammonia storage tank.

Power Block 1 includes combustion turbine generators (CTGs) and one shared steam turbine generator (STG). Each CTG will exhaust to a heat recovery steam generator (HRSG) without supplemental firing capabilities. The CTG/HRSG trains will feed into the common STG, forming a standard 2-on-1 configuration. Power Block 1 also includes an air-cooled condenser, a 70.8 million British thermal units per hour (MMBtu/hr) auxiliary boiler, and related ancillary equipment.

Power Block 2 includes four simple-cycle, intercooled CTGs. Each SCGT includes dry low NOx combustors, selective catalytic reduction (SCR) equipment for nitrogen oxide (NOx) reduction, a catalyst to reduce carbon monoxide (CO) emission, and ancillary equipment.

On August 3, 2018, the CEC staff approved the temporary use of an additional laydown area to support construction. No changes to the conditions of certification were required. On April 4, 2019, AES submitted a petition to modify the operational profile of the CCGT and SCGTs, increase the stack height of the CCGT, and additional project modifications. Staff is in the process of evaluating this petition.

In the current petition (AES 2019), AES is requesting the CEC to approve the following:

- Increase the total number of auxiliary boiler commissioning hours from 30 to 100.
- Revise the auxiliary boiler commissioning emission factors.
- Increase the minimum ammonia injection rate for the auxiliary boiler.
- Include a new NOx emission factor for RECLAIM reporting during the auxiliary boiler commissioning period.

- The use of a CO continuous emissions monitoring system (CEMS) to demonstrate compliance with the auxiliary boiler CO emission limit.
- Include new source testing requirements for the auxiliary boiler ammonia emissions.

On May 11, 2019 and June 6, 2019, AES submitted applications to the South Coast Air Quality Management District (SCAQMD) to incorporate changes to the auxiliary boiler and auxiliary boiler SCR in the SCAQMD issued permits. The changes include the proposed modifications listed above, and additional updates and refinements to the SCAQMD issued permits. The SCAQMD processed the proposed changes as administrative and minor permit changes. SCAQMD issued the revised Title V permit July 10, 2019 after an expedited review by the U.S. Environmental Protection Agency (U.S. EPA). The SCAQMD is still processing the April 4, 2019 proposed changes for the operational profiles of the CCGT and SCGTs.

Staff notes an additional refinement is required for the CEC Air Quality Conditions of Certification in order to complete the July 5, 2019 petition. Condition **AQ-SC9** requires the boiler to complete commissioning prior to the commissioning of the CCGT. Staff is proposing to delete the language to allow the limited commissioning of the auxiliary boiler during the CCGT commissioning period. Staff analysis determined operations would continue to be restricted to equivalent scenarios evaluated and authorized during the original licensing period.

Air quality impacts from the proposed changes would be less than significant including impacts to environmental justice populations. No changes to the amount of project mitigation in the form of Emission Reduction Credits (ERCs) or Regional Clean Air Incentive Market (RECLAIM) trading credits are proposed. There are no air quality environmental justice issues related to the proposed facility modifications and no minority or low-income populations would be significantly or adversely impacted.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) COMPLIANCE

The amendment incorporates the changes to the auxiliary boiler and auxiliary boiler SCR. The amendment is classified as a minor permit revision under Title V and SCAQMD New Source Review (NSR) requirements. The amendment does not trigger a Prevention of Significant Deterioration (PSD) review. The amendment includes changes to commissioning hours and commissioning emission rates used to demonstrate compliance with the emission requirements included in the conditions of certification. The amendment includes clarifications to the NOx RECLAIM reporting requirements. AEC is a major source and requires a Title V operating permit. SCAQMD reviewed the requested modifications and determined the changes would comply with their current rules and regulations. The SCAQMD included additional changes in their issued permits to ensure compliance with applicable rules and regulations.

There have been changes to air quality laws, ordinances, regulations and standards (LORS) applicable to the project since the Final Commission Decision. **Air Quality Table 1** includes a summary of the air quality LORS applicable to the changes proposed in this auxiliary boiler amendment. **Air Quality Table 1** in this analysis is not intended to be comprehensive of all AEC facility LORS. Staff evaluated the changes and clarifications for consistency with all LORS and a compliance summary is included in **Air Quality Table 1**. The conditions of certification in the Final Commission Decision and amendments thereafter ensure that the facility would remain in compliance with all LORS.

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

| Applicable Law | Description and Compliance |
|---|---|
| **Federal** | **U.S. Environmental Protection Agency (U.S. EPA)** |
| Federal Clean Air Act Amendments of 1990 (FCAAA), Title 40 Code of Federal Regulations (CFR) Part 50 | National Ambient Air Quality Standards (NAAQS) are set in this part. NAAQS define levels of air quality that are necessary to protect public health. |
| Title 40 CFR Part 51 | Requirements for Preparation, Adoption, and Submittal of Implementation Plans. Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to sources of designated nonattainment pollutants. This requirement is addressed through SCAQMD Regulation XIII. |
| Title 40 CFR Part 52 | Approval and Promulgation of Implementation Plans– Establishes requirements for attainment emissions. Prevention of Significant Deterioration (PSD) requirements apply on a pollutant specific basis for major stationary sources. Twenty-eight source categories are subject to PSD requirements for attainment pollutants if facility annual emissions exceed 100 tons per year. SCAQMD has partial delegation of PSD authority from the U.S. EPA depending on the calculation methodology and plant wide applicability limits. Part 52 includes requirements for phased construction. **AQ-E14** requires a Best Available Control Technology (BACT)/ Lowest Achievable Emission Rate (LAER) analysis for the SCGT construction phase. The auxiliary boiler and auxiliary boiler SCR are considered part of the CCGT construction phase, therefore the condition does not apply to the changes. |
| Title 40 CFR Part 60, Subpart A | General Provisions– Outlines general requirements for facilities subject to standards of performance including, notification, work practice, monitoring and testing requirements. Staff's modifications to the conditions of certification ensure continued compliance. |

| Applicable Law | Description and Compliance |
|---|---|
| Title 40 CFR Part 60, Subpart Dc | Standards of Performance for Small Industrial Commercial Institutional Steam generating Units– Establishes new source performance standards (NSPS) for steam generating units with heat input rates between 10 and 100 MMBtu/hr. The auxiliary boiler would be subject to this subpart. Fuel records would need to be retained. Compliance is expected. |
| Title 40 CFR Part 63 | National Emission Standards for Hazardous Air Pollutants. Establishes National Emission Standards for Hazardous Air Pollutants For Source Categories– This subpart establishes requirements for facilities that are major sources of hazardous air pollutants (HAPs). AEC is considered an area source and not a major source of HAPs. AEC would not exceed the major source thresholds for HAPs (10 tons per year for any one pollutant or 25 tons per year for HAPs combined). In addition, this project does not include any stationary reciprocating internal combustion engines. |
| Title 40 CFR Part 64 | Compliance Assurance Monitoring (CAM) – CAM regulations apply to major stationary sources that use control equipment to achieve emission limits. The combined-cycle turbines are located at a major source. The combined-cycle turbines are subject to BACT requirements for NOx, CO, and volatile organic compound (VOC) emissions. Applicable BACT limits are met by using external control equipment consisting of SCR and oxidation catalysts. Compliance for CO and NOx is demonstrated by continuous emission monitoring systems (CEMS). The oxidation catalysts also control VOC emissions at specified temperatures. Compliance with the VOC emission limit is demonstrated through source testing. Continued compliance with the monitoring requirements is expected. |
| Title 40 CFR Part 70 | State Operating Permit Programs– Part 70 establishes the Title V permitting program. AEC is considered a federal major source and subject to the Title V Operating Permit Program. Title V permits consolidate federally enforceable operating limits. An updated Title V application has been submitted as part of SCAQMD requirements. Continued compliance is expected. |
| Title 40 CFR Part 72 | Permits Regulation– Part 72 establishes the Acid Rain Permit Program. The acid rain program requirements establish controls for sulfur dioxide ($SO_2$) and NOx emissions from fossil fuel-fired combustion used to generate electricity. Facilities are required to cover $SO_2$ emissions with allowances or offsets. Compliance with acid rain provisions is implemented through the Title V program. This program is within the jurisdiction of the SCAQMD with U.S. EPA oversight. Continued compliance is expected. |
| **State** | **California Air Resources Board and CEC** |

| Applicable Law | Description and Compliance |
|---|---|
| California Health & Safety Code (H&SC) §21080, 39619.8, 40440.14 (AB 1318) | Requires the executive officer of the SCAQMD, upon making a specified finding, to transfer emission reduction credits for certain pollutants from the SCAQMD's internal emission credit accounts to eligible electrical generating facilities. Continued compliance is expected. |
| H&SC §40910-40930 (District Plans to Attain State Ambient Air Quality Standards) | State Ambient Air Quality Standards should be achieved and maintained. The permitting of the source needs to be consistent with the approved clean air plan. The SCAQMD New Source Review (NSR) program needs to be consistent with regional air quality management plans. Continued compliance is expected. |
| California Health & Safety Code §41700 (Nuisance Regulation) | Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance. Continued compliance is expected. |
| California Health & Safety Code 40910-40930 | Permitting of source needs to be consistent with approved clean air plan. Continued compliance is expected. |
| California Code of Regulations | Greenhouse Gases Emission Performance Standard (EPS), Article 1 –Provisions Applicable to Power Plants 10 MW and Larger (SB1368) — AEC is expected to have a capacity factor below 60 percent and therefore SB 1368 would not apply. |
| **Local** | **South Coast Air Quality Management District (SCAQMD)** |
| Regulation II Permits Rule 204 | Permit Conditions—Establishes the ability for the SCAQMD to impose conditions on any permit as needed to assure compliance with all applicable regulations. |
| Regulation II Permits Rule 205 | Expiration of Permit to Construct—Requires permits to construct to expire within a year of issuance unless an extension is approved in writing by the SCAQMD Executive Officer. **AQ-E2** includes these requirements. AES submitted a permit extension letter to the SCAQMD dated 3/2/2018. On 4/17/2018 and 4/12/2019 the SCAQMD extended the expiration of the permits to construct. |
| Regulation II Permits Rule 212 | Standards for Approving Permits and Issuing Public Notice—Outlines specific criteria for approving permits and issuing public notice. Outlines requirements for RECLAIM facilities. AEC is located within 1,000 feet of a school as defined in H&SC 42301.9. The SCAQMD reported the changes did not trigger Rule 212 public noticing requirements. The changes will not result in an increase in the evaluated emissions of criteria pollutants and toxic contaminants that would expose a person to levels above noticing thresholds. |
| Regulation II Permits Rule 217 | Provisions For Sampling and Testing Facilities—Establishes requirements for providing and maintaining facilities needed for sampling and testing. Compliance is expected. |

| Applicable Law | Description and Compliance |
|---|---|
| Regulation II<br>Permits<br>Rule 218 | Continuous Emission Monitoring (CEM)—Establishes requirements for CEMS. Only CO CEMS are subject to Rule 218 requirements. The NOx CEMs is subject to Regulation XX. Each turbine is already required to operate with a compliant CO CEMS. The auxiliary boiler is not required to be equipped with a CO CEMS. However, AES submitted an application for a CO CEMS for the auxiliary boiler. Per the regulation, AES will be required to adhere to the rule requirements for the CO CEMS. Compliance requirements are included in the conditions of certification. |
| Regulation IV<br>Prohibitions<br>Rule 401 | Visible Emissions—Establishes limits on visible emissions. Visible emissions are not expected from the auxiliary boiler or boiler SCR. The auxiliary boiler will be fired exclusively on natural gas. Compliance is expected. |
| Regulation IV<br>Prohibitions<br>Rule 402 | Nuisance—Prohibits the discharge of air contaminants or other material which could detrimentally impact the public. AEC planned operations will use ammonia ($NH_3$) for emission control. The facility maintains a 5.0 parts per million (ppm) ammonia slip level. Nuisance problems are not expected from the auxiliary boiler or boiler SCR under normal operations. |
| Regulation IV<br>Prohibitions<br>Rule 403 | Fugitive Dust—Requires the prevention, reduction or mitigation of fugitive dust emission from project sites. Fugitive dust is not expected from the auxiliary boiler and SCR under normal operations. The license includes staff conditions detailing requirements for construction fugitive dust control. Continued compliance is expected. |
| Regulation IV<br>Prohibitions<br>Rule 407 | Liquid and Gaseous Air Contaminants—Establishes a CO emission limit of 2,000 parts per million by volume (ppmv). The CO emissions from the auxiliary boiler are subject to a more stringent CO emission limit of 50 ppmv at 3 percent oxygen (% $O_2$), meeting this rule. |
| Regulation IV<br>Prohibitions<br>Rule 408 | Circumvention. Prohibits hidden or secondary rule violations. No further analysis required. |
| Regulation IV<br>Prohibitions<br>Rule 409 | Combustion Contaminants—Establishes restrictions on particulate matter emissions from combustion equipment to 0.1 grain per cubic foot at 12% $O_2$. The auxiliary boiler will exclusively combust commercial grade natural gas. Compliance is expected. |
| Regulation IV<br>Prohibitions<br>Rule 431.1 | Sulfur Content of Gaseous Fuels—Limits the sulfur concentration to 16 ppmv (calculated as hydrogen sulfide) in natural gas. Commercial grade natural gas has an average sulfur content of 4 ppm. Compliance is expected. |
| Regulation IV<br>Prohibitions<br>Rule 474 | Fuel Burning Equipment-Oxides of Nitrogen—This rule is superseded by NOx RECLAIM pursuant to Rule 2001, Table 1. |

| Applicable Law | Description and Compliance |
|---|---|
| Regulation XI – Source Specific Standards<br>Rule 1100 | Implementation schedule for NOx Facilities—Establishes the implementation schedule for Regulation XX NOx RECLAIM facilities that are transitioning to a command-and-control regulatory structure (device level- requirements). Provides clarifying applicability requirements for Rule 1146. See Rule 1146, below. |
| Regulation XI – Source Specific Standards<br>Rule 1146 | Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters—Establishes NOx limits and monitoring and testing requirements for applicable boilers. SCAQMD amended the rule on 12/7/18. The amendment included applicability requirements. The auxiliary boiler is a Group II unit subject to the rule. RECLAIM facilities compliance date is 1/21/2021. |
| Regulation XIII<br>New Source Review | New Source Review for Criteria Pollutants—This regulation applies to new or modified sources that may emit any nonattainment air contaminant, ozone depleting compound, or $NH_3$. Precursors are treated as nonattainment pollutants. This regulation establishes BACT/Lowest Achievable Emission Rate (LAER), modeling, and offset requirements. NOx emissions are regulated under Regulation XX (RECLAIM). The SCAQMD amended Rule 1302-Definitions on 11/4/16. The definition of "major polluting facility" was updated. The SCAQMD reviewed BACT/LAER, modeling, and offset requirements for the auxiliary boiler. See the Analysis section for details. |
| Regulation XIII<br>New Source Review<br>Rule 1325 | Federal PM2.5 New Source Review Program—Outlines requirements for particulate matter less than 2.5 microns (PM2.5) for any new major polluting facility or major modification to a major polluting facility located in areas designated as non-attainment for PM2.5. The SCAQMD amended Rule 1325 on 12/5/14, 11/4/16 and 1/4/19. SCAQMD lowered the major polluting facility thresholds to 70 tons per year per pollutant and PM2.5 precursors now include VOC, $NH_3$, NOx, and $SO_2$. Staff condition changes reflect the updated requirements. Compliance is expected. |
| Regulation XIV<br>Toxics and Other Non-Criteria Pollutants<br>Rule 1401 | New Source Review of Toxic Air Contaminants (TAC)—Specifies limits for maximum individual cancer risk and acute and chronic hazard index for modifications to existing facilities emitting toxic air contaminants. Compliance is expected. See Public Health for further analysis. |
| Regulation XVII<br>Prevention of Significant Deterioration (PSD) | A series of rules establishing requirements for attainment emissions. SCAB is in attainment of the nitrogen dioxide ($NO_2$), $SO_2$, CO, and particulate matter less than ten microns (PM10) national ambient air quality standards. SCAQMD has partial delegation of PSD authority from the U.S. EPA depending on the calculation methodology and plant wide applicability limits. The changes to the auxiliary boiler and SCR do not trigger a PSD review. |

| Applicable Law | Description and Compliance |
|---|---|
| Regulation XVII<br>Prevention of Significant Deterioration (PSD)<br>Rule 1714 | Prevention of Significant Deterioration (PSD) for Greenhouse Gases (GHGs)—The SCAQMD amended this rule 3/1/19. BACT for GHG emissions from the auxiliary boiler was evaluated during the licensing period. The SCAQMD did not re-evaluate GHG BACT because there is no expected increase in the operating emissions. |
| Regulation XX<br>Regional Clean Air Incentives Market (RECLAIM) | A series of rules establishing requirements for RECLAIM facilities. Rule 2005-New Source Review for RECLAIM—Establishes review requirements for new or modified facilities subject to the RECLAIM program. Rule 2012—Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions. Establishes criteria for monitoring and source testing for major sources, large sources and process units. The changes did not require additional RECLAIM Trade Credits (RTCs) to be purchased. Staff notes the amendment was evaluated according to current SCAQMD RECLAIM requirements. Compliance is expected. |
| Regulation XXX<br>Title V Permits | A series of rules establishing general requirements and application procedures for facilities subject to Title V requirements. The SCAQMD determined that the requested amendment is considered a minor permit revision and requires a 45-day U.S. EPA review. The U.S. EPA completed their review. |
| Regulation XXXI<br>Acid Rain Permit Program | A series of rules establishing the Acid Rain Permit Program. Requires a subject facility to obtain emission allowances for SOx as well as monitoring for SOx, NOx, and carbon dioxide ($CO_{2)}$ emissions. These rules adopt 40 CFR Part 72 by reference. |

# ANALYSIS

## OPERATION SUMMARY AND EMISSIONS ANALYSIS

On May 14, 2018, AES notified CEC staff they submitted an administrative amendment request to the SCAQMD to update the auxiliary boiler equipment description that changed the make and model of the auxiliary boiler. AES proposed these changes without any changes to the boiler rating, emission guarantees, emission limits, SCR specifications, stack, monitoring parameters, fuel usage rate, or operating schedule. The manufacturer emissions guarantee confirmed the boiler rating, stack dimensions, and controlled NOx and CO emission rates are equivalent to the rates evaluated during the licensing process. The emission guarantee indicated lower VOC and PM10/2.5 emission rates. However, AES is not proposing to lower the VOC or PM10/2.5 auxiliary boiler emission rate. In addition, the emissions guarantee included a NOx uncontrolled emission rate of 30 ppm at three percent oxygen over 1-hour. Staff proposes to update

the equipment description to reflect the change to the make and model of the auxiliary boiler.

AES included a change to the CCGT stack height and ammonia storage tank in the May 14, 2018 administrative amendment request to SCAQMD. AES included these changes as part of the CCGT and SCGTs operation changes amendment submitted to CEC on April 4, 2019. Staff is currently evaluating these changes in a separate evaluation. SCAQMD is also processing these requests and has not yet incorporated these changes in the SCAQMD issued permits.

AES requested additional changes to the AEC SCAQMD issued permits on November 11, 2018, and February 8, 2019. These changes affect the CCGT, SCGTs, SCR/CO catalyst for the CCGT conditions and the analysis will be incorporated into the pending CCGT and SCGTs operation changes amendment analysis.

On May 15, 2019, AES contacted the SCAQMD regarding additional changes needed to the SCAQMD issued operating permits. These changes include refinements to the CCGT, SCGTs, auxiliary boiler, and CCGT, SCGTs, and auxiliary boiler SCR systems. The SCAQMD determined the majority of these changes could be included in open amendments. The SCAQMD determined an additional application would be required for the auxiliary boiler SCR system. AES submitted an application to the SCAQMD on June 6, 2019 to incorporate changes to the auxiliary boiler SCR system. On June 12, 2019, AES notified the SCAQMD they plan to install a CO CEMS on the auxiliary boiler to monitor CO emissions. AES submitted the correspondence with the SCAQMD to the CEC outlining the changes.

The commissioning of the auxiliary boiler started on July 29, 2019. The first phase of the commissioning generally would include cleaning and does not include firing the unit. The first fire of the auxiliary boiler was scheduled to occur in the first to second week of August. The changes to the auxiliary boiler include changes to the commissioning requirements included in the SCAQMD permits to operate and CEC license.

Condition of Certification **AQ-E5** currently limits the auxiliary boiler commissioning to 30 hours of fired operation from the initial auxiliary boiler startup. During AEC licensing, it was determined the auxiliary boiler was subject to BACT requirements. During commissioning, the auxiliary boiler would not meet the established BACT limits for NOx and CO. The U.S. EPA currently accepts limited exceptions to steady state BACT requirements during periods when steady state BACT is unachievable, referred to as alternate BACT. The Decision limited the commissioning period to 30 hours in **AQ-E5** as a limited exception or alternate BACT.

AES determined the commissioning phase for the auxiliary boiler would require two phases. The first phase would include the first burner light-off, boiler conditioning, and establishing the air/fuel ratio curve, and the SCR ammonia injection curve. This first phase would occur prior to permanent connection to the CCGT steam system. The first phase would not include steam production up to design pressure at maximum firing rate. The first phase would occur for up to six hours a day for five days, or

approximately 30 hours of operation as already established during the initial evaluation; there is the possibility that additional startup and commissioning hours would be needed to complete the first phase tuning and testing.

The second phase would occur during the initial startup and commissioning of the CCGT. The second phase would be conducted after all permanent connections to the CCGT steam system are completed and the auxiliary boiler can produce design steam pressure. The auxiliary boiler would be tested at maximum firing rates and the remainder of the steam system would complete commissioning. AES stated the auxiliary boiler would be fired for 24-36 hours varying between minimum and maximum heat input to complete the auxiliary steam system blows. This process would be repeated to test the steam supply for creating vacuum and steam seals in the air-cooled condenser. The second phase is expected to occur over 70 hours. The entire auxiliary boiler commissioning process would take a few months to complete and up to 100 total hours.

The original 30-hour auxiliary boiler-commissioning limit was based on the known parameters and the expected boiler manufacturer at the time AEC was licensed. The Final Staff Assessment (FSA) assessed auxiliary boiler commissioning emissions as two cold auxiliary boiler startup events. **Air Quality Table 2** includes the anticipated maximum auxiliary boiler commissioning emissions of select criteria pollutants from **Air Quality Table 19** in the FSA. These emissions are based on the first phase auxiliary boiler commissioning activities expected to occur over five days and up to six fired hours per day. **Air Quality Table 19** in the FSA also includes the expected auxiliary boiler fuel use during commissioning. AES included a minor adjustment to the expected fuel usage. The expected auxiliary boiler commissioning fuel usage from the decision and the revised fuel usage are included in **Air Quality Table 2.** Additional discussion of the fuel use is included below in the Greenhouse Gas Section.

**Air Quality Table 2**
**Maximum Initial Boiler Commissioning Emissions**

| Boiler | Commissioning Emissions (lbs) and Fuel Use | | |
|---|---|---|---|
| | NOx | CO | VOC |
| Daily Emissions | 8.44 | 8.681 | 9.36 |
| Total Commissioning Emissions | 42.2 | 43.4 | 46.8 |
| Decision Expected Total Fuel Use | 414 MMBtu or 0.39 mmscf | | |
| Revised Expected Fuel Use | 424.8 MMBtu or 0.405 mmscf | | |

Source: CEC 2016, CEC 2016a (FSA Table 19), SCAQMD 2019a, staff analysis

The auxiliary boiler startup and shutdown emission rates from the FSA are included below in **Air Quality Table 3**. AES is not proposing an increase to the pounds per event emission rates assumed in the Final Commission Decision for startup events. See below for discussion of the changes to the emission factors used to calculate commissioning emissions.

**Air Quality Table 3**
**Auxiliary Boiler Startup Emission Rates**

| Auxiliary Boiler Event Description | Event Duration | Emissions (lbs/event) and (lbs/hour) | | | | |
|---|---|---|---|---|---|---|
| | | NOx | CO | VOC | SOx | PM10/2.5 |
| Cold Startup (lbs/event) | 170 min | 4.22 | 4.34 | 4.69 | 0.24 | 0.84 |
| Cold Startup (lbs/hour) | | 1.49 | 1.53 | 1.65 | <0.048 | <0.3 |
| Warm Startup (lbs/event) | 85 min | 2.11 | 2.17 | 2.34 | 0.12 | 0.42 |
| Warm Startup (lbs/hour) | | 1.49 | 1.53 | 1.65 | <0.048 | <0.3 |
| Hot Startup (lbs/event) | 25 min | 0.62 | 0.64 | 0.69 | 0.035 | 0.12 |
| Hot Startup (lbs/hour) | | 0.87 | 2.29 | 0.96 | <0.048 | <0.3 |

Source: CEC 2016, CEC 2016a (FSA Table 26)

**AQ-A3** includes monthly emission limits based on the operating profile of the auxiliary boiler, steady state emission rates, and startup events. The license does not include separate emission limits from the auxiliary boiler during the commissioning period. The auxiliary boiler operating profile from the FSA is included in **Air Quality Table 4**.

**Air Quality Table 4**
**Auxiliary Boiler Operating Profile**

| Auxiliary Boiler Operating Parameters | Events | Hours |
|---|---|---|
| **Monthly** | | |
| Cold Startup | 2 | 2.83 |
| Warm Startup | 4 | 1.42 |
| Hot Startup | 4 | 0.42 |
| Steady-State | -- | 730.98 |
| Total Monthly[a] | -- | 744 |

Source: CEC 2016, CEC 2016a (FSA Table 28)

[a] total monthly hours is the total of the events times the expected duration hours.

Per the FSA, the original auxiliary boiler operational emission rates were based on the maximum heat input rating of 70.8 MMBtu/hr. In emails dated 1/7/2016 and 4/6/2016, AES requested SCAQMD to permit the boiler at a reduced operating emission rate and requested a monthly heat input limit. SCAQMD calculated the hourly emissions rate based on the boiler at 21.23 MMBtu/hr corresponding to operation at approximately 30 percent load. The revised Supplemental Application For Certification (SAFC) submitted to the CEC on 4/12/2016 included hourly emission rates based on the maximum hourly heat input of 70.8 MMBtu/hr. **Air Quality Table 5** includes the proposed auxiliary boiler emission rates.

**Air Quality Table 5**
**Maximum Auxiliary Boiler Hourly Steady-State Emission Rates**

| Auxiliary-Boiler | Maximum Hourly Steady-State Emission Rates | | | | |
|---|---|---|---|---|---|
| | NOx | CO | VOC | SOx[a] | PM10/2.5 |
| Controlled | 5 ppmv | 50 ppmv | 0.0052 lb/MMBtu | 0.0020 lb/MMBtu | 0.0072 lb/MMBtu |
| AEC Emission Rates (lbs/hr) | 0.42 | 2.83 | 0.47 | 0.14 | 0.51 |
| SCAQMD Emission Rate (lbs/hr) | 0.13 | 0.80 | 0.11 | 0.042 | 0.15 |

Source: CEC 2016, CEC 2016a (FSA Table 27)
Note: [a] Based upon 0.75 gr/100 scf; worst case, short-term sulfur content of natural gas.

The maximum monthly emissions established in **AQ-A3** limit both normal operations and commissioning periods, and are based on the SCAQMD reduced heat input rate. Therefore, the monthly emission limits in **AQ-A3** are more restrictive than the potential emissions from auxiliary boiler operations, which might occur at maximum heat inputs. AES expects to meet the current auxiliary boiler monthly emission limits in **AQ-A3**. The proposal to increase the auxiliary boiler commissioning period does not propose any change to the monthly emissions limits included in the license.

**AQ-A3** also includes emission factors for CO, VOC, PM10, and SOx used to verify that auxiliary boiler operations do not exceed the emission limits. The current emission factors are the same for both commissioning and normal operations. The SCAQMD calculated these emission factors by taking the monthly emission limits and dividing by the expected fuel consumption based on the auxiliary boiler monthly operating profile. The SCAQMD calculated the auxiliary boiler fuel consumption during steady-state operating periods, 21.23 MMBtu/hr, based on the reduced operating load. The auxiliary boiler fuel consumption during startup periods, 41.36 MMBtu/hr, was provided by the original boiler vendor during licensing (Table 5.18.11 of the AFC). **Air Quality Table 6** includes the current emission limits and emission factors in **AQ-A3**.

AES is proposing to separate the emission factors used to demonstrate compliance during the auxiliary boiler commissioning period from the emission factors used for normal operations in **AQ-A3**. AES calculated the revised commissioning emission factors for CO and VOC by taking the total expected emissions from the commissioning period and dividing by the expected fuel use in **Air Quality Table 2**. The resulting emission rates for CO and VOC are higher than the emission rates currently included in **AQ-A3** resulting in a more conservative approach for calculating potential emissions of CO and VOC emissions during the commissioning period. There is no expected change in the emission factors used for PM10 and SOx. In addition, AES is proposing to add PM2.5 emission limits and emission factors equivalent to PM10. The revised commissioning emission factors are included in **Air Quality Table 6.**

**AQ-A8** establishes a NOx emission limit for the auxiliary boiler. This emission factor is used for RECLAIM reporting after commissioning but prior to the certification of the NOx CEMS. The SCAQMD added a new permit condition establishing a NOx emission limit used for RECLAIM reporting during boiler commissioning. The new SCAQMD NOx emission factor was calculated using the same updated methodology described above for CO and VOC. AES is proposing the CEC incorporate the same requirement in the license. Staff incorporated the auxiliary boiler commissioning NOx emission limit in **AQ-8** instead of adding a new condition of certification. **AQ-8** includes both the current NOx emission limit used for the period after commissioning but prior to CEMS certification and the emission limit to determine NOx emissions during the auxiliary boiler commissioning period. Both of the NOx emission limits are included in **Air Quality Table 6.**

**Air Quality Table 6**
**Auxiliary Boiler Emission Factors**

| Auxiliary Boiler AQ-A3, AQ-A8 | NOx | CO | VOC | PM10 | PM2.5 | SOx |
|---|---|---|---|---|---|---|
| Emission Limits (lb/month) | ----- | 604.70 | 101.91 | 113.49 | 113.49 | 31.80 |
| Current Emission Factors (lb/mmcf) | 38.46 | 39.55 | 6.67 | 7.42 | ---- | 2.08 |
| Revised Commissioning Emission Factors (lb/mmcf) | 104.2 | 107.16 | 115.56 | 7.42 | 7.42 | 2.08 |

Source: SCAQMD 2016 (AQ Table 28), AES 2019, SCAQMD 2019a, and staff analysis.

**Air Quality Table 7** includes the maximum annual commissioning year emissions from the FSA for AEC, including the auxiliary boiler. Maximum commissioning year emissions include the total emissions from commissioning added to the maximum normal operating emissions for the remaining timeframe. For example, the commissioning of the AEC CCGT is expected to take six months. The commissioning year includes emissions from the commissioning period and from six months of routine operation. Since the auxiliary boiler would have a minimal commissioning period and commissioning emissions are assumed to be equivalent to startup operations, maximum annual operational emissions were conservatively used for the auxiliary boiler commissioning year emissions.

**Air Quality Table 7**
**Maximum Annual Emissions, Commissioning Year**

| Project Component | Commissioning Year Emissions (lbs/year) | | | | |
|---|---|---|---|---|---|
| | NOx | CO | VOC | SOx | PM10/2.5 |
| AEC CCGT | 108,377 | 249,162 | 60,146 | 26,536 | 46,410 |
| AEC SCGTs | 68,575 | 74,931 | 18,596 | 11,312 | 43,487 |
| Auxiliary Boiler | 1,351 | 7,256 | 1,223 | 382 | 1,362 |

Source: CEC 2016, CEC 2016a (FSA Table 32).

AES is also proposing to increase the maximum ammonia injection rate for the auxiliary boiler for the SCR catalyst, included in **AQ-D7**. Ammonia slip is limited to 5.0 ppmvd at three percent oxygen. The ammonia injection rate represents the effective operating range for the ammonia injection system to control NOx emissions. The ammonia injection rate is not used for any emission calculation and there is no proposed change to the ammonia slip requirement. Staff increased the maximum ammonia injection rate for the SCR in **AQ-D7** from 1.1 pounds per hour to 3.9 pounds per hour.

AES is proposing to use a CO CEMS to demonstrate compliance with the CO emissions requirements for the auxiliary boiler. Staff supports the use of a certified CEMS for determining compliance. Changes to the conditions of certification would be required to support the CO CEMS. Staff deleted the CO emissions factor used to determine CO emissions from normal operations. Staff added an additional Condition of Certification **AQ-D18** to outline CO CEMS requirements. AES would not be required to do a CO source test if they operate a certified CO CEMS and follow relative accuracy test audit procedures. Staff deleted the CO source testing requirements in **AQ-D14** and revised the language to support the remaining ammonia source testing requirements. Staff is requiring AES submit the SCAQMD approved CEMS plan and any subsequent revisions to the CPM. Staff deleted the source test reference in **AQ-K2** due to removal of the CO source test requirements and the addition of detailed ammonia source test procedures in **AQ-D14**. In addition, staff updated the required ammonia source test method for consistency with current SCAQMD requirements.

## BACT/LAER ANALYSIS

The changes do not constitute an emission increase per the SCAQMD rules and regulations. Therefore, the proposed changes do not trigger a revised BACT/LAER analysis.

Staff reviewed the auxiliary boiler BACT/LAER requirements during the licensing process. The license includes a NOx emission limit of 5.0 ppmvd averaged over 1-hour in Condition of Certification **AQ-A11**. Since the licensing period, SCAQMD revised Rule 1146. Rule 1146 requires this category of boiler to meet a NOx emission limit of 5 ppmvd over a 15-minute averaging period. The compliance schedule is December 7, 2018 for Non-RECLAIM facilities and January 1, 2021 for RECLAIM facilities. AEC is a RECLAIM facility and therefore the 15-minute averaging period will become effective on January 21, 2021.

Staff concurs the changes to Condition of Certification **AQ-E5** would still meet the SCAQMD requirements for alternate BACT. The license would continue to include appropriate limits to operating periods when it is not feasible for the auxiliary boiler to meet the established BACT limits.

## PM2.5 FEDERAL NEW SOURCE REVIEW PROGRAM

The SCAQMD adopted Rule 1325 to incorporate U.S. EPA requirements for PM2.5 into SCAQMD rules and regulations. Rule 1325 established offset ratios, LAER compliance

and control of PM2.5 precursors. On November 4, 2016, the SCAQMD amended Rule 1325 to establish appropriate major stationary source threshold for direct PM2.5 and PM2.5 precursors. The SCAQMD lowered the major polluting facility thresholds from 100 tons per year to 70 tons per year. Rule 1325 was amended on January 4, 2019 to expand the definition of PM2.5 'precursors' to include VOC and $NH_3$. Source test results for PM2.5/PM20 will be used to validate the emission factors used for Rule 1325 compliance.

The SCAQMD did not perform a complete facility Rule 1325 analysis for the proposed changes to the auxiliary boiler since there are no changes to the monthly emission limits. The SCAQMD updated the PM2.5 facility emission limit to reflect the updated Rule 1325 requirements. Staff is proposing the same update to Condition of Certification **AQ-F1**. Staff notes a full Rule 1325 analysis will be included as part of the open CCGT and SCGTs operation changes amendment.

## IMPACTS ANALYSIS

Ambient air quality impacts occur when project emissions cause the ambient concentrations of a pollutant to increase. An impact analysis includes quantifying the emissions released from the equipment during operation and the use of an atmospheric dispersion model to determine the probable impact at ground level.

The FSA included a facility commissioning impact analysis. The worst-case commissioning scenario analyzed corresponded to the commissioning of the CCGT. The worst-case scenario included both turbines operating concurrently at maximum commission firing rates and the auxiliary boiler firing under steady-state conditions. During the licensing process, staff requested information from AES regarding the use of auxiliary boiler at steady-state emission rates instead of the startup emission rates during the commissioning of the CCGT. AES responded that the startup of the auxiliary boiler would occur prior to the startup of the CCGTs. In order to ensure the commissioning impact scenario represented a worst-case commissioning scenario, staff proposed to restrict the commissioning of the auxiliary boiler during CCGT commissioning. The license includes **AQ-SC9** requiring the auxiliary boiler to complete commissioning activities prior to commissioning the CCGT since startup emissions rates used to characterize emissions from the auxiliary boiler-commissioning period were not included in the modeled scenario.

**Air Quality Table 8** includes the results of the AEC CCGT commissioning phase impact analysis. The predicted impacts from the PM10 emissions, highlighted in bold font, were above the CAAQS. It is noted the PM10 background concentrations are above the CAAQS without taking into account an incremental contribution from the proposed AEC. Therefore, staff concluded the commissioning of the GE 7FA.05 combined-cycle turbines could contribute to existing violations of annual PM10 ambient air quality standard. Staff also noted impacts from PM2.5 and $NO_2$ were close to the most stringent standards due to the existing high background concentrations, but were not expected to create new violations.

**Air Quality Table 8**
**Proposed Combined-Cycle Commissioning Impacts, (µg/m³)[a]**

| Pollutant | Averaging Period | Project Impact[a] (µg/m³) | Background (µg/m³) | Total[b] Impact (µg/m³) | Limiting Standard (µg/m³) | Percent of Standard |
|---|---|---|---|---|---|---|
| $NO_2$[c] | 1 hour | 67.6 | 256 | 323.6 | 339 | 95% |
| | Annual | 0.26 | 48 | 48 | 57 | 85% |
| PM10 | 24 hour | 1.62 | **59** | **61** | 50 | **121%** |
| | Annual | 0.21 | **27.3** | **27.5** | 20 | **138%** |
| PM2.5 | 24 hour[d] | 1.14 | 27.2 | 28.3 | 35 | 81% |
| | Annual | 0.21 | 10.97 | 11.18 | 12 | 93% |
| CO | 1 hour | 1,231 | 3,665 | 4,896 | 23,000 | 21% |
| | 8 hour | 835 | 2,978 | 3,813 | 10,000 | 38% |
| $SO_2$ | 1 hour | 2.24 | 58 | 60 | 655 | 9% |
| | 3 hour | 1.92 | 58 | 60 | 1,300 | 5% |
| | 24 hour | 0.55 | 11 | 12 | 105 | 11% |

Source: CEC 2017 (Decision Air Quality Table 8).

The SCAQMD auxiliary boiler evaluation for the current AES proposal describes the auxiliary boiler commissioning as occurring in two phases. The first phase is prior to the connection to the CCGT. The second phase would occur during the commissioning of the CCGT. The evaluation states it is unclear if the emissions from the auxiliary boiler would be fully abated during the CCGT commissioning.

Staff requested additional information from AES to determine if the auxiliary boiler emissions rates during the CCGT commissioning period would be equivalent to the steady-state emission rates assumed in the worst-case commissioning impact analysis. AES responded July 31, 2019 (TN 229155), that the auxiliary boilers would not be operating when the CCGT is operating at the maximum commissioning emissions modeled during the licensing period. In addition, elevated auxiliary boiler emissions (emissions above the modeled steady state rates) would not occur during the same hours as CCGT commissioning.

Staff deleted **AQ-SC9** since auxiliary boiler operations during the CCGT commissioning period would be within the scope of the analysis during the licensing period. In addition, staff analyzed commissioning periods separately from operating periods. The commissioning period for the CCGT and auxiliary boiler are short-term operations and do not require continuous operation of the auxiliary boiler and CCGT. In addition, there is some uncertainty in the emission rates assumed for commissioning periods. The equipment vendors do not generally guarantee emissions during commissioning periods. In addition, it is not always understood the extent to which the emission controls are available and operating during this period. Best management practices or measures are used to minimize emissions during these transient operations. AES

provided a discussion on the best management practices they would employ to minimize emissions during the commissioning process.

## CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) MITIGATION

The Final Commission Decision required mitigation for the auxiliary boiler operation for non-attainment pollutants and precursors to non-attainment pollutants. The required mitigation met the requirements under SCAQMD rules and regulations and CEC mitigation requirements under CEQA.

The amount of offsets required for VOC, SOx, and PM10 in the Final Commission Decision, were determined using 30-day emission averages. Offsets were not required for CO as the South Coast Air Basin is in attainment for CO and CO is not a precursor for any non-attainment criteria pollutant. The 30-day average is based on the highest emissions for any month, including a month where commissioning takes place. SCAQMD rules require an offset ratio of 1.2-to-1 for ERCs. The oil/water separator had a minimal contribution to the total VOC pound per day but was included for completeness with the auxiliary boiler.

The CEC normally requires criteria pollutant mitigation on least a one-to-one ratio. **Air Quality Table 9** demonstrates that the required mitigation for the auxiliary boiler in the Final Commission Decision for VOC, SOx, and PM10 in the form of ERCs met both SCAQMD and CEC requirements under CEQA. For comparison, **Air Quality Table 9** includes the maximum annual emissions from the auxiliary boiler and the oil/water separator and the calculated annualized daily emissions. **Air Quality Table 9** also includes a summary of the ERCs provided by AES.

**Air Quality Table 9**
**Project Offset Requirements for Emission Reduction Credits**

| Component | VOC | SOx | PM10 |
|---|---|---|---|
| Auxiliary Boiler and Oil/Water Separator 30-Day Emission Averages (lb/day) | 3.4 | 1.06 | 3.78 |
| SCAQMD Offset Ratio for ERCs | 1.2 | 1.2 | 1.2 |
| Total Calculated (lb/day) | 4.08 | 1.27 | 4.54 |
| SCAQMD Rounded Required Offset (lb/day) | 4 | 1 | 5 |
| Maximum Annual Auxiliary Boiler and Oil/Water Separator Emissions (lb/yr) | 1,223 | 382 | 1,362 |
| Annualized Auxiliary Boiler and Oil/Water Separator Emissions (lb/day) | 3.35 | 1.05 | 3.73 |
| ERCs provided by AES | 4 | 1 | 5 |

Source: CEC 2017 (Decision Air Quality Table 11), staff analysis
Note: [a] First Year

The facility is required to hold NOx RECLAIM Trading Credits (RTCs) to cover the first compliance year per Rule 1304.1. Maximum commissioning year emissions were used

to determine the first year RECLAIM requirements. **Air Quality Table 10** includes the first year NOx RECLAIM requirement, including commissioning, for the combined-cycle turbines and auxiliary boiler. AES has not provided a date to install, and provide offsets for, the SCGT phase.

**Air Quality Table 10**
**Project RECLAIM Trade Credit Requirements (lbs/year)**

| Equipment | (lbs/year) |
|---|---|
| | NOx, RTCs |
| Total AEC CCGT (both CCGT turbines) | 216,754 |
| Auxiliary Boiler | 1,351 |
| Required RECLAIM 1st Year - AEC CCGT and Auxiliary Boiler | 218,105 |

Source: CEC 2017 (Decision Air Quality Table 12), staff analysis

Existing conditions of certification will ensure the project stays in compliance with all RECLAIM requirements. The changes would not require an increase in any emission limit used to determine AEC mitigation. AEC expects to meet the monthly emission limits that the 30-day VOC, SOx, and PM10/2.5 emission averages are based on. In addition, there are no changes to the annual NOX emissions used to determine the current NOx RECLAIM holdings.

AES is proposing the addition of interim emission factors to calculate emissions from the commissioning period. During commissioning, the auxiliary boiler is assumed to operate at uncontrolled emission levels. The conditions of certification require AES to calculate emissions from the commissioning period to ensure and demonstrate commissioning operations meet all emission requirements in the conditions of certification.

Staff has determined no additional mitigation in the form of ERCs or RECLAIM holdings for the changes to the auxiliary boiler would be required. AES provided adequate mitigation at the time of licensing to meet both the SCAQMD rule requirements and CEC requirements under CEQA. The changes to the auxiliary boiler would not result in an emission increase or other change in circumstance that would require additional mitigation. The CEQA mitigation measures noted as conditions of certification reduce the direct and cumulative air quality impacts of the proposed facility modifications to a less than significant level, including impacts to any environmental justice population. There are no air quality environmental justice issues related to the proposed facility modifications and no minority or low-income populations would be significantly or adversely impacted.

## GREENHOUSE GAS ANALYSIS

The Final Commission Decision included combined estimated GHG emission calculations for the CCGT and auxiliary boiler. The GHG emission calculations were

based on the predicted operations of the covered equipment. A summary of the expected operational CCGT and auxiliary boiler GHG emissions shown as metric tons of carbon dioxide equivalent ($MCO_2e$) from the Final Commission Decision is included in **Air Quality Table 11**. The expected GHG emissions exclusive to the commissioning period were not included in the Final Commission Decision.

**Air Quality Table 11**
**AEC Combined Cycle (Power Block 1)**
**Estimated Potential Annual Greenhouse Gas (GHG) Emissions**

| AEC | CCTG and Auxiliary Boiler Operational GHG Emissions ($MTCO_2e/yr$)[a] |
|---|---|
| Carbon Dioxide ($CO_2$) | 1,117,681.94 |
| Methane ($CH_4$) | 526.71 |
| Nitrous Oxide ($N_2O$) | 627.84 |
| Sulfur Hexafluoride ($SF_6$) Leakage | 17.44 |
| **Power Block 1 GHG Emissions ($MTCO_2e/yr$)** | **1,118,853.92** |

Source: CEC 2017 (Greenhouse Gas Table 2), staff analysis
Note: [a] Auxiliary boiler contribution based on the expected annual average heat input rate.

AES provided the expected natural gas usage of the auxiliary boiler from the commissioning period during the licensing process. AES indicated to the SCAQMD an error was made in the expected fuel use calculation provided by AES during the licensing period. AES requested the SCAQMD correct the expected natural gas usage for the auxiliary boiler during the commissioning period from 414 MMBtu to 424.8 MMBtu as shown in **Air Quality Table 2**. The corrected fuel usage is equivalent to 6 hours of operation (approximately 2 cold startups) at the maximum auxiliary boiler-firing rate. The assumed fuel consumption rate provided during the licensing period for the auxiliary boiler during startup operations was 41.36 MMBtu/hr.

The CEC license and SCAQMD issued permits do not explicitly restrict the natural gas usage during the commissioning period. However, AES is required to record the natural gas usage in order to calculate the emissions from the commissioning period. The commissioning period is subject to the auxiliary boiler emission limits included in Condition of Certification **AQ-A5**.

Per staff calculations, the change in expected fuel usage for the commissioning period is equivalent to approximately 1.14 metric tons of $CO_2e$ emissions ($MCO_2e$). The commissioning fuel usage would be absorbed in the expected annual average heat input rate for the auxiliary boiler. Regardless, the 1.14 MCO2e is negligible compared to the calculated Power Block 1 $MCO_2e$ included in **Air Quality Table 11**.

## PREVENTION OF SIGNIFICANT DETERIORATION

The Prevention of Significant Deterioration (PSD) program has been established to prevent the deterioration of air quality in areas that already meet the primary NAAQS.

The SCAQMD is partially delegated to issue initial PSD permits and for PSD permit modifications.

PSD requirements apply to significant increases in emissions from a major stationary source, or a major modification to a minor source on a pollutant specific basis for attainment emissions. Combined-cycle power plants are considered major sources if the potential or actual emissions are greater than 100 tons per year. Significant emission increases are defined as potential annual emission increases of 100 tons or more for CO, 40 tons or more of NOx or $SO_2$, and 15 tons or more for PM10.

In addition, GHGs are a regulated pollutant under the PSD major source permitting program. A PSD analysis for GHG alone is not required if a PSD review is not required for criteria pollutants. In May 2010, U.S. EPA issued the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule establishing thresholds for GHG emissions. The regulation includes criteria for two phase-in steps with a commitment to develop a third step if necessary. Step 1 affected existing facilities that were already subject to PSD requirements and modifications that increased carbon dioxide equivalent ($CO_2e$) emissions over 75,000 tons per year. Step 2 affected new facilities with proposed $CO_2e$ emissions over 100,000 tons per year and modifications at existing facilities with increases in $CO_2e$ emissions over 75,000 tons per year. On June 23, 2014, the U.S. Supreme Court issued a decision regarding the application of stationary source permitting requirements to GHGs. The decision determined that GHGs could not be considered as an air pollutant for determining if a source is a major source requiring a PSD or Title V permit. The decision clarified that PSD permits required based on emissions of conventional pollutants may continue to require limitations on GHG emissions based on the application of BACT. The changes to the auxiliary boiler and boiler SCR do not trigger a PSD review for criteria pollutants. Therefore, a GHG PSD review is not triggered.

## CONDITION CHANGES

SCAQMD and AES provided the CEC with the SCAQMD engineering evaluation and updated Title V operating permit. The SCAQMD issued Title V permit for AEC includes the following changes:

- Updated terminology to the SCAQMD/District reference to South Coast AQMD;
- Updated auxiliary boiler equipment description to include the change in boiler make and model;
- Lowered annual facility PM2.5 emission limit in **AQ-F1** from 100 to 70 tons;
- Updated rule citations in the conditions;
- Updated the application numbers;
- The addition of PM2.5 to the auxiliary boiler monthly emission limits;
- The addition of clarifying language for auxiliary boiler commissioning operation including a notification requirement once the commissioning process is completed;

- Increased the CO and VOC emission rates factors used with monthly fuel data for emission calculations during boiler commissioning;
- The addition of an auxiliary boiler CO CEMS and corresponding requirements;
- The addition of language clarifying how to calculate monthly auxiliary boiler emissions if the month includes commissioning and normal operations;
- The addition of a condition of an increased NOx emission limit for the auxiliary boiler commissioning period to report RECLAIM emissions;
- Clarified significant figures for the auxiliary boiler NOx, and CO emission concentration limits;
- Deleted CO source test requirement in response to the addition of the CO CEMS requirements;
- Increased auxiliary boiler commissioning period from 30 to 100 hours
- Updated contaminant and applicable rule list for the auxiliary boiler;
- Increased ammonia injection rate for the auxiliary boiler SCR;
- Updated the approved ammonia source test methodology;
- The addition of an ammonia source test requirement for the auxiliary boiler; and
- The addition of clarifying language that the NOx concentration shall be simultaneously recorded during ammonia slip test.

Staff incorporated these same changes to the AEC Air Quality Conditions of Certification with the exception of updating the application numbers since the application numbers are not included in the CEC license.

In addition, staff deleted **AQ-SC9** based on the data request response docketed by AES on July 31, 2019 (TN 229155). The response clarified that changes to the auxiliary boiler and auxiliary boiler SCR are within the scope of the original impact analysis. In addition, staff made minor clarifications to the Air Quality Conditions of Certification such as typographical corrections to improve clarity. Staff updated the SCAQMD Permit Conditions with Corresponding CEC Conditions of Certification Table to reflect all changes.

## CONCLUSIONS

Staff approves changes to the auxiliary boiler with accompanying changes to the Air Quality Conditions of Certification for the AEC Decision. The changes would not require additional mitigation. All proposed changes would conform with the applicable LORS related to air quality and would not result in significant air quality impacts. The requested changes have already been analyzed by SCAQMD staff and incorporated into the SCAQMD issued Title V permit.

## AMENDED CONDITIONS OF CERTIFICATION

The modifications to the Air Quality Conditions of Certification are included below. **Bold underline** indicates new language. ~~Strikethrough~~ indicates deleted language.

The SCAQMD has a unique system of structuring and numbering permit conditions. In order for the reader to avoid confusion between the SCAQMD numbering and CEC numbering, a table is included below that cross references the conditions in the SCAQMD permit to the conditions in the license and subsequent amendments as proposed.

### SCAQMD PERMIT CONDITIONS WITH CORRESPONDING CEC CONDITIONS OF CERTIFICATION

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| **Facility Conditions** | | |
| F2.1 | **AQ-F1** | Annual emission limit for PM2.5. Includes equation and emission factors. Semi-annual Title V report shall include monthly compliance demonstrations. |
| F9.1 | **AQ-F2** | Exhaust opacity limits. |
| F18.1 | **AQ-F3** | Acid Rain $SO_2$ allocations for existing boilers. |
| F24.1 | **AQ-F4** | Accidental release prevention requirements. (existing) |
| F52.1 | **AQ-F5** | Requires a retirement plan for the permanent shutdown of the existing boilers #1, 2, 3 and 6. |
| F52.2 | **AQ-F6** | Provides specifications for SF6 circuit breakers including a maximum leakage rate ~~0~~**o**f 0.5 percent by weight. Requires circuit breakers to include a 10% by weight leak detections system. Leakage shall be calculated on an annual basis. |
| **Combined-Cycle Gas Turbine Generators** | | |
| A63.2 | **AQ-A1** | Monthly and annual contaminant emission limits (CO, VOC, PM10, & SOx). Includes emissions calculations equations and emission factors for commissioning and normal operation. |
| A99.1 | **AQ-A4** | Establishes a NOx emission factor (16.66 lbs/mmscf) during the commissioning period for RECLAIM reporting. Records of natural gas are required for compliance. |
| A99.2 | **AQ-A5** | Establishes a NOx emission factor (8.35 lbs/mmscf) during the interim period after commissioning but prior to CEMS certification. Records of natural gas are required for compliance. |
| A195.8 | **AQ-A9** | NOx emission limit of 2.0 ppmv @ 15% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| | | down periods. |
| A195.9 | **AQ-A12** | CO emission limit of 1.5 ppm @ 15% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| A195.10 | **AQ-A15** | VOC emission limit of 2.0 ppm @ 15% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| A327.1 | **AQ-A18** | Relief from emission limits, under Rule 475; project may violate either the mass emission limit or concentration emission limit, but not both at the same time. |
| B61.1 | **AQ-B1** | Annual $H_2S$ concentration limit of 0.25 grains/100 scf for natural gas. |
| C1.3 | **AQ-C1** | Limits start-ups to 2 per day, 62 total per month (15 cold), and annually (80 cold, 500 total). Defines cold and non-cold starts and establishes duration and emission limits. |
| C1.4 | **AQ-C2** | Limits shutdowns to 62 total per month and 500 annually. Limits shutdown events to 30 minutes and establishes emission limits. |
| D29.2 | **AQ-D10** | Requires initial source tests for NOx, CO, SOx, VOC, PM10, PM2.5 and $NH_3$. Establishes testing methods and protocol requirements. |
| D29.3 | **AQ-D11** | Requires source tests for specific pollutants (SOx, VOC, and PM/PM10) once every three years. Establishes testing method and reporting requirements. |
| D82.1 | **AQ-D15** | Requires the installation of CEMS for CO emissions. |
| D82.2 | **AQ-D16** | Requires the installation of CEMS for NOx emissions. |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.4 | **AQ-E1** | Requires that the turbines are constructed, operated and maintained according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| E193.8 | **AQ-E3** | Limits commissioning to 996 hours for each turbine from the date of initial start-up. Only 216 of the 996 hours can be without emission control. The equipment shall only operate when vented to the CO oxidation catalyst and SCR system after commissioning. |
| E193.11 | **AQ-E6** | Requires compliance with 40 CFR 60 Subpart TTTT. |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| | | Establishes a 1,000 lb/MWhr (gross) $CO_2$ emission limit if the turbine supplies more than 1,481,141 MWh-net electrical output for distribution on a 12 operating month and 3 yr average. |
| E193.12 | **AQ-E7** | Requires compliance with 40 CFR 60 Subpart TTTT. Limits $CO_2$ emissions to 120 lbs/MMBtu if the turbine supplies less than 1,481,141 MWh-net electrical output for distribution on a 12 operating month and 3yr average. |
| E193.14 | **AQ-E9** | Limits $CO_2$ emissions to 610,480 tons per year. Establishes a $CO_2$ emission rate of 937.88 lbs/gross megawatt hour on an annual basis. Includes emission equation and emission factor. |
| E448.1 | **AQ-E11** | Limits total electric output from all the generators to 1094.7 MW-gross at 59 degree Fahrenheit. Establishes electrical output monitoring requirements. |
| I297.1, I297.2 | **AQ-I1** | Prohibited from operation unless the project owner hold**s** sufficient RTCs for the CTGs. |
| K40.4 | **AQ-K1** | Source test reporting requirements. |
| **Simple-Cycle Turbines** | | |
| A63.3 | **AQ-A2** | Monthly and annual contaminant emission limits (CO, VOC, PM10, & SOx). Includes emissions calculations equations and emission factors for commissioning and normal operation. |
| A99.3 | **AQ- A6** | Establishes a NOx emission factor (25.24 lbs/mmscf) during the commissioning period for RECLAIM reporting. Records of natural gas are required for compliance. |
| A99.4 | **AQ- A7** | Establishes a NOx emission factor (11.21 lbs/mmscf) during the interim period after commissioning but prior to CEMS certification. Records of natural gas are required for compliance. |
| A195.11 | **AQ-A10** | NOx emission limit of 2.5 ppm @ 15% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| A195.17 | **AQ-A13** | CO emission limit of 2.0 ppm @ 15% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| A195.10 | **AQ-A15** | VOC emission limit of 2.0 ppm @ 15% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| A327.1 | **AQ-A18** | Relief from emission limits, under Rule 475; project may violate either the mass emission limit or concentration emission limit, but not both at the same time. |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| B61.1 | **AQ-B1** | Annual $H_2S$ concentration limit of 0.25 grains/100 scf for natural gas. |
| C1.5 | **AQ-C3** | Limits start-ups to 2 per day, 62 total per month, and 500 annually. Establishes duration and emission limits. |
| C1.6 | **AQ-C4** | Limits shutdowns to 62 total per month and 500 annually. Limits shutdown events to 13 minutes and establishes emission limits. |
| D29.2 | **AQ-D10** | Requires initial source tests for NOx, CO, SOx, VOC, PM10, PM2.5 and $NH_3$. Establishes testing methods and protocol requirements. |
| D29.3 | **AQ-D11** | Requires source tests for specific pollutants (SOx, VOC, and PM/PM10) once every three years. Establishes testing method and reporting requirements. |
| D82.1 | **AQ-D15** | Requires the installation of CEMS for CO emissions. |
| D82.2 | **AQ-D16** | Requires the installation of CEMS for NOx emissions. |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.4 | **AQ-E1** | Requires that the turbines are constructed, operated and maintained according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| E193.9 | **AQ-E4** | Limits commissioning to 280 hours for each turbine from the date of initial start-up. Only 4 of the 280 hours can be without emission control. The equipment shall only operate when vented to the CO oxidation catalyst and SCR system after commissioning. |
| E193.13 | **AQ- E8** | Requires compliance with 40 CFR 60 Subpart TTTT. Limits $CO_2$ emissions to 120 lbs/MMBtu. |
| E193.15 | **AQ- E10** | Limits $CO_2$ emissions to 120,765 tons per year. Establishes a $CO_2$ emission limit of 1,356.03 lbs/gross megawatt hour on an annual basis. Includes emission equation and emission factor. |
| E448.1 | **AQ- E11** | Limits total electric output from all the generators to 1094.7 MW-gross at 59 degree**s** Fahrenheit. Establishes electrical output monitoring requirements. |
| I297.3-6 | **AQ-I2** | Prohibited from operation unless the project owner hold**s** sufficient RTCs for the simple **cycle** turbines. |
| K40.4 | **AQ-K1** | Source test reporting requirements. |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| **Auxiliary Boiler** | | |
| A63.4 | **AQ-A3** | Monthly and annual contaminant emission limits (CO, VOC, PM10, & SOx). Includes emissions calculations equations and emission factors for commissioning and normal operation. |
| A99.5 | **AQ-A8** | Establishes a NOx emission factor **of** ~~(~~38.46 lbs/mmscf~~)~~ **during the interim period prior to CEMS certification an a NOx emission factor of 104.20 lbs/mmscf** during the commissioning period for RECLAIM reporting. Records of natural gas are required for compliance. |
| A195.13 | **AQ-A11** | NOx emission limit of 5.0 ppm @ 3% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| A195.14 | **AQ-A14** | CO emission limit of 50**.0** ppm @ 3% $O_2$ averaged over 1-hour. Does not apply during commissioning startup, and shut down periods. |
| C1.7 | **AQ-C5** | Limits start-ups to 1 per day, 10 total per month (2 cold, 4 warm, 4 hot), and annually (24 cold, 48 warm and 48 hot). Defines cold, warm and hot starts and establishes duration and emission limits. |
| D29.5 | **AQ-D13** | Requires initial source tests for NOx, CO, SOx, VOC, PM10, PM2.5 and $NH_3$. Establishes testing methods and protocol requirements. |
| D29.6 | **AQ-D14** | Requires source test for **ammonia emissions.** ~~CO at full load according to testing frequency requirements in Rule 1146.~~ Establishes testing method and reporting requirements. |
| D82.3 | **AQ-D17** | Requires the installation of CEMS for NOx emissions and establishes requirements for CEMS plan. |
| **D82.4** | **AQ-D18** | **Established CO CEMS requirements for the auxiliary boiler.** |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.4 | **AQ-E1** | Requires that the equipment is constructed, operated and maintained according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| E193.10 | **AQ-E5** | Limits commissioning to 30 hours from the date of initial start-up. The equipment shall only operate when vented to the SCR system after commissioning. |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| H23.7 | **AQ-H1** | Establishes CO requirements according to Rule 1146. |
| I297.7 | **AQ-I3** | Prohibited from operation unless the project owner hold sufficient RTCs for the boiler. |
| K40.5 | **AQ-K2** | Source test reporting requirements. |
| **SCR/CO Catalyst for Combined-cycle** | | |
| A195.15 | **AQ-A16** | Establishes the 5.0 ppm ammonia slip limit. Requires a NOx analyzer. |
| D12.9 | **AQ-D1** | Requires a flow meter for the ammonia injection and maintain continuous record. Requires ammonia injection between 44 and 242 pounds per hour. |
| D12.10 | **AQ-D2** | Requires a temperature gauge at the SCR inlet and maintain continuous record. Requires temperature be maintained between 570 and 692 degree Fahrenheit. |
| D12.11 | **AQ-D3** | Requires a pressure gauge to measure the differential pressure across the SCR grid and maintain continuous record. Limits the pressure differential to 1.6 inches water column. |
| D29.4 | **AQ-D12** | Requires initial, quarterly for the first year and then annual source tests for $NH_3$. Establishes testing methods and protocol requirements. |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.4 | **AQ-E1** | Requires that the equipment is constructed, operated and maintained according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| **SCR/CO Catalyst for Simple** | | |
| A195.15 | **AQ-A16** | Establishes the 5.0 ppm ammonia slip limit. Requires a NOx analyzer. |
| D12.12 | **AQ-D4** | Requires a flow meter for the ammonia injection and maintain continuous record. Requires ammonia injection between 110 and 180 pounds per hour. |
| D12.13 | **AQ-D5** | Requires a temperature gauge at the SCR inlet and maintain continuous record. Requires temperature be maintained between 500 and 870 degrees Fahrenheit. |
| D12.14 | **AQ-D6** | Requires a pressure gauge to measure the differential pressure across the SCR grid and maintain continuous |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| | | record. Limits the pressure differential to 3.0 inches water column. |
| D29.4 | **AQ-D12** | Requires initial, quarterly for the first year and then annual source tests for $NH_3$. Establishes testing methods and protocol requirements. |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.4 | **AQ-E1** | Requires that the equipment is constructed, operated and maintained according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| **SCR for the Auxiliary Boiler** | | |
| A195.16 | **AQ-A17** | Establishes the 5.0 ppm ammonia slip limit. Requires a NOx analyzer. |
| D12.15 | **AQ-D7** | Requires a flow meter for the ammonia injection and maintain continuous record. Requires ammonia injection between 0.3 and 1.1 pounds per hour. |
| D12.16 | **AQ-D8** | Requires a temperature gauge at the SCR inlet and maintain continuous record. Requires temperature be maintained between 415 and 628 degrees Fahrenheit. |
| D12.17 | **AQ-D9** | Requires a pressure gauge to measure the differential pressure across the SCR grid and maintain continuous record. Limits the pressure differential to 2.0 inches water column. |
| D29.4 | **AQ-D12** | Requires initial, quarterly for the first year and then annual source tests for $NH_3$. Establishes testing methods and protocol requirements. |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.4 | **AQ-E1** | Requires that the equipment is constructed, operated and maintained according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| **Ammonia Storage Tanks** | | |
| C157.1 | **AQ-C6** | Requires the installation of a pressure relief valve maintained at 50 psig. |

| SCAQMD Permit Conditions | CEC Condition of Certification | Condition Description |
|---|---|---|
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E144.1 | **AQ-E12** | Requires venting of the storage tank during filling only to the vessel from which it is being filled. |
| E193.4 | **AQ-E1** | Requires that the ammonia storage tank be operated according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |
| **Oil Water Separator** | | |
| ~~E73.2~~ **E74.1** | **AQ-E14** | Requires the BACT/LAER determination to be reviewed prior to the commencement of Phase II construction (simple-cycle). |
| E193.16 | **AQ-E13** | Requires that the oil water separator be equipped with a fixed cover to minimize VOC emissions. |
| E193.4 | **AQ-E1** | Requires that the oil water separator be operated according to the mitigation measures stipulated in the Commission Decision. |
| E193.5 | **AQ-E2** | The Permit to Construct expires one year from the date of issuance unless extended. Establishes construction timelines. |

## Staff RECOMMENDED Conditions

~~**AQ-SC9** The project owner shall complete the auxiliary boiler commissioning prior to the commissioning of the combined-cycle gas turbines (CCGT-1 and CCGT-2).~~

~~**Verification:** The project owner shall identify the start and conclusion of the work phases described above in the Monthly Compliance Reports and/or Quarterly Operational reports.~~

## ~~District's~~ South Coast AQMD Permitted equipment and Conditions

## Equipment

| ID No. | Equipment Descriptions |
|---|---|
| **AEC CCGT Power Block** | |
| **Combined-~~c~~Cycle Gas Turbine 1 (CCGT-1)** | |
| D165 | CCGT-1 General Electric Model 7FA.05, natural gas combined-cycle, 236.645 MW at 28 degrees Fahrenheit, with a Heat Recovery Steam Generator and 219.615 MW Steam Turbine Generator (common with HRSG CCGT-2) |

| | |
|---|---|
| C169 | CCGT-1 CO Oxidation Catalyst |
| C170 | CCGT-1 Selective Catalytic Reduction with aqueous ammonia |
| S172 | CCGT-1 Turbine Stack, height of 140 feet and diameter of 20 feet |
| **Combined-cCycle Gas Turbine 2 (CCGT-2)** | |
| D173 | CCGT-2 General Electric Model 7FA.05, natural gas combined-cycle, 236.645 MW at 28 degrees Fahrenheit, with a Heat Recovery Steam Generator and 219.615 MW Steam Turbine Generator (common with HRSG CCGT-1) |
| C177 | CCGT-2 CO Oxidation Catalyst |
| C178 | CCGT-2 Selective Catalytic Reduction with aqueous ammonia |
| S180 | CCGT-2 Turbine Stack, height of 140 feet and diameter of 20 feet |
| **Auxiliary Boiler** | |
| D181 | 70.8 MMBtu/hr ~~Babcock and Wilcox~~ **Cleaver Brooks** Model ~~FM 103-88~~ **NB-200D-50** natural gas boiler |
| C183 | Auxiliary Boiler Selective Catalytic Reduction with aqueous ammonia |
| S211 | Auxiliary Boiler Stack, height of 80 feet and diameter of 3 feet |
| **AEC SCGT Power Block** | |
| **Simple-Cycle Gas Turbine 1 (SCGT-1)** | |
| D185 | SCGT-1 General Electric Model LMS-100PB, natural gas simple-cycle, 100.438 MW at 59 degrees Fahrenheit |
| C187 | SCGT-1 CO Oxidation Catalyst |
| C188 | SCGT-1 Selective Catalytic Reduction with aqueous ammonia |
| S180 | SCGT-1 Turbine Stack, height of 80 feet and diameter of 13.5 feet |
| **Simple-Cycle Gas Turbine 2 (SCGT-2)** | |
| D191 | SCGT-2 General Electric Model LMS-100PB, natural gas simple-cycle, 100.438 MW at 59 degrees Fahrenheit |
| C193 | SCGT-2 CO Oxidation Catalyst |
| C194 | SCGT-2 Selective Catalytic Reduction with aqueous ammonia |
| S196 | SCGT-2 Turbine Stack, height of 80 feet and diameter of 13.5 feet |
| **Simple-Cycle Gas Turbine 3 (SCGT-3)** | |
| D197 | SCGT-3 General Electric Model LMS-100PB, natural gas simple-cycle, 100.438 MW at 59 degrees Fahrenheit |
| C199 | SCGT-3 CO Oxidation Catalyst |
| C200 | SCGT-3 Selective Catalytic Reduction with aqueous ammonia |
| S202 | SCGT-3 Turbine Stack, height of 80 feet and diameter of 13.5 feet |
| **Simple-Cycle Gas Turbine 4 (SCGT-4)** | |
| D203 | SCGT-1 General Electric Model LMS-100PB, natural gas simple-cycle, 100.438 MW at 59 degrees Fahrenheit |
| C205 | SCGT-1 CO Oxidation Catalyst |
| C206 | SCGT-1 Selective Catalytic Reduction with aqueous ammonia |
| S208 | SCGT-1 Turbine Stack, height of 80 feet and diameter of 13.5 feet |
| **Supporting Equipment** | |
| **Oil/Water Separation** | |
| D209 | OWS-1 Storage Tank, 5,000 gallon serving CCGT |
| D210 | OWS-2 Storage Tank, 5,000 gallon serving SCGT |
| **Inorganic Chemical Storage** | |
| D163 | Tank-1 Storage Tank 40,000 gallons serving the CCGT |
| D164 | Tank-2 Storage Tank 40,000 gallons serving the SCGT |

~~**The following conditions were developed by the SCAQMD and are obtained from the FDOC.**~~

## South Coast Air Quality Management District Conditions of Certification

The following **South Coast** ~~SC~~AQMD conditions AQ-F1 to AQ-F6 are facility wide conditions that apply to each unit of equipment and the AEC facility as a whole.

**AQ-F1** The project owner shall limit emissions from this facility as follows:

| CONTAMINANT | EMISSIONS LIMIT |
|---|---|
| PM 2.5 | Less than ~~100~~ **70** tons in any one year |

The project owner shall not operate any of the Boilers Nos. 1, 2, 3, 4, 5, 6 (Devices D39, D42, D45, D48, D51, D3, respectively), Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 **(**Devices D165 and D173, respectively), Auxiliary Boiler (Device D181), or Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Devices D185, D191, D197, and D203 respectively) unless compliance with the annual emission limit for PM2.5 is demonstrated.

Compliance with the annual emission limit shall be based on a 12-month rolling average basis. The project owner shall calculate the PM2.5 emissions for the facility by summing the PM2.5 emissions for each of the sources by using the equation below.

Facility PM2.5, tons/year = (FF1*EF1 + FF2*EF2 + FF3*EF3 + FF4*EF4 + FF5*EF5 + FF6*EF6 + FF7*EF7 + FF8*EF8 + FF9*EF9 + FF10*EF10 + FF11*EF11+ FF12*EF12 + FF13*EF13)/2000

| Equipment Monthly Fuel Usage (mmscf)) | Emission Factor (lb/mmscf) |
|---|---|
| **Existing Boilers** | |
| FF1 = Boiler No. 1 | EF1 = 1.19 |
| FF2 = Boiler No. 2 | EF2 = 1.19 |
| FF3 = Boiler No. 3 | EF3 = 1.19 |
| FF4 = Boiler No. 4 | EF4 = 1.19 |
| FF5 = Boiler No. 5 | EF5 = 1.19 |
| FF6 = Boiler No. 6 | EF6 = 1.19 |
| **Combined-Cycle Turbines** | |
| FF7 = No. CCGT-1 | EF7 = 3.92 |
| FF8 = No. CCGT-2 | EF8 = 3.92 |
| **Auxiliary Boiler** | |
| FF9 = Auxiliary Boiler | EF9 = 7.42 |
| **Simple-Cycle Turbines** | |
| FF10 = Turbine No. SCGT-1 | EF10 = 7.44 |

| | |
|---|---|
| FF11 = Turbine No. SCGT-2 | EF11 = 7.44 |
| FF12 = Turbine No. SCGT-3 | EF12 = 7.44 |
| FF13 = Turbine No. SCGT-4 | EF13 = 7.44 |

Any changes to these emission factors must be approved in advance by the ~~SCAQMD~~ **South Coast AQMD** in writing and be based on unit specific source tests performed using ~~SCAQMD~~ **South Coast AQMD** -approved testing protocol.

AES Alamitos, LLC shall submit written reports of the monthly PM2.5 compliance demonstration required by this condition. The report submittal shall be included with the semi-annual Title V report as required under Rule 3004(a)(4)(f). Records of the monthly PM2.5 compliance demonstration shall be maintained on site for at least five years and made available upon ~~SCAQMD~~ **South Coast AQMD** request.

For the purpose of this condition, any one year shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12-month period beginning on the first day of each calendar month.

[Rule 1325]

**Verification:** The project owner shall submit to the CPM the facility annual operating and emissions data demonstrating compliance with this condition as part of the fourth quarter Quarterly Operation Report (**AQ-SC7**).

**AQ-A3** The project owner shall limit emissions from this equipment as follows:

| Contaminant | Range | Emissions Limit |
|---|---|---|
| **Monthly Pounds in Any Calendar Month (lbs/month)** | | |
| CO | Less than or equal to | 605 lbs/month |
| VOC | Less than or equal to | 102 lbs/month |
| PM10 | Less than or equal to | 113.5 lbs/month |
| **PM2.5** | **Less than or equal to** | **113.5 lbs/month** |
| Sox | Less than or equal to | 32 lbs/month |

**The boiler shall not commence with normal operation until the commissioning process has been completed. The South Coast AQMD shall be notified in writing once the commissioning process for the boiler is completed.**

**Normal operation may commence in the same calendar month as the completion of the commissioning process provided the boiler is in compliance with the above emission limits.**

The project owner shall calculate the monthly emissions for CO, VOC, PM10, and SOx using the equation below.

Monthly Emissions, lb/month = (Monthly fuel usage in mmscf/month) * (Emission factors indicated below)

**The following emission factors shall be used to demonstrate compliance with the monthly emission limits.**

**For commissioning, the emission factors shall be as follows: CO, 107.16 lb/mmcf; VOC, 115.56 lb/mmcf; PM10/PM2.5, 7.42 lb/mmcf; and SOx, 2.08 lb/mmcf.**

For ~~commissioning and~~ normal operation, the emission factors shall be as follows: ~~CO, 39.55 lb/mmcf;~~ VOC, 6.67 lb/mmcf; PM10/**PM2.5**, 7.42 lb/mmcf; and SOx, 2.08 lb/mmcf.

**For normal operation, the CO emissions shall be measured with certified CO CEMS. For the interim period after commissioning but prior to CEMS certification, and in the event of CEMS failure subsequent to CEMS certification, the emission factor shall be CO, 39.55 lb/mmcf.**

**For a month during which both commissioning and normal operation take place, the monthly emissions shall be the sum of the commissioning emissions and the normal operation emissions.**

The project owner shall maintain records in a manner approved by the ~~District~~ **South Coast AQMD** to demonstrate compliance with this condition and the records shall be made available to ~~District~~ **South Coast AQMD** personnel upon request. The records shall include, but not be limited to, natural gas usage in a calendar month.

[RULE 1303(a)(1)-BACT, RULE 1303(b)(2)-Offset, RULE 1703(a)(2) – PSD-BACT]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall provide emissions summary data in compliance with his condition as part of the Quarterly Operation reports (**AQ-SC7**).

**AQ-A8** The project owner shall limit NOx emissions to 38.46 lbs/mmscf only during the interim period after commissioning but prior to CEMS certification to report RECLAIM emissions, not to exceed one year after the start of unit operations.

The project owner shall maintain records of natural gas usage for this period.

**The project owner shall limit NOx emissions to 104.20 lbs/mmscf only during boiler commissioning to report RECLAIM emissions, not to exceed one year after the start of unit operations.**

**The project owner shall maintain records of natural gas usage for this period.**

[RULE 2012]
[Devices subject to this condition: D181 (auxiliary boiler)

**Verification:** The project owner shall provide natural gas usage records for the auxiliary boiler as part of the Quarterly Operation reports (**AQ-SC7**). The records shall clearly identify the corresponding commissioning project period.

**AQ-A11** The project owner shall limit NOx emissions to 5**.0** parts per million by volume (PPMV), averaged over 1 hour, dry basis at 3 percent oxygen. This limit shall not apply to boiler commissioning and startup periods.

[RULE 1703(a)(2) – PSD-BACT; RULE 2005]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC7**).

**AQ-A14** The project owner shall limit CO emissions to 50**.0** parts per million by volume (PPMV), averaged over 1 hour, dry basis at 3 percent oxygen. This limit shall not apply to boiler commissioning and startup.

[RULE 1303(a)(1)-BACT; RULE 1703(a)(2) – PSD-BACT]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC7**).

**AQ-C5** The project owner shall limit the number of start-ups to no more than 10 in any one calendar month.

The number of cold startups shall not exceed 2 in any calendar month, the number of warm startups shall not exceed 4 in any calendar month, and the number of hot starts shall not exceed 4 in any calendar month, with no more than 1 startup in any one day.

The number of cold startups shall not exceed 24 in any calendar year, the number of warm startups shall not exceed 48 in any calendar year, and the number of hot startups shall not exceed 48 in any calendar year.

For the purposes of this condition, a cold startup is defined as a startup which occurs after the auxiliary boiler has been shut down for 48 hours or more. A cold startup shall not exceed 170 minutes. The NOx emissions from a cold startup shall not exceed 4.22 lbs.

For the purposes of this condition, a warm startup is defined as a startup which occurs after the auxiliary boiler has been shut down 10 hours or more but less than 48 hours. A warm startup shall not exceed 85 minutes. The NOx emissions from a warm startup shall not exceed 2.11 lbs.

For the purposes of this condition, a hot startup is defined as a startup which occurs after the auxiliary boiler has been shut down for less than 10 hours. A hot startup shall not exceed 25 minutes. The NOx emissions from a hot startup shall not exceed 0.62 lbs.

The project owner shall maintain records in a manner approved by the ~~District~~ **South Coast AQMD**, to demonstrate compliance with this condition and the records shall be made available to ~~District~~ **South Coast AQMD** personnel upon request.

[RULE 1303(a)(1)-BACT, RULE 1703(a)(2)-PSD-BACT, RULE 2005]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC7**). The project owner shall provide records including a table indicating documenting type of startup, duration and date of occurrence.

**AQ-D7** The project owner shall install and maintain a flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia ($NH_3$).

The project owner shall also install and maintain a device to continuously record the parameter being measured. Continuously record shall be defined as measuring at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour.

The flow meter shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The project owner shall maintain the ammonia injection rate between 0.3 and ~~1.1~~ **3.9** pounds per hour.

[RULE 1303(a)(1)-BACT, RULE 1703(a)(2)-PSD-BACT, RULE 2005]

[Devices subject to this condition: C183 (auxiliary boiler)]

**Verification:** The project owner shall demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC7**). The project owner shall make the site available for inspection of records by representatives of the ~~District~~ **South Coast AQMD**, ARB, and the CEC.

**AQ-D12** The project owner shall conduct source test(s) for the pollutant(s) identified below.

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

The test shall be conducted and the results submitted to the ~~District~~ **South Coast AQMD** within 60 days after the test date. The **South Coast** ~~SC~~AQMD shall be notified of the date and time of the test at least 10 days prior to the test.

The test shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The NOx concentration, as determined by the certified CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable or not yet certified, a test shall be conducted to determine the NOx emissions using ~~District~~ **South Coast AQMD** Method 100.1 measured over a 60 minute averaging time period.

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

[RULE 1303(a)(1)-BACT, RULE 1703(a)(2)-PSD-BACT]

[Devices subject to this condition: C170, C178 (combined-cycle), C188, C194, C200, C206 (simple-cycle), C183 (auxiliary boiler)]

**Verification:** The project owner shall test according to the original protocol. If changes to the testing methods or testing conditions are proposed then the project owner shall submit a revised protocol for the source tests no later than 45 days prior to the proposed source test date to both the ~~District~~ **South Coast AQMD** and CPM for approval. The project owner shall submit the source test results no later than 60 days following the source test date to both the ~~District~~ **South Coast AQMD** and CPM. The project owner shall notify the ~~District~~ **South Coast AQMD** and CPM no later than 10 days prior to the proposed initial source test of the date and time of the scheduled test.

**AQ-D13** The project owner shall conduct source test(s) for the pollutant(s) identified below.

| Pollutant(s) to be Tested | Required Test Method(s) | Averaging Time | Test Location |
|---|---|---|---|
| NOx emissions | District Method 100.1 | 1 hour | Outlet of the SCR serving this equipment |
| CO emissions | District Method 100.1 | 1 hour | Outlet of the SCR serving this equipment |
| SOx emissions | AQMD Laboratory Method 307-91 | District-Approved Averaging Time | Fuel Sample |
| VOC emissions | District Method 25.3 | 1 hour | Outlet of the SCR serving this equipment |
| PM10 emissions | EPA Method 201A / District Method 5.1 | District-Approved Averaging Time | Outlet of the SCR serving this equipment |
| PM2.5 emissions | EPA Method 201A / 202 | District-Approved Averaging Time | Outlet of the SCR serving this equipment |
| $NH_3$ emissions | District Method 207.1 and 5.3 ~~or EPA Method 17~~ | 1 hour | Outlet of the SCR serving this equipment |

The test shall be conducted after ~~District~~ **South Coast AQMD** approval of the source test protocol, but no later than 180 days after initial start-up. The ~~District~~ **South Coast AQMD** shall be notified of the date and time of the test at least 10 days prior to the test.

For each firing rate, the following operating data shall be included: (1) the exhaust flow rates, in actual cubic feet per minute (acfm), (2) the firing rates in Btu/hour, (3) the exhaust temperature, in degrees Fahrenheit, (4) the oxygen content of the exhaust gases, in percent, and (5) the fuel flow rate.

The test shall be conducted in accordance with a ~~District~~ **South Coast AQMD** approved source test protocol. The protocol shall be submitted to the **South Coast** ~~SC~~AQMD engineer no later than 90 days before the proposed test date and shall be approved by the District before the test commences.

The test protocol shall include the identity of the testing lab, confirmation that the test lab is approved under the ~~District~~ **South Coast AQMD** Laboratory Approval Program for the required test method for the CO pollutant, a statement from the testing lab certifying that it meets the criteria of Rule 304 (no conflict of interest), and a description of all sampling and analytical procedures.

The sampling facilities shall comply with the ~~District~~ **South Coast AQMD** Guidelines for Construction of Sampling and Testing Facilities, pursuant to Rule 217.

The sampling time for the PM**10** and PM2.5 tests shall be 1 hour or longer as necessary to obtain a measureable amount of sample.

The test shall be conducted when this equipment is operating at maximum, minimum, and normal operating rates.

For purposes of this condition, an alternative test method may be allowed for any of the above pollutants upon concurrence by EPA, ARB, and **South Coast** ~~SC~~AQMD.

[RULE 1303(a)(1)-BACT, RULE 1703(a)(2)-PSD-BACT, RULE 2005]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall submit the proposed protocol for the initial source tests no later than 90 days prior to the proposed source test date to both the ~~District~~ **South Coast AQMD** and CPM for approval. The project owner shall submit the source test results no later than 60 days following the source test date to both the ~~District~~ **South Coast AQMD** and CPM. The project owner shall notify the ~~District~~ **South Coast AQMD** and CPM no later than 10 days prior to the proposed initial source test of the date and time of the scheduled test.

**AQ-D14** The project owner shall conduct source test(s) for the pollutant(s) identified below.

| Pollutant(s) to be Tested | Required Test Method(s) | Averaging Time | Test Location |
|---|---|---|---|
| ~~CO emissions~~ | ~~District Method 100.1~~ | ~~1 hour~~ | ~~Outlet of the SCR serving this equipment~~ |
| $NH_3$ emissions | District Method 207.1 | 1 hour | Outlet of the SCR serving this equipment |

~~The test(s) shall be conducted in accordance with the testing frequency requirements specified in Rule 1146.~~

~~The test shall be conducted and the results submitted to the District within 60 days after the test date. The SCAQMD shall be notified of the date and time of the test at least 10 days prior to the test.~~

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

~~The test shall be conducted to demonstrate compliance with the Rule 1303 concentration and/or monthly emissions limit.~~

~~For purposes of this condition, an alternative test method may be allowed for any of the above pollutants upon concurrence by EPA, CARB, and SCAQMD.~~

**The test shall be conducted and the results submitted to the South Coast AQMD within 60 days after the test date. The South Coast AQMD shall be notified of the date and time of the test at least 10 days prior to the test.**

**The test shall be conducted at least quarterly to demonstrate compliance with the ammonia emission limit during the first twelve months of operation and at least annually thereafter, except that source tests may be conducted annually within 12 months thereafter when four consecutive quarterly source test demonstrate compliance with the ammonia emission limit. If an annual test is failed, four consecutive quarterly source test must demonstrate compliance with the ammonia emissions limits prior to resuming annual source tests.**

**The NOx concentration, as determined by the certified CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable or not yet certified, a test shall be conducted to determine the NOx emissions using South Coast AQMD Method 100.1 measured over a 60 minute averaging time period.**

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

[**RULE** ~~Rule~~ 1146, RULE 1303(a)(1)-BACT, RULE 1303(b)(2)-Offset, RULE 1703(a)(2)-PSD-BACT]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall test according to the original protocol. If changes to the testing methods or testing conditions are proposed then the project owner shall submit a revised protocol for the source tests no later than 45 days prior to the proposed source test date to both the ~~District~~ **South Coast AQMD** and CPM for approval. The project owner shall submit the source test results no later than 60 days following the source test date to both the ~~District~~ **South Coast AQMD** and CPM. The project owner shall notify the ~~District~~ **South Coast AQMD** and CPM no later than 10 days prior to the proposed initial source test of the date and time of the scheduled test.

**AQ-D18** **The project owner shall install and maintain a CEMS to measure the following parameters:**

**CO concentration in ppmv.**

**Concentrations shall be corrected to 3 percent oxygen on a dry basis.**

**The CEMS shall be installed and operated to measure CO concentrations over a 15-minute averaging time period.**

**The CEMS shall be installed and operating no later than 90 days after initial start-up of the turbine, and in accordance with an approved South Coast AQMD Rule 218 CEMS plan application. The project owner shall not install the CEMS prior to receiving initial approval from SCAQMD.**

**The CEMS shall convert the actual CO concentration to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.**

**[RULE 1303(a)(1) – BACT, RULE 1703(a)(1) – PSD-BACT]**

**[Devices subject to this condition: D181 (auxiliary boiler)]**

**Verification:** **The project owner shall submit the SCAQMD approved CEMS plan and any subsequent revisions to the CPM within 90 days of South Coast AQMD approval. The project owner shall make the site available for inspection of records by representatives of the South Coast AQMD, ARB, and the CEC.**

**AQ-E5** The project owner shall operate and maintain this equipment according to the following requirements

**The total** ~~Total~~ commissioning **period** ~~hours~~ shall not exceed **100** ~~30~~ hours of fired operation for the auxiliary boiler from the date of initial boiler start-up.

The project owner shall vent this equipment to the SCR control system whenever the auxiliary boiler is in operation after commissioning is completed.

The project owner shall provide the **South Coast** ~~SC~~AQMD with written notification of the initial startup date. The project owner shall maintain records in a manner approved by the ~~District~~ **South Coast AQMD** to demonstrate compliance with this condition and the records shall be made available to ~~District~~ **South Coast AQMD** personnel upon request. The records shall include, but not be limited to, the number of commissioning hours and natural gas fuel usage.

[RULE 1303(a)(1)-BACT, RULE 1703(a)(2)-PSD-BACT, RULE 2005]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall submit all records including the total number of commissioning hours and fuel usage to demonstrate compliance with this condition as part of the Quarterly Operational Report required in **AQ-SC7**. The project owner shall make the site available for inspection by representatives of the ~~District~~ **South Coast AQMD**, ARB, U.S. EPA and the CEC.

**AQ-E14** Notwithstanding the requirements of Section E conditions, the project owner may commence the construction of Phase II of this project if all the following condition(s) are met:

The BACT/LAER determination for Phase II of this project shall be reviewed and modified (by **South Coast** ~~SC~~AQMD) as appropriate at the latest reasonable time which occurs no later than 18 months prior to the commencement of construction of Phase II of the project.

[40 CFR 52.21 - PSD]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle), D181 (auxiliary boiler), C170, C178 (combined-cycle control), C188, C194, C200, C206 (simple-cycle control), C183 (auxiliary boiler control), D163, D164 (ammonia tanks), D209, D210 (oil water separator)]

**Verification:** The project owner shall submit to the CPM documentation that the BACT/LAER determination was reviewed by the SCAQMD prior to the commencement of construction Phase II. The documentation shall include any modifications to the BACT/LAER determination made by the SCAQMD. Any modification to the BACT/LAER determination shall be submitted to the CEC compliance project manager as an amendment request.

**AQ-H1** This equipment is subject to the applicable requirements of the following Rules or Regulations:

| Contaminant | Rule | Rule/Subpart |
|---|---|---|
| CO | ~~District~~ **South Coast AQMD** Rule | 1146 |
| **NOx** | **South Coast AQMD Rule** | **1146** |
| **NOx** | **South Coast AQMD Rule** | **1100** |

[RULE **1100,** 1146]

[Devices subject to this condition: D181 (auxiliary boiler)]

**Verification:** The project owner shall make the site available for inspection by representatives of the ~~District~~ **South Coast AQMD**, ARB, U.S. EPA and the CEC.

**AQ-K2** The project owner shall provide to the ~~District~~ **South Coast AQMD** a source test report in accordance with the following requirements:

Source test results shall be submitted to the ~~District~~ **South Coast AQMD** no later than 90 days after the source tests required by conditions D29.5 (**AQ-D13**)~~, D29.6 (**AQ-D14**)~~, and D29.4**5** (**AQ-D12**), are conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 3 percent oxygen (dry basis), mass rate (lbs/hr), lbs/MM cubic feet, and lbs/MMBtu. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

All moisture concentration shall be expressed in terms of percent corrected to 3 percent oxygen.

Source test results shall also include, for each firing rate, the following operating data: (1) the exhaust flow rates, in actual cubic feet per minute (acfm), (2) the firing rates in Btu/hour, (3) the exhaust temperature, in degrees Fahrenheit, (4) the oxygen content of the exhaust gases, in percent, and (5) the fuel flow rate.

[RULE 1146, RULE 1303(a)(1)-BACT, RULE 1303(b)(2)-Offset, RULE 1703(a)(2) – PSD-BACT, RULE 2005]

[Devices subject to this condition: D181]

**Verification:** The project owner shall submit the source test results no later than 90 days following the source test date to both the ~~District~~ **South Coast AQMD** and CPM.

## REFERENCES


**AES 2019** – Alamitos Energy Center –Alamitos Energy Center Auxiliary Boiler Petition to Amend (TN 228908), Docket Date: July 05, 2019

**AES 2019b** – Alamitos Energy Center –AEC Petition to Amend Operational Changes (TN 228908), Docket Date: July 05, 2019

**AES 2019c** – Alamitos Energy Center –Alamitos Energy Center Response to Data Request 1 (TN 229155), Docket Date: July 31, 2019

**CEC 2017** – California Energy Commission – Final Commission Decision (TN 217416), Docket Date: May 4, 2017

**CEC 2016** – California Energy Commission – Errata to Air Quality Section (TN 215087), Docket Date: December 22, 2016

**CEC 2016a** – California Energy Commission – Final Staff Assessment, Part 2, dated December 8, 2016 (TN 21474), Docket Date: December 8, 2016

**CEC 2018** – California Energy Commission – Notice of Determination and Staff Approval Petition to Amend for the Temporary Use of an Additional Construction Laydown Area (TN 224233), Docket Date: July 20, 2018

**CEC 2019a** – California Energy Commission – Jill Brennan Comments Increase in boiler hours from 30 hours to 100 hours (TN 228975), Docket Date: July 15, 2019

**CEC 2019b** – California Energy Commission – Camille King Thompson Comments Increase hours of production time from proposal of 2013-2015. (TN 228982), Docket Date: July 15, 2019

**CEC 2019c** – California Energy Commission – Dorothy Johnson Comments on New Construction (TN 228983), Docket Date: July 15, 2019

**SCAQMD 2019** – South Coast Air Quality Management District – SCAQMD Letter to AES Southland Regarding Title V Facility Permit Revision (TN 229157) Issue Date: July 10, 2019

**SCAQMD 2019a** – South Coast Air Quality Management District – Application Processing and Calculations (TN 229156) Issue Date: June 28, 2019