

**DOCKETED**

<b>Docket Number:</b>	13-AFC-01C
<b>Project Title:</b>	Alamitos Energy Center - Compliance
<b>TN #:</b>	232836
<b>Document Title:</b>	TV Permit Revision
<b>Description:</b>	Title V Permit Revision Summary and request to include in open PTA
<b>Filer:</b>	Jeff Miller
<b>Organization:</b>	AES
<b>Submitter Role:</b>	Applicant
<b>Submission Date:</b>	4/24/2020 2:38:59 PM
<b>Docketed Date:</b>	4/24/2020



AES Alamitos Energy Center  
690 North Studebaker Road  
Long Beach, CA 90803

tel 562 493 7891  
fax 562 493 7320

April 16, 2020  
Mr. Joseph Douglas  
Compliance Project Manager  
California Energy Commission  
1516 9th Street  
Sacramento, CA 95814

Subject: Alamitos Energy Center (13-AFC-01C)  
Condition of Certification AQ-C1

Dear Mr. Douglas,

AES is working with the South Coast Air Quality Management District (SCAQMD) to update the Permit to Construct and temporary Permit to Operate for the new combined cycle gas turbine generators at the Alamitos Energy Center. Recently completed commissioning and performance testing has demonstrated that AES can meet all of the equipment specifications and emission limits established in the SCAQMD permits with the exception of NOx mass emissions during certain startups. As confirmed by commissioning and testing data, and due to electrical grid conditions outside of the control of AES, the combustion turbines cannot meet the current noncold startup NOx mass emission limit of 17 pounds per event under all operating conditions. AES has submitted an application for a permit modification to the SCAQMD to increase the noncold NOx mass emission limit to 32 pounds per event. The combustion turbines would still offer best in class emissions control with this permit change and would establish the Lowest Achievable Emission Rate for comparable equipment and conditions in the SCAQMD jurisdiction.

AES has also submitted a Petition for a Variance with the SCAQMD as communicated in correspondence to your agency on February 14, 2020. On April 8, 2020, the SCAQMD submitted a revised Title V Permit to the US EPA for review modifying Title V Permit Condition C1.3 that limits noncold startup emissions to 32 pounds of NOx per event. Attached is correspondence with SCAQMD and CEC on this matter, including the SCAQMD engineering evaluation supporting this permit change.

AES requests that the resultant changes to the Conditions of Certification be incorporated in the open Petition to Amend TN# 227497 initially docketed by AES in April 2019 for Operational Changes to the Air Permit. Please let me know if you have any questions.

Sincerely,

Jeff Miller, AES Alamitos Energy Center

CC: Stephen O'Kane/AES  
Nancy Fletcher/CEC

Mr. Joseph Douglas  
April 16, 2020



Attachments:

- AES Petition for Variance with SCAQMD February 2020 (Previously submitted to CEC on Feb 14, 2020)
- SCAQMD Minor Title V Permit Revision Correspondence with US EPA Region 9, dated April 8, 2020

Mr. Joseph Douglas  
April 16, 2020



Attachment 1



AES Alamos Energy Center  
690 North Studebaker Road  
Long Beach, CA 90803

tel 562 493 7891  
fax 562 493 7320

February 14, 2020

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

Subject: Alamos Energy Center (13-AFC-01C)  
Condition of Certification AQ-SC6 Petition for Variance with SCAQMD

Dear Mr. Douglas,

In accordance with Condition of Certification AQ-SC6, attached is a Petition for Variance filed with the South Coast Air Quality Management District (SCAQMD) addressing compliance with the Facility's Title V Permit. During commissioning and testing of the Combustion Turbines AES demonstrated compliance with all emissions limits with the exception of NOx during certain non-cold startups as a result of factors outside of our control. AES has filed a Title V Permit modification to address the NOx limit during non-cold startups. This variance will allow the facility to continue operating in Compliance while the District updates the Permit. In addition, AES is seeking that the Variance address the changes in progress for operating parameters of the SCRs.

Please let me know if you have any questions.

Sincerely,

Jeff Miller  
Compliance Manager  
AES Alamos Energy Center

CC: Stephen O'Kane/AES  
Ron Rodrique/AES

**PETITION FOR VARIANCE  
BEFORE THE HEARING BOARD OF THE  
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

PETITIONER: AES ALAMITOS, LLC

CASE NO: \_\_\_\_\_

FACILITY ID: 115394

FACILITY ADDRESS: 690 North Studebaker Road

**[location of equipment/site of violation; specify business/corporate address, if different, under Item 2, below]**

City, State, Zip: Long Beach, CA 90803

1. TYPE OF VARIANCE REQUESTED (more than one box may be checked; see Attachment A, Item 1, before selecting)

☐ INTERIM    ☐ SHORT    ☒ REGULAR    ☐ EMERGENCY    ☐ EX PARTE EMERGENCY

2. CONTACT: Name, title, company (if different than Petitioner), address, and phone number of persons authorized to receive notices regarding this Petition (no more than two authorized persons).

Stephen O'Kane

Noah Perch-Ahern

Manager

Partner

AES Alamitos, LLC

Greenberg Glusker LLP

690 N. Studebaker Rd. Long Beach, CA Zip 90803

1900 Ave. of the Stars, Los Angeles, CA 90067

☎ (562) 493-7840                      Ext.

☎ (310) 201-7484                      Ext.

Fax (562) 493-7737

Fax (310) 201-4441

E-mail: stephen.okane@AES.com

E-mail nperchahern@ggfirm.com

***Persons with disabilities may request this document in an alternative format by contacting the Clerk of the Board at 909-396-2500 or by e-mail at [clerkofboard@aqmd.gov](mailto:clerkofboard@aqmd.gov).***

***If you require disability-related accommodations to facilitate participating in the hearing, contact the Clerk of the Board at least five (5) calendar days prior to the hearing.***

**[ALL DOCUMENTS FILED WITH CLERK'S OFFICE BECOME PUBLIC RECORD]**

3. RECLAIM Permit ☒ Yes ☐ No Title V Permit ☒ Yes ☐ No

4. **GOOD CAUSE:** Explain why your petition was not filed in sufficient time to issue the required public notice. (Required only for Emergency and Interim Variances; see Attachment A, Item 4)

N/A

5. Briefly describe the type of business and processes at your facility.

Power generation. Natural gas fired steam boilers and combustion gas turbines.

6. List the equipment and/or activity(s) that are the subject of this petition (see Attachment A, Item 6, Example #1). **Attach copies of the Permit(s) to Construct and/or Permit(s) to Operate for the subject equipment. For RECLAIM or Title V facilities, attach *only* the relevant sections of the Facility Permit showing the equipment or process and conditions that are subject to this petition. You must bring the entire Facility Permit to the hearing.**

Equipment/Activity	Application/ Permit No.	RECLAIM Device No.	Date Application/Plan Denied (if relevant)*
Gas Turbine No. CCGT-1	579142	D165	
Gas Turbine No. CCGT-2	579143	D173	
Selective Catalytic Reduction, No. CCGT-1	579160	C170	
Selective Catalytic Reduction, No. CCGT-2	579161	C178	

\*Attach copy of denial letter

7. Briefly describe the activity or equipment, and why it is necessary to the operation of your business. A schematic or diagram may be attached, in addition to the descriptive text.

AES Alamitos, LLC (AES) is requesting a variance from certain permit conditions during normal operations of the recently-commissioned new combined-cycle gas turbines.

The AES Alamitos Energy Center (AEC) generating station is a critical part of the electrical infrastructure for southern California and is necessary for Los Angeles basin electrical reliability. The existing 1950s era steam generating plant is being replaced with a high efficiency 650 MW combined cycle gas turbine generator (CCGT).

Recently completed commissioning and performance testing has indicated that the new plant will meet all established emission limits except for the NOx mass emission rate during a gas turbine non-cold startup per Title V (defined below) permit condition C1.3. Condition C1.3 limits NOx emissions during non-cold startup events to 17 lbs per event and represents a new standard of Lowest Achievable Emission Rates for fast or non-cold startup NOx emissions from comparable CCGT power plants. Currently operating, and most recently permitted CCGTs in the South Coast Air Quality Management District have limits of 36 lbs NOx per non-cold startup event or higher. AES Alamitos is seeking a variance to the 17 lb NOx non-cold startup emission limits in Condition C1.3 and is proposing a revised limit of 32 lbs NOx per non-cold startup event.

The recently completed startup tests conducted during the commissioning phase of plant operations

demonstrated that the new CCGT would not likely be able to meet the mass emission rate for non-cold starts under all operating conditions. The existing permit limit for non-cold startup events was developed during the original permitting process and was based on engineering estimates, equipment specifications and expected operating conditions. Testing conducted during recently completed commissioning work indicate that the original emission estimates for startup events did not accurately project NOx mass emissions for the non-cold startup scenario because they did not account for grid-related issues outside of the operator's control. This discrepancy is limited to NOx under this single non-cold startup scenario. This is a necessary modification for operation of the new power plant, which has been designed as a fast start and fast ramp, high efficiency generator to provide electrical generation flexibility for the electrical system which will enable a greater penetration of intermittent renewable energy into the grid.

AES is in the process of seeking a permit modification to modify the mass emission standard for NOx during non-cold startups. AES is seeking a Variance to the NOx mass emission limit for non-cold startup events in permit condition C1.3 until the permit modification has been processed and a new permit is issued.

In addition to the foregoing, AES is also seeking a variance from permit conditions D12.9 and D12.10 to match the permitted ammonia injection rate and SCR temperature range with actual and verified equipment specifications for normal operating conditions.

8. Is there a regular maintenance and/or inspection schedule for this equipment? Yes ☒ No ☐

If yes, how often: Daily. Date of last maintenance and/or inspection: Day prior to petition.

Describe the maintenance and/or inspection that was performed.

Daily inspections, calibrations of emission monitoring systems, and preventative maintenance are conducted.

9. List all District rules, and/or permit conditions [indicating the specific section(s) and subsection(s)] from which you are seeking variance relief (if requesting variance from Rule 401 or permit condition, see Attachment A). Briefly explain how you are or will be in violation of each rule or condition (see Attachment A, Item 9, Example #2).

Rule	Explanation
RULE 1303(a)(l)-BACT, 5-10-1996; RULE 1303(a)(l)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015	Permit condition C1.3. Increase non-cold startup NOx emission limits for the gas turbines from 17 lbs per event to 32 lbs per event.
RULE 1303(a)(l)-BACT, 5-10-1996; RULE 1303(a)(l)-BACT, 12-6-2002; RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015	Permit condition D12.9. Lower the minimum allowable ammonia injection rate from 44 lbs/hr to 20 lbs/hr.
RULE 1303(a)(l)-BACT, 5-10-1996; RULE 1303(a)(l)-BACT, 12-6-2002; RULE 1703(a)(2)- PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015	Permit condition D12.10. Change the temperature range at the inlet of the SCR/CO catalyst from 570°F-692°F to 450°F-800°F.

10. Are the equipment or activities subject to this request currently under variance coverage? Yes ☐ No ☒

Case No.	Date of Action	Final Compliance Date	Explanation

11. Are any other equipment or activities at this location currently (or within the last six months) under variance coverage? Yes ☒ No ☐

Case No.	Date of Action	Final Compliance Date	Explanation
5278-1	10/10/2019	10/13/2019	Provided variance from visible emissions limits during portion of commissioning period.

12. Were you issued any Notice(s) of Violation or Notice(s) to Comply concerning this equipment or activity within the past year? Yes ☒ No ☐

If yes, you must attach a copy of each notice. Attached as **Exhibit 1**.

13. Have you received any complaints from the public regarding the operation of the subject equipment or activity within the last six months? Yes ☒ No ☐

If yes, you should be prepared to present details at the hearing.

\*The only public complaints that have been received by AES within the last six months related to the subject of the variance that was issued on October 10, 2019. No other public complaints have been received.

14. Explain why it is beyond your reasonable control to comply with the rule(s) and/or permit condition(s). Provide specific event(s) and date(s) of occurrence(s), if applicable.

The AEC generating station was permitted and approved by the California Energy Commission on April 12, 2017. The original Permit to Operate pursuant to Title V and the Prevention of Significant Deterioration Program was issued by the South Coast Air Quality Management District (SCAQMD) on April 18, 2017 ("Title V Permit"). The current, revised Title V Permit, dated July 10, 2019, is attached as **Exhibit 2**.

In January 2020, AES completed the commissioning phase of the new power plant including equipment performance and emission testing of the new CCGT. Equipment performance and emissions testing indicated that the CCGT could meet all emission limits for normal operations, startups, and shutdowns, except for the 17 lb mass emission limit for NOx during a non-cold startup per condition C1.3 of the facility Title V permit. Under certain operating conditions outside the control of AES Alamos, mass emission of NOx exceed 17 lbs per event. Therefore, to ensure future compliance, AES is requesting a higher NOx mass emissions limit for non-cold startups.

During the original permitting of the facility, in connection with evaluation of Best Available Control Technology (BACT) emissions requirements, AES provided the SCAQMD their best engineering estimates for emissions of NOx, CO, and VOC during startups, and the time required for each startup to reach Minimum Emission Compliant Load (MECL) and BACT levels for normal operations. These emission estimates assumed a constant ramp-up in gas turbine load and fuel flow up to the point the gas turbine and associated Selective Catalytic Reduction (SCR) system can control emissions down to MECL BACT levels. During the performance and emission testing of these units it was discovered that the gas turbines at times will need to

halt the ramp up to MECL BACT levels while waiting for the electrical generator to synchronize to the conditions of the electrical grid. The gas turbine has to operate at the full-speed, no-load level while waiting for the generator to synchronize with the electrical grid. When the gas turbine is operated at full-speed, no-load it is emitting NOx at a relatively high rate. Synchronization to the grid can occur within 10 seconds, but can also take as long as 5 or 6 minutes, depending on the actual voltage and frequency of the grid at the time. Because a non-cold start takes 30 minutes or less to complete (and get to MECL BACT levels), only one or two minutes at an elevated NOx emission rate will cause a significant increase to the total NOx emissions for a non-cold start.

Based on its original projections made prior to actual system testing, AES had originally proposed a 17 lb NOx per non-cold start limit, which set a new lower limit for equivalent CCGTs in the SCAQMD jurisdiction. AES Alamitos is concurrently preparing a permit application to the SCAQMD requesting a 32 lb NOx per non-cold start limit, which would still set the new lowest emission rate of equivalent CCGTs in the region. This requested variance is based on emissions data showing to date maximum mass NOx emissions of up to 32 lbs during non-cold startups. AES Alamitos is seeking the variance from the 17 lb NOx limit currently listed in condition C1.3 of the AES Alamitos Title V permit while permit applications are pending. AES Alamitos would comply with a 32 lb NOx per non-cold startup limit during the variance period and maintain compliance with all emission limits, monitoring, and reporting requirements.

AES Alamitos remains in compliance with all conditions in the current Title V permit for the facility. Per Condition A63.2 compliance with mass emission limits during the commissioning period shall be demonstrated using fuel-based emission factors. Per condition A99.2 compliance with NOx mass emission rates during the interim period after commissioning but prior to CEMS certification, shall be demonstrated using a fuel-based emission factor. Upon certification of the gas turbine CEMS, compliance with the NOx mass emission rate during startup must be demonstrated using CEMS data and the calculation methods in SCAQMD Rule 2012, Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions. Using the certified CEMS data and methods for calculating NOx mass emissions contained in Rule 2012, AES Alamitos would report NOx emissions above the limit in permit condition C1.3 and is therefore seeking a variance from this condition.

AES Alamitos also provided the SCAQMD with the expected ammonia injection rates and SCR/CO catalyst temperature ranges specified in conditions D12.9 and D12.10 in a November 2018 permit application that was revised in May 2019 (See **Exhibit 3**). Manufacturer's recommendations necessitate that the appropriate equipment operating specifications listed in D12.9 and D12.10 should be as stated below:

- D12.9 – change the lower limit of ammonia injection from 44 pounds per hour to 20 pounds per hour. This allows AES Alamitos to use less ammonia while controlling NOx emissions at minimum gas turbine loads, thereby minimizing ammonia slip emissions.
- D12.10 – change the SCR/CO catalyst operating range from 570°F-692°F to 450°F-800°F per recommendation of OEM.

Permit applications were submitted for these changes, which are still pending approval and have not yet been issued.

AES is beginning commercial operations and supplying the Los Angeles basin with the cleanest most flexible gas-fired electrical generation ever constructed. AES Alamitos has already shut down 830 MW of 1950s era steam boiler generation as part of the AES Alamitos modernization project. Without this variance the new CCGT will not be able to continue operations until new permits are issued. Every day the new CCGT cannot operate the Los Angeles basin must instead rely on some of the oldest, highest pollution emitting steam generation in the state. Granting this variance will result in less emissions in the LA basin.

15. When and how did you first become aware that you would not be in compliance with the rule(s) and/or permit condition(s)? Provide specific event(s) and date(s) of occurrence(s).

AES Alamitos first became aware of the issues with startup emission and condition C1.3 on January 27, 2020 when performance and emission testing data first became available. AES Alamitos first made SCAQMD staff aware of the issue with non-cold startup emissions and C1.3 on January 30, 2020.

AES Alamos first became aware of issues with conditions D12.9 and D12.10 in May 2019 and November 2018 respectively. AES Alamos filed applications for permit modifications at that time.

16. List date(s) and action(s) you have taken since that time to achieve compliance.

AES has immediately prepared this variance petition to assure that it will not be out of compliance. AES has confirmed that it is unable to lower the non-cold startup NOx emissions during certain startups on account of grid issues outside of AES's control.

AES Alamos has had numerous communications with respect to conditions D12.9 and D12.10, responding to questions as quickly as possible. Permit approval and issuance is, however, still pending.

17. What would be the harm to your business during **and/or after** the period of the variance if the variance were not granted?

Economic losses. \$238,000 per day. Losses grossly in excess of those figures could be incurred if significant delay occurs that leads to reliability issues and blackouts.

Number of employees laid off (if any): Has not been calculated.

Provide detailed information regarding economic losses, if any, (anticipated business closure, breach of contracts, hardship on customers, layoffs, and/or similar impacts).

Suspension of commercial operation of the new 650 MW combined cycle gas turbine generator (CCGT) has the potential to significantly impact electrical reliability for southern California.

18. Can you curtail or terminate operations in lieu of, or in addition to, obtaining a variance? Please explain.

With respect to non-cold NOx startup emissions, no. As set forth above, it is not possible to curtail or terminate a startup, as that would result in non-operation of the CCGT.

With respect to ammonia and SCR, AES can adjust operating parameters, but doing so creates additional emissions of pollutants and results in inefficiencies.

19. Estimate excess emissions, if any, on a daily basis, including, if applicable, excess opacity (the percentage of total opacity above 20% during the variance period). If the variance will result in no excess emissions, insert "N/A" here and skip to No. 20.

Pollutant	(A)	(B)	(C)*
	Total Estimated Excess Emissions (lbs/day)	Reduction Due to Mitigation (lbs/day)	Net Emissions After Mitigation (lbs/day)
NOx	≤60	0	≤60

\* Column A minus Column B = Column C

Excess Opacity: 0%

20. Show calculations used to estimate quantities in No. 19, **or** explain why there will be no excess emissions.

Current permit limit is 17 lbs of NOx per non-cold startup events per turbine, AES Alamitos is requesting 32 lbs per non-cold startup event per turbine, or an increase of 15 lb NOx per non-cold start. AES Alamitos is limited to two startup events per day per turbine

$(32 \text{ lbs NOx} - 17 \text{ lbs NOx}) \times (\text{two turbines}) \times (\text{two startup events per day}) = 60 \text{ lbs NOx}$

There will be no increase in emissions resulting from the requested changes to Conditions 12.9 and 12.10

21. Explain how you plan to reduce (mitigate) excess emissions during the variance period to the maximum extent feasible, or why reductions are not feasible.

It is not feasible to reduce excess emissions, because the total mass NOx emissions during non-cold startups are determined in part by grid conditions outside of AES's control. The only way to comply with the limit would be to curtail or terminate a startup, which would result in non-operation of the CCGT.

With respect to the ammonia injection rate and the SCR temperature, AES is seeking this variance to match permit conditions with actual equipment specifications and operating conditions. Complying with the current permit limits for ammonia injection rates and SCR temperature would limit the operational capability of the pollution control system and likely lead to higher emissions than what could be achieved while still maintaining compliance with permit emission limits.

22. How do you plan to monitor or quantify emission levels from the equipment or activity(s) during the variance period, and to make such records available to the District? **Any proposed monitoring does not relieve RECLAIM facilities from applicable missing data requirements.**

All monitoring and emission quantification procedures required by the Title V permit will be maintained during the variance period.

23. How do you intend to achieve compliance with the rule(s) and/or permit condition(s)? Include a detailed description of any equipment to be installed, modifications or process changes to be made, permit conditions to be amended, etc., dates by which the actions will be completed, and an estimate of total costs.

As soon as possible, AES will apply for a permit modification to allow for an increase in NOx mass emissions during non-cold start-up. Fee for Title V/RECLAIM modification for two identical gas turbines > 50 MW, with expedited processing is \$53,702.75.

Fees for previously submitted applications are \$6,641.41 for conditions D12.9 and D12.10.

24. State the date you are requesting the variance to begin: March 18, 2020 or the date of approval; and the date by which you expect to achieve final compliance: upon issuance of revised permit conditions or less than one year.

If the regular variance is to extend beyond one year, you **must** include a **Schedule of Increments of Progress**, specifying dates or time increments for steps needed to achieve compliance. See District Rule 102 for definition of Increments of Progress (see Attachment A, Item 24, Example #3).

List Increments of Progress here:

N/A

25. List the names of any District personnel with whom facility representatives have had contact concerning this variance petition or any related Notice of Violation or Notice to Comply.

Bhaskar Chandon Ext.3902

Mary Reichert Ext.2575

If the petition was completed by someone other than the petitioner, please provide their name and title below.

Noah Perch-Ahern	Greenberg Glusker	Partner
Name	Company	Title

The undersigned, under penalty of perjury, states that the above petition, including attachments and the items therein set forth, is true and correct.

Executed on February 5, 2020, at Los Angeles, California

Signature

Noah Perch-Ahern  
Print Name

Title: Partner \_\_\_\_\_

26. SMALL BUSINESS and TABLE III SCHEDULE A FEES: To be eligible for reduced fees for small businesses, individuals, or entities meeting small business gross receipts criterion [see District Rule 303(h)], you must complete the following:

***Declaration Re Reduced Fee Eligibility***

1. The petitioner is
- a) ☐ an individual, or
  - b) ☐ an officer, partner or owner of the petitioner herein, or a duly authorized agent of the petitioner authorized to make the representations set forth herein.

***If you selected 1a, above, skip item 2.***

2. The petitioner is
- a) ☐ a business that meets the following definition of Small Business as set forth in District Rule 102:  
SMALL BUSINESS means a business which is independently owned and operated and meets the following criteria, or if affiliated with another concern, the combined activities of both concerns shall meet these criteria:
    - (a) the number of employees is 10 or less; **AND**
    - (b) the total gross annual receipts are \$500,000 or less **or**
    - (iii) the facility is a not-for-profit training center.

**-OR-**

- b) ☐ an entity with total gross annual receipts of \$500,000 or less.
3. Therefore, I believe the petitioner qualifies for reduced fees for purpose of filing fees and excess emission fee calculations, in accordance with Rule 303(h).

I declare under penalty of perjury that the foregoing is true and correct.

Executed on \_\_\_\_\_, at \_\_\_\_\_, California

Signature

Print Name

Title \_\_\_\_\_

## ATTACHMENT A

### ITEM 1

Type of Variance Requested:

- (a) **SHORT:** If compliance with District rule(s) can be achieved in **90 days or less**, request a short variance. *(Hearing will be held approximately 21 days from date of filing--10-day posted notice required.)*
- (b) **REGULAR:** If compliance with District rule(s) will take **more than 90 days**, request a regular variance. If the variance request will extend beyond one year, you **must** include a specific detailed schedule of increments of progress [see Page 8, No. 24] under which you will achieve final compliance. *(Hearing will be held approximately 45 days from date of filing--30-day published notice required.)*
- (c) **EMERGENCY:** If non-compliance is the result of an unforeseen emergency, such as a sudden equipment breakdown, power failure, or accidental fire, you may request an emergency variance. You may request an *ex parte* emergency variance in addition to an emergency variance. **An emergency variance cannot be granted for more than 30 days.** *(Hearing will be held within 2 working days from the date of filing, whenever possible, excluding Mondays, weekends, and holidays.)* **If you request an emergency variance, you must answer No. 4 on page 1.**
- (d) **EX PARTE EMERGENCY:** If variance coverage is required on a weekend or when the Board is not in session, and you cannot wait until an emergency variance hearing can be held, you may request an *ex parte* emergency variance. An *ex parte* emergency variance will be granted or denied solely on the information contained in the petition and the District's response to the petition. Under most circumstances, an *ex parte* emergency variance will remain in effect only until a hearing can be held. **If you request an ex parte variance, you must answer No. 4 on page 1.**
- (e) **INTERIM:** If you require immediate relief (other than for emergencies) to cover the time until a short or regular variance hearing can be held, request an interim variance. If you request an interim variance, you must also request a short or a regular variance on the same petition. *(Hearing will be held approximately 2 working days from date of filing, whenever possible, excluding Mondays, weekends and holidays.)* **If you request an interim variance, you must answer No. 4 on page 1.**

### ITEM 4

**GOOD CAUSE:** The Hearing Board is required to provide public notice of variance hearings, as the public has a right to attend and testify at such hearings. In order for the Hearing Board to hold an Interim, *Ex Parte* Emergency or Emergency Variance hearing without the required public notice, a petitioner must present facts which will support a determination by the Board that "good cause" exists to hear a variance without notifying the public about the variance and providing the public with an opportunity to present evidence concerning the variance.

### ITEM 6

Example #1:

Equipment/Activity	Application/ Permit No.	RECLAIM Device No.	Date Application/Plan Denied (if relevant)*
Tenter frame		D32	
Chrome-plating tank	M99999		
Bake oven	123456		
Create special effects (fog)	N/A	N/A	N/A
Mfg., sale, distribution, use of non-compliant coating	N/A	N/A	12/10/95

## **ITEM 9**

a) If you are requesting relief from Rule 401 and the excess opacity during the variance period will reach or exceed 40%, you should also request relief from California Health and Safety Code Section 41701.

b) If you are requesting relief from a permit condition(s), you should also request relief from the rule requiring compliance with conditions of the permit: 202(a), (b) or (c) - Temporary Permit to Operate; 203(b) - Permit to Operate; 2004(f)(1) – RECLAIM Permit; 3002(c) – Title V Permit.

### **Example #2:**

<b>Rule</b>	<b>Explanation</b>
404(a)	tenter frame is vented to damaged air pollution control equipment
2004 (f)(1) [Condition No. 28-2 of Facility P/O No. 099999]	source test cannot be conducted as required until new ESP is installed
1113(c)(2)	petitioner manufactures and sells clear wood finishes with VOCs in excess of 350 grams per liter
401(a) & California H&S Code Section 41701	Opacity will exceed 45%.

## **ITEM 24**

### **Example #3:**

#### **Sample Schedule of Increments of Progress**

- Permit application(s) will be submitted to the District by [date].
- Contracts for the purchase of emission control systems will be awarded by [date].
- On-site construction will be completed by [date].



# EXHIBIT **1**



South Coast Air Quality Management District  
21865 COPLEY DRIVE, DIAMOND BAR, CA 91765-4178

P 67928

# NOTICE OF VIOLATION

DATE OF VIOLATION		
Month:	Day:	Year:
10	3	19

Facility Name: <b>AES ALAMITOS, LLC</b>		Facility ID#: <b>115394</b>	Sector: <b>LH</b>
Location Address: <b>690 N STUDEBAKER RD.</b>		City: <b>LONG BEACH</b>	Zip: <b>90803</b>
Mailing Address: <b>P.O. Box 210307 (BP) 690 N STUDEBAKER RD</b>		City: <b>LONG BEACH (BP) 90803</b>	Zip: <b>75211 (BP)</b>

YOU ARE HEREBY NOTIFIED THAT YOU HAVE BEEN CITED FOR ONE OR MORE VIOLATIONS OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULES, STATE LAW OR FEDERAL LAW. IF PROVEN, SUCH VIOLATION(S) MAY RESULT IN THE IMPOSITION OF CIVIL OR CRIMINAL PENALTIES.

EACH DAY A VIOLATION OCCURS MAY BE HANDLED AS A SEPARATE OFFENSE REGARDLESS OF WHETHER OR NOT ADDITIONAL NOTICES OF VIOLATION ARE ISSUED.

## DESCRIPTION OF VIOLATIONS

#	Authority*	Code Section or Rule No.	SCAQMD Permit to Operate or CARB Registration No.	Condition No. (If Applicable)	Description of Violation
1	<input checked="" type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	401 (b)(1)			Opacity greater than R1 (20%) for greater than 3 minutes in an hour.
2	<input type="checkbox"/> SCAQMD <input checked="" type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	41701			Opacity greater than R2 (40%) for greater than 3 minutes in an hour.
3	<input type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR				
4	<input type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR				
5	<input type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR				

Served To: <b>JEFF MILLER</b>	Phone: <b>(562) 493-7733</b>	Served By: <b>Bullington Pham</b>	Date Notice Served: <b>10/3/2019</b>
Title: <b>Compliance Manager</b>	Email: <b>jeff.miller@aes.com</b>	Phone No: <input checked="" type="checkbox"/> 909-396-2288 <input type="checkbox"/> 310-233-	Email: <b>bpham @ aqmd.gov</b>

\*Key to Authority Abbreviations:

SCAQMD – South Coast Air Quality Management District  
CCR – California Code of Regulations

CH&SC – California Health and Safety Code  
CFR – Code of Federal Regulations

Method of Service:

☒ In Person

☐ Certified Mail

VIOLATOR'S COPY



South Coast Air Quality Management District  
21865 COPLEY DRIVE, DIAMOND BAR, CA 91765-4178

P 67929

# NOTICE OF VIOLATION

DATE OF VIOLATION		
Month: 10	Day: 6	Year: 19

Facility Name: <b>AES ALAMITOS, LLC</b>	Facility ID#: <b>115394</b>	Sector: <b>24</b>
Location Address: <b>690 N. STUDEBAKER RD.</b>	City: <b>LONG BEACH</b>	Zip: <b>90803</b>
Mailing Address: <b>690 N. STUDEBAKER RD.</b>	City: <b>LONG BEACH</b>	Zip: <b>90803</b>

YOU ARE HEREBY NOTIFIED THAT YOU HAVE BEEN CITED FOR ONE OR MORE VIOLATIONS OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULES, STATE LAW OR FEDERAL LAW. IF PROVEN, SUCH VIOLATION(S) MAY RESULT IN THE IMPOSITION OF CIVIL OR CRIMINAL PENALTIES.

EACH DAY A VIOLATION OCCURS MAY BE HANDLED AS A SEPARATE OFFENSE REGARDLESS OF WHETHER OR NOT ADDITIONAL NOTICES OF VIOLATION ARE ISSUED.

## DESCRIPTION OF VIOLATIONS

#	Authority*	Code Section or Rule No.	SCAQMD Permit to Operate or CARB Registration No.	Condition No. (If Applicable)	Description of Violation
1	<input checked="" type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	401 (6)(1)	Device D165		Opacity greater than R1 (20%) for greater than 3 minutes in an hour.
2	<input type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	41700	Device D165		Discharge of air contaminants causing detriment, nuisance, or annoyance to a considerable amount of persons or to the public.
3	<input type="checkbox"/> SCAQMD <input checked="" type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	41701	Device D165		Opacity greater than R2 (40%) for greater than 3 minutes in an hour.
4	<input checked="" type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	402	Device D165		Discharge of air contaminants causing detriment, nuisance, or annoyance to a considerable amount of persons or to the public.
5	<input checked="" type="checkbox"/> SCAQMD <input type="checkbox"/> CH&SC <input type="checkbox"/> CCR <input type="checkbox"/> CFR	3002 (c)(1)	Device D165	F9.1	Failure to <del>comply</del> operate permitted equipment in compliance with all terms, requirements, and conditions specified in Title V permit at all times.

Served To: <b>JEFF MILLER</b>	Phone: <b>(562) 493-7733</b>	Served By: <b>Bullington Pham</b>	Date Notice Served: <b>10/8/19</b>
Title: <b>Compliance Mgr.</b>	Email: <b>jeff.miller@aes.com</b>	Phone No: <input checked="" type="checkbox"/> 909-396-2288 <input type="checkbox"/> 310-233-	Email: <b>bpham@aqmd.gov</b>

\*Key to Authority Abbreviations:

SCAQMD - South Coast Air Quality Management District  
CCR - California Code of Regulations

CH&SC - California Health and Safety Code  
CFR - Code of Federal Regulations

Method of Service:

☒ In Person ☐ Certified Mail

VIOLATOR'S COPY

# EXHIBIT **2**



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

July 10, 2019

Stephen O'Kane  
Manager, Sustainability and Regulatory Compliance  
AES Southland  
690 N. Studebaker Road  
Long Beach, CA 90803

**SUBJECT:** RECLAIM/Title V Facility Permit Revision (Facility ID: 115394)

Dear Mr. O'Kane:

Please find attached the revised Title Page, Table of Contents, and Section H of your RECLAIM/Title V Facility Permit. The revised sections reflect the approval of the permit revisions requested in your Application No. 604013. The proposed permit revisions were submitted to EPA for 45-day review on June 28, 2019. The South Coast AQMD requested expedited review of the proposal on or before July 19, 2019, in order to facilitate timely start-up and commissioning of the Auxiliary Boiler. The EPA provided expedited review and ended the review period on July 3, 2019, with no further comments.

This permit amendment includes the modification of the Auxiliary Boiler and the Auxiliary Boiler SCR.

Equipment	Application No.	Device No.	Process/System	Permit Type
Auxiliary Boiler	604014	D181	12 / 1	PC
Auxiliary Boiler SCR	613323	C183	12 / 1	PC

Please review the attached sections carefully. Insert the enclosed sections into your RECLAIM/Title V Facility Permit and discard the earlier versions. Questions concerning changes to your permit should be directed to Ms. Vicky Lee at (909) 396-2284.

Very truly yours,

Bhaskar Chandan, P.E., QEP  
Senior Air Quality Engineering Manager  
Engineering & Permitting  
Energy/Public Services/Waste Management/Terminals

BC:RC:VL  
Enclosure: Facility Permit

cc: Gerardo Rios, EPA Region IX (w/ enclosure)  
Scott Caso, SCAQMD Compliance (w/ enclosure)



South Coast Air Quality Management District  
21865 Copley Drive, Diamond Bar, CA 91765-4178

Title Page	
Facility ID:	115394
Revision #:	33
Date:	July 10, 2019

## FACILITY PERMIT TO OPERATE


**AES ALAMITOS, LLC  
690 N STUDEBAKER RD  
LONG BEACH, CA 90803**

### NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Wayne Nastri  
Executive Officer

By   
Laki Tsipulos, Ph.D., P.E.  
Deputy Executive Officer  
Engineering and Permitting



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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C	Facility Plot Plan	TO BE DEVELOPED	
D	Facility Description and Equipment Specific Conditions	13	11/04/2014
E	Administrative Conditions	11	11/04/2014
F	RECLAIM Monitoring and Source Testing Requirements	9	11/04/2014
G	Recordkeeping and Reporting Requirements for RECLAIM Sources	9	11/04/2014
H	Permit To Construct and Temporary Permit to Operate	16	07/10/2019
I	Compliance Plans & Schedules	9	11/04/2014
J	Air Toxics	8	11/04/2014
K	Title V Administration	9	11/04/2014
Appendix			
A	NOx and SOx Emitting Equipment Exempt From Written Permit Pursuant to Rule 219	9	11/04/2014
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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 4: INORGANIC CHEMICAL STORAGE</b>					
STORAGE TANK, TANK-1 (COMBINED-CYCLE TURBINES), AQUEOUS AMMONIA 19 PERCENT, 40000 GALS; DIAMETER: 13 FT ; LENGTH: 45 FT A/N: 579167 Permit to Construct Issued: 04/18/17	D163				C157.1, E74.1, E144.1, E193.4, E193.5
STORAGE TANK, TANK-2 (SIMPLE-CYCLE TURBINES), AQUEOUS AMMONIA 19 PERCENT, 40000 GALS; DIAMETER: 13 FT ; LENGTH: 45 FT A/N: 579168 Permit to Construct Issued: 04/18/17	D164				C157.1, E74.1, E144.1, E193.4, E193.5
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
<b>System 1: COMBINED-CYCLE TURBINES (AEC CCGT POWER BLOCK)</b>					

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
 (3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
 (5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
 (7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
 (9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. CCGT-1, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH A/N: 579142 Permit to Construct Issued: 04/18/17	D165	C169	NOX: MAJOR SOURCE**	CO: 1.5 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; CO2: 1000 LBS/GROSS MWH NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]; NOX: 8.35 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; NOX: 16.66 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 8.5 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996;	A63.2, A99.1, A99.2, A195.8, A195.9, A195.10, A327.1, B61.1, C1.3, C1.4, D29.2, D29.3, D82.1, D82.2, E74.1, E193.4, E193.5, E193.8, E193.11, E193.12, E193.14, E448.1, I297.1, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
<p>GENERATOR, NO. CCGT-1, 236.645 MW GROSS AT 28 F</p> <p>HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-1</p> <p>GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-2</p>				<p><i>RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO2: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</i></p>	
CO OXIDATION CATALYST, NO. CCGT-1, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN A/N: 579160 Permit to Construct Issued: 04/18/17	C169	D165 C170			E74.1, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
SELECTIVE CATALYTIC REDUCTION, NO. CCGT-1, CORMETECH, TITANIUM/ VANADIUM/TUNGSTEN, 1289 CU.FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH A/N: 579160 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C170	C169 S172		NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.9, D12.10, D12.11, D29.4, E74.1, E193.4, E193.5
STACK, TURBINE NO. CCGT-1, HEIGHT: 140 FT ; DIAMETER: 20 FT A/N: 579142 Permit to Construct Issued: 04/18/17	S172	C170			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
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<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. CCGT-2, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH A/N: 579143 Permit to Construct Issued: 04/18/17	D173	C177	NOX: MAJOR SOURCE**	CO: 1.5 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; CO2: 1000 LBS/GROSS MWH NATURAL GAS (8A) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]; NOX: 8.35 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; NOX: 16.66 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 8.5 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996;	A63.2, A99.1, A99.2, A195.8, A195.9, A195.10, A327.1, B61.1, C1.3, C1.4, D29.2, D29.3, D82.1, D82.2, E74.1, E193.4, E193.5, E193.8, E193.11, E193.12, E193.14, E448.1, I297.2, K40.4

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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
<p>GENERATOR, NO. CCGT-2, 236.645 MW GROSS AT 28 F</p> <p>HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-2</p> <p>GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-1</p>				<p><i>RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO2: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</i></p>	
<p>CO OXIDATION CATALYST, NO. CCGT-2, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN A/N: 579161</p> <p>Permit to Construct Issued: 04/18/17</p>	C177	D173 C178			E74.1, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
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SELECTIVE CATALYTIC REDUCTION, NO. CCGT-2, CORMETECH, TITANIUM/ VANADIUM/TUNGSTEN, 1289 CU.FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH A/N: 579161 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C178	C177 S180		NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.9, D12.10, D12.11, D29.4, E74.1, E193.4, E193.5
STACK, TURBINE NO. CCGT-2, HEIGHT: 140 FT ; DIAMETER: 20 FT A/N: 579143 Permit to Construct Issued: 04/18/17	S180	C178			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
BOILER, AUXILIARY, WATER-TUBE, NATURAL GAS, CLEAVER-BROOKS, MODEL NB-200D-50, WITH LOW NOX BURNER, FLUE GAS RECIRCULATION, 70.8 MMBTU/HR WITH A/N: 604014 Permit to Construct Issued: 07/10/19	D181	C183	NOX: MAJOR SOURCE**	CO: 50 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 400 PPMV NATURAL GAS (5) [RULE 1146, 11-1-2013; RULE 1146, 12-7-2018]; CO: 2000 PPMV NATURAL GAS (5A) [RULE 407, 4-2-1982]; NOX: 5 PPMV NATURAL GAS (4) [RULE 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 38.46 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 104.2 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.007 LBS/MMBTU NATURAL GAS (4) [RULE 1303(b)(2) -Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; VOC: 0.005 LBS/MMBTU NATURAL GAS (4) [RULE 1303(b)(2) -Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]	A63.4, A99.5, A99.6, A195.13, A195.14, C1.7, D29.5, D82.3, D82.4, E74.1, E193.4, E193.5, E193.10, H23.7, I297.7, K40.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
BURNER, NATURAL GAS, CB-NATCOM, MODEL P-71-G23-11-16, WITH LOW NOX BURNER, 70.8 MMBTU/HR					
SELECTIVE CATALYTIC REDUCTION, AUXILIARY BOILER, BABCOCK & WILCOX, VANADIUM, 46 CU.FT.; WIDTH: 5 FT 5 IN; HEIGHT: 3 FT 8 IN; LENGTH: 7 FT 3 IN WITH A/N: 613323 Permit to Construct Issued: 07/10/19  AMMONIA INJECTION, AQUEOUS AMMONIA	C183	D181 S211		NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.16, D12.15, D12.16, D12.17, D29.7, E74.1, E193.4, E193.5
STACK, AUXILIARY BOILER, HEIGHT: 80 FT ; DIAMETER: 3 FT A/N: 604014 Permit to Construct Issued: 07/10/19	S211	C183			
<b>System 2: SIMPLE-CYCLE TURBINES (AEC SCGT POWER BLOCK)</b>					

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-1, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N: 579145 Permit to Construct Issued: 12/30/17	D185	C187	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.3, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

\*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-1, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579162 Permit to Construct Issued: 04/18/17	C187	D185 C188			E74.1, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-1, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579162 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C188	C187 S190		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

\*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-1, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N: 579145 Permit to Construct Issued: 12/30/17	S190	C188			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-2, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N: 579147 Permit to Construct Issued: 01/26/18	D191	C193	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.4, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-2, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579163 Permit to Construct Issued: 04/18/17	C193	D191 C194			E74.1, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-2, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579163 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C194	C193 S196		NH <sub>3</sub> : 5 PPMM (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-2, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N: 579147 Permit to Construct Issued: 01/26/18	S196	C194			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-3, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N: 579150 Permit to Construct Issued: 01/26/18	D197	C199	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (5) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.5, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-3, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579164 Permit to Construct Issued: 04/18/17	C199	D197 C200			E74.1, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-3, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579164 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C200	C199 S202		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
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The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-3, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N: 579150 Permit to Construct Issued: 01/26/18	S202	C200			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
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The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-4, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N: 579152 Permit to Construct Issued: 01/26/18	D203	C205	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.6, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

\*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-4, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579165 Permit to Construct Issued: 04/18/17	C205	D203 C206			E74.1, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-4, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT; LENGTH: 11 FT 6 IN WITH A/N: 579165 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C206	C205 S208		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-4, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N: 579152 Permit to Construct Issued: 01/26/18	S208	C206			
<b>Process 13:OIL/WATER SEPARATION</b>					
STORAGE TANK, NO. OWS-1 (COMBINED-CYCLE TURBINES), WASTE WATER, ABOVE GROUND, 5000 GALS; DIAMETER: 5 FT 6 IN; LENGTH: 30 FT A/N: 579169 Permit to Construct Issued: 04/18/17	D209				E74.1, E193.4, E193.5, E193.16
STORAGE TANK, NO. OWS-2 (SIMPLE-CYCLE TURBINES), WASTE WATER, ABOVE GROUND, 5000 GALS; DIAMETER: 5 FT 6 IN; LENGTH: 30 FT A/N: 579170 Permit to Construct Issued: 04/18/17	D210				E74.1, E193.4, E193.5, E193.16

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: DEVICE ID INDEX**

**The following sub-section provides an index  
to the devices that make up the facility  
description sorted by device ID.**



**FACILITY PERMIT TO OPERATE  
AES ALAMITOS, LLC**

**SECTION H: DEVICE ID INDEX**

Device Index For Section H			
Device ID	Section H Page No.	Process	System
D163	1	4	0
D164	1	4	0
D165	3	12	1
C169	3	12	1
C170	4	12	1
S172	4	12	1
D173	6	12	1
C177	6	12	1
C178	7	12	1
S180	7	12	1
D181	9	12	1
C183	9	12	1
D185	11	12	2
C187	11	12	2
C188	11	12	2
S190	12	12	2
D191	14	12	2
C193	14	12	2
C194	14	12	2
S196	15	12	2
D197	17	12	2
C199	17	12	2
C200	17	12	2
S202	18	12	2
D203	20	12	2
C205	20	12	2
C206	20	12	2
S208	21	12	2
D209	21	13	0
D210	21	13	0
S211	9	12	1



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

#### **FACILITY CONDITIONS**

F2.1 The operator shall limit emissions from this facility as follows:

CONTAMINANT	EMISSIONS LIMIT
PM2.5	Less than 70 TONS IN ANY ONE YEAR



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

The operator 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 PM<sub>2.5</sub> is demonstrated.

Compliance with the annual emission limit shall be based on a 12-month rolling average basis. The operator shall calculate the PM<sub>2.5</sub> emissions for the facility by summing the PM<sub>2.5</sub> emissions for each of the sources by using the equation below.

$$\text{Facility PM}_{2.5}, \text{ tons/year} = (\text{FF1} \cdot \text{EF1} + \text{FF2} \cdot \text{EF2} + \text{FF3} \cdot \text{EF3} + \text{FF4} \cdot \text{EF4} + \text{FF5} \cdot \text{EF5} + \text{FF6} \cdot \text{EF6} + \text{FF7} \cdot \text{EF7} + \text{FF8} \cdot \text{EF8} + \text{FF9} \cdot \text{EF9} + \text{FF10} \cdot \text{EF10} + \text{FF11} \cdot \text{EF11} + \text{FF12} \cdot \text{EF12} + \text{FF13} \cdot \text{EF13}) / 2000$$

FF1 = Boiler No. 1 monthly fuel usage in mmscf; EF1 = 1.19 lb/mmscf

FF2 = Boiler No. 2 monthly fuel usage in mmscf; EF2 = 1.19 lb/mmscf

FF3 = Boiler No. 3 monthly fuel usage in mmscf; EF3 = 1.19 lb/mmscf

FF4 = Boiler No. 4 monthly fuel usage in mmscf; EF4 = 1.19 lb/mmscf

FF5 = Boiler No. 5 monthly fuel usage in mmscf; EF5 = 1.19 lb/mmscf

FF6 = Boiler No. 6 monthly fuel usage in mmscf; EF6 = 1.19 lb/mmscf

FF7 = Combined-Cycle Turbine No. CCGT-1 monthly fuel usage in mmscf; EF7 = 3.92 lb/mmscf

FF8 = Combined-Cycle Turbine No. CCGT-2 monthly fuel usage in mmscf; EF8 = 3.92 lb/mmscf

FF9 = Auxiliary Boiler monthly fuel usage in mmscf; EF9 = 7.42 lb/mmscf



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

FF10 = Simple-Cycle Turbine No. SCGT-1 monthly fuel usage in mmscf; EF10 = 7.44 lb/mmscf

FF11 = Simple-Cycle Turbine No. SCGT-2 monthly fuel usage in mmscf; EF11 = 7.44 lb/mmscf

FF12 = Simple-Cycle Turbine No. SCGT-3 monthly fuel usage in mmscf; EF12 = 7.44 lb/mmscf

FF13 = Simple-Cycle Turbine No. SCGT-4 monthly fuel usage in mmscf; EF13 = 7.44 lb/mmscf

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

AES Alamitos, LLC shall submit written reports of the monthly PM<sub>2.5</sub> 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 PM<sub>2.5</sub> compliance demonstration shall be maintained on site for at least five years and made available upon 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, 11-4-2016; RULE 1325, 1-4-2019]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### The operator shall comply with the terms and conditions set forth below:

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

- (a) As dark or darker in shade as that designated No.1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or
- (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[RULE 401, 3-2-1984; RULE 401, 11-9-2001]

F18.1 Acid Rain SO<sub>2</sub> Allowance Allocation for affected units are as follows:

Device ID	Boiler ID	Contaminant	Tons in any year
39	Unit 1	SO <sub>2</sub>	2703
42	Unit 2	SO <sub>2</sub>	17
45	Unit 3	SO <sub>2</sub>	81
48	Unit 4	SO <sub>2</sub>	541
51	Unit 5	SO <sub>2</sub>	3866
3	Unit 6	SO <sub>2</sub>	936

- a). The allowance allocation(s) shall apply to calendar years 2010 and beyond.
- b). The number of allowances allocated to Phase II affected units by U.S. EPA may change in a 1998 revision to 40CFR73 Tables 2,3, and 4. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned conditions necessitate a revision to the unit SO<sub>2</sub> allowance allocations identified in this permit (see 40 CFR 72.84)

[40CFR 73 Subpart B, 1-11-1993]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

F24.1 Accidental release prevention requirements of Section 112(r)(7):

a). The operator shall comply with the accidental release prevention requirements pursuant to 40 CFR Part 68 and shall submit to the Executive Officer, as a part of an annual compliance certification, a statement that certifies compliance with all of the requirements of 40 CFR Part 68, including the registration and submission of a risk management plan (RMP).

b). The operator shall submit any additional relevant information requested by the Executive Officer or designated agency.

**[40CFR 68 - Accidental Release Prevention, 5-24-1996]**

F52.1 This facility is subject to the applicable requirements of the following rules or regulation(s):



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

The facility shall submit a detailed retirement plan for the permanent shutdown of Boilers Nos. 1, 2, 6 and 3 (Devices D39, D42, D3, and D45, respectively), describing in detail the steps and schedule that will be taken to render Boilers Nos. 1, 2, 6, and 3 permanently inoperable.

The retirement plan shall be submitted to SCAQMD within 60 days after Permits to Construct for Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Devices D185, D191, D197, and D203 respectively) are issued.

AES shall not commence any construction of the Alamitos Energy Project including Gas Turbines Nos. CCGT-1, CCGT-2, SCGT-1, SCGT-2, SCGT-3, and SCGT-4, unless the retirement plan is approved in writing by SCAQMD. If SCAQMD notifies AES that the plan is not approvable, AES shall submit a revised plan addressing SCAQMD's concerns within 30 days.

Within 30 calendar days of actual shutdown but no later than December 29, 2019, AES shall provide SCAQMD with a notarized statement that Boilers Nos. 1, 2, and 6 are permanently shut down and that any re-start or operation of the boilers shall require new Permits to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

AES shall notify SCAQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boilers Nos. 1, 2, and 6, or advise SCAQMD as soon as practicable should AES undertake permanent shutdown prior to December 29, 2019.

AES shall cease operation of Boilers Nos. 1, 2, and 6 within 90 calendar days of the first fire of Gas Turbines No. CCGT-1 or CCGT-2, whichever is earlier.

Within 30 calendar days of actual shutdown but no later than December 31, 2020, AES shall provide SCAQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

AES shall notify SCAQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boiler No. 3, or advise SCAQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2020.

AES shall cease operation of Boiler No. 3 within 90 calendar days of the first fire of Gas Turbines No. SCGT-1, SCGT-2, SCGT-3, or SCGT-4, whichever is earliest.

**[RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996; RULE 1313(d), 12-7-1995]**

F52.2 This facility is subject to the applicable requirements of the following rules or regulation(s):



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### The operator shall comply with the terms and conditions set forth below:

For all circuit breakers at the facility utilizing SF<sub>6</sub>, including the circuit breakers serving Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2; common Steam Turbine Generator; and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4, the operator shall install, operate, and maintain enclosed-pressure SF<sub>6</sub> circuit breakers with a maximum annual leakage rate of 0.5 percent by weight. The circuit breakers shall be equipped with a 10 percent by weight leak detection system.

The leak detection system shall be calibrated in accordance with manufacturer's specifications. The manufacturer's specifications and records of all calibrations shall be maintained on site.

The total CO<sub>2</sub>e emissions from all circuit breakers shall not exceed 74.55 tons per calendar year.

The operator shall calculate the SF<sub>6</sub> emissions due to leakage from the circuit breakers by using the mass balance in equation DD-1 at 40 CFR Part 98, Subpart DD, on an annual basis.

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

[RULE 1714, 12-10-2012]

### DEVICE CONDITIONS

#### A. Emission Limits

A63.2 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

CO	Less than or equal to 95023 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 13314 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 6324 LBS IN ANY CALENDAR MONTH
SOX	Less than or equal to 3616 LBS IN ANY CALENDAR MONTH
CO	Less than or equal to 180544 LBS IN ANY ONE YEAR
VOC	Less than or equal to 52668 LBS IN ANY ONE YEAR
PM10	Less than or equal to 39440 LBS IN ANY ONE YEAR
SOX	Less than or equal to 7435 LBS IN ANY ONE YEAR



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

For the purposes of this condition, the above emission limits shall be based on the emissions from a single turbine.

The turbine shall not commence with normal operation until the commissioning process has been completed. Normal operation commences when the turbine is able to supply electrical energy to the power grid as required under contract with the relevant entities. The SCAQMD shall be notified in writing once the commissioning process for each turbine is completed.

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

The operator 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, 61.18 lb/mmcf; VOC, 8.86 lb/mmcf; PM10, 5.11 lb/mmcf; and SOx, 2.92 lb/mmcf.

For normal operation, the emission factors shall be as follows: CO, 15.28 lb/mmcf; VOC, 4.70 lb/mmcf; PM10, 3.92 lb/mmcf; and SOx, 2.24 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.

Compliance with the annual emission limits shall be based on a 12-operating month-rolling-average basis, following completion of the commissioning period.

The emission factors for the monthly emission limits shall be the same as the



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### The operator shall comply with the terms and conditions set forth below:

emission factors used to demonstrate compliance with the annual emission limits, except the annual emission factor for SO<sub>x</sub> is 0.75 lb/mmcf.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; **RULE 1303(a)(1)-BACT, 12-6-2002**; **RULE 1304.1, 9-6-2013**; **RULE 1703(a)(2) - PSD-BACT, 10-7-1988**]

[Devices subject to this condition : D165, D173]

A63.3 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 8594 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 1973 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 4638 LBS IN ANY CALENDAR MONTH
SOX	Less than or equal to 1207 LBS IN ANY CALENDAR MONTH
CO	Less than or equal to 29730 LBS IN ANY ONE YEAR
VOC	Less than or equal to 7510 LBS IN ANY ONE YEAR
PM10	Less than or equal to 14695 LBS IN ANY ONE YEAR
SOX	Less than or equal to 1275 LBS IN ANY ONE YEAR



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

For the purposes of this condition, the above emission limits shall be based on the emissions from a single turbine.

The turbine shall not commence with normal operation until the commissioning process has been completed. Normal operation commences when the turbine is able to supply electrical energy to the power grid as required under contract with the relevant entities. The SCAQMD shall be notified in writing once the commissioning process for each turbine is completed.

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

The operator 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, 112.03 lb/mmcf; VOC, 3.69 lb/mmcf; PM10, 2.00 lb/mmcf; and SOx, 7.69 lb/mmcf.

For normal operation, the emission factors shall be as follows: CO, 8.84 lb/mmcf; VOC, 3.17 lb/mmcf; PM10, 7.44 lb/mmcf; and SOx, 1.94 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.

Compliance with the annual emission limits shall be based on a 12-operating month-rolling-average basis, following completion of the commissioning period.

The emission factors for the monthly emission limits shall be the same as the



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### The operator shall comply with the terms and conditions set forth below:

emission factors used to demonstrate compliance with the annual emission limits, except the annual emission factor for SO<sub>x</sub> is 0.65 lb/mmcf.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; **RULE 1303(a)(1)-BACT, 12-6-2002**; **RULE 1304.1, 9-6-2013**; **RULE 1703(a)(2) - PSD-BACT, 10-7-1988**]

[Devices subject to this condition : D185, D191, D197, D203]

A63.4 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 605 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 102 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 113.5 LBS IN ANY CALENDAR MONTH
PM2.5	Less than or equal to 113.5 LBS IN ANY CALENDAR MONTH
SOX	Less than or equal to 32 LBS IN ANY CALENDAR MONTH



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

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 operator shall calculate the monthly emissions for CO, VOC, PM10/PM2.5, 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 normal operation, the emission factors shall be as follows: 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 operator shall maintain records in a manner approved by the South Coast AQMD to demonstrate compliance with this condition and the records shall be made available to South Coast AQMD personnel upon request. The records shall



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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**The operator shall comply with the terms and conditions set forth below:**

include, but not be limited to, natural gas usage in a calendar month.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D181]

- A99.1 The 16.66 LBS/MMSCF NOX emission limit(s) shall only apply during the turbine commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D165, D173]

- A99.2 The 8.35 LBS/MMSCF NOX emission limit(s) shall only apply during the interim period after commissioning but prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D165, D173]

- A99.3 The 25.24 LBS/MMSCF NOX emission limit(s) shall only apply during the turbine commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**



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**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D185, D191, D197, D203]

- A99.4 The 11.21 LBS/MMSCF NOX emission limit(s) shall only apply during the interim period after commissioning but prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D185, D191, D197, D203]

- A99.5 The 38.46 LBS/MMSCF NOX emission limit(s) shall only apply during the interim period prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operation.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D181]

- A99.6 The 104.20 LBS/MMSCF NOX emission limit(s) shall only apply during the boiler commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D181]

- A195.8 The 2.0 PPMV NOX emission limit(s) is averaged over over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.



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**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

A195.9 The 1.5 PPMV CO emission limit(s) is averaged over over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173]

A195.10 The 2.0 PPMV VOC emission limit(s) is averaged over over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

A195.11 The 2.5 PPMV NOX emission limit(s) is averaged over over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

A195.13 The 5.0 PPMV NOX emission limit(s) is averaged over 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, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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#### The operator shall comply with the terms and conditions set forth below:

A195.14 The 50.0 PPMV CO emission limit(s) is averaged over over 1 hour, dry basis at 3 percent oxygen. This limit shall not apply to boiler commissioning and startup periods..

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D181]

A195.15 The 5.0 PPMV NH<sub>3</sub> emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen.

The operator shall calculate and continuously record the NH<sub>3</sub> slip concentration using the following equation:

$$\text{NH}_3 \text{ (ppmvd)} = [a - b * (c * 1.2) / 1,000,000] * 1,000,000 / b, \text{ where:}$$

a = NH<sub>3</sub> injection rate (lb/hr)/17(lb/lb-mol)

b = dry exhaust gas flow rate (scf/hr)/385.3 scf/lb-mol)

c = change in measured NO<sub>x</sub> across the SCR (ppmvd at 15% O<sub>2</sub>)

The operator shall install and maintain a NO<sub>x</sub> analyzer to measure the SCR inlet NO<sub>x</sub> ppmv accurate to within plus or minus 5 percent calibrated at least once every 12 months. The operator shall use the method described above or another alternative method approved by the Executive Officer.

The ammonia slip calculation procedure shall be in effect no later than 90 days after initial startup of the turbine.

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information without corroborative data using an approved reference method for the determination of ammonia.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C170, C178, C188, C194, C200, C206]



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#### The operator shall comply with the terms and conditions set forth below:

A195.16 The 5.0 PPMV NH<sub>3</sub> emission limit(s) is averaged over 1 hour, dry basis at 3 percent oxygen.

The operator shall calculate and continuously record the NH<sub>3</sub> slip concentration using the following equation:

$$\text{NH}_3 \text{ (ppmvd)} = [a - b * (c * 1.2) / 1,000,000] * 1,000,000 / b, \text{ where:}$$

$a = \text{NH}_3 \text{ injection rate (lb/hr)} / 17 \text{ (lb/lb-mol)}$

$b = \text{dry exhaust gas flow rate (scf/hr)} / 385.3 \text{ scf/lb-mol}$

$c = \text{change in measured NO}_x \text{ across the SCR (ppmvd at 3\% O}_2\text{)}$

The operator shall install and maintain a NO<sub>x</sub> analyzer to measure the SCR inlet NO<sub>x</sub> ppmv accurate to within plus or minus 5 percent calibrated at least once every 12 months. The operator shall use the method described above or another alternative method approved by the Executive Officer.

The ammonia slip calculation procedure shall be in effect no later than 90 days after initial startup of the boiler.

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information without corroborative data using an approved reference method for the determination of ammonia.

[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002**]

[Devices subject to this condition : C183]

A195.17 The 2.0 PPMV CO emission limit(s) is averaged over over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988**]



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**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D185, D191, D197, D203]

A327.1 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

**[RULE 475, 10-8-1976; RULE 475, 8-7-1978]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

#### **B. Material/Fuel Type Limits**

B61.1 The operator shall not use natural gas containing the following specified compounds:

Compound	Range	grain per 100 scf
H2S	greater than	0.25

This concentration limit is an annual average based on monthly samples of natural gas composition or gas supplier documentation. Gaseous fuel samples shall be tested using District Method 307-91 for total sulfur calculated as H2S.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

#### **C. Throughput or Operating Parameter Limits**

C1.3 The operator shall limit the number of start-ups to no more than 62 in any one calendar month.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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#### **The operator shall comply with the terms and conditions set forth below:**

The number of cold startups shall not exceed 15 in any calendar month, with no more than 2 startups in any one day.

The number of cold startups shall not exceed 80 in any calendar year, and the total number of startups shall not exceed 500 in any calendar year.

For the purposes of this condition, a cold startup is defined as a startup which occurs after the combustion turbine has been shut down for 48 hours or more. A cold startup shall not exceed 60 minutes. The NO<sub>x</sub> emissions from a cold startup shall not exceed 61 lbs. The CO emissions from a cold startup shall not exceed 325 lbs. The VOC emissions from a cold startup shall not exceed 36 lbs.

For the purposes of this condition, a non-cold startup is defined as a startup which occurs after the combustion turbine has been shut down less than 48 hours. A non-cold startup shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a non-cold startup shall not exceed 17 lbs. The CO emissions from a non-cold startup shall not exceed 137 lbs. The VOC emissions from a non-cold startup shall not exceed 25 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

- C1.4 The operator shall limit the number of shut-downs to no more than 62 in any one calendar month.



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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

The number of shutdowns shall not exceed 500 in any calendar year.

Each shutdown shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a shutdown event shall not exceed 10 lbs. The CO emissions from a shutdown event shall not exceed 133 lbs. The VOC emissions from a shutdown event shall not exceed 32 lbs.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

- C1.5 The operator shall limit the number of start-ups to no more than 62 in any one calendar month.

The number of startups shall not exceed 2 startups in any one day. The number of startups shall not exceed 500 in any calendar year.

A startup shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a startup shall not exceed 16.6 lbs. The CO emissions from a startup shall not exceed 15.4 lbs. The VOC emissions from a startup shall not exceed 2.80 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

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



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**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

- C1.6 The operator shall limit the number of shut-downs to no more than 62 in any one calendar month.

The number of shutdowns shall not exceed 500 in any calendar year.

Each shutdown shall not exceed 13 minutes. The NO<sub>x</sub> emissions from a shutdown event shall not exceed 3.12 lbs. The CO emissions from a shutdown event shall not exceed 28.1 lbs. The VOC emissions from a shutdown event shall not exceed 3.06 lbs..

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

- C1.7 The operator shall limit the number of start-ups to no more than 10 in any one calendar month.



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#### **The operator shall comply with the terms and conditions set forth below:**

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 NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> emissions from a hot startup shall not exceed 0.62 lbs.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

C157.1 The operator shall install and maintain a pressure relief valve set at 50 psig.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**



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**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D163, D164]

#### **D. Monitoring/Testing Requirements**

D12.9 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 44 and 242 pounds per hour, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

D12.10 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 570 degrees F and 692 degrees F, except during startups and shutdowns.



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**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

- D12.11 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 1.6 inches water column.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

- D12.12 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).



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#### The operator shall comply with the terms and conditions set forth below:

The operator 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 operator shall maintain the ammonia injection rate between 110 and 180 pounds per hour, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C188, C194, C200, C206]

D12.13 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 500 degrees F and 870 degrees F, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C188, C194, C200, C206]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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#### The operator shall comply with the terms and conditions set forth below:

- D12.14 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 3.0 inches water column.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C188, C194, C200, C206]

- D12.15 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 0.3 and 3.9 pounds per hour.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C183]



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#### The operator shall comply with the terms and conditions set forth below:

D12.16 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 415 degrees F and 628 degrees F, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C183]

D12.17 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 2.0 inches water column.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C183]



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**The operator shall comply with the terms and conditions set forth below:**

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
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 Modified	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	EPA Method 201A and 202	District-approved averaging time	Outlet of the SCR serving this equipment
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment



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#### **The operator shall comply with the terms and conditions set forth below:**

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

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, the combined-cycle turbine and steam turbine generating output in MW-gross and MW-net, and the simple-cycle turbine generating output in MW-gross and MW-net.

The test shall be conducted in accordance with a District approved source test protocol. The protocol shall be submitted to the SCAQMD 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 proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The sampling time for PM and PM<sub>2.5</sub> tests shall be 4 hours or longer as necessary to obtain a measureable amount of sample.

The tests shall be conducted when the combined-cycle turbine is operating at loads of 45, 75, and 100 percent of maximum load, and the simple-cycle turbine is operating at loads of 50, 75, and 100 percent of maximum load.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by SCAQMD, the operator shall use SCAQMD Method 25.3 modified as follows:

- a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,
- b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and



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**The operator shall comply with the terms and conditions set forth below:**

c) Analysis of Summa canisters per the canister analysis portion of AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified AQMD Method 25.3, nor does it mean that it may be used in lieu of AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

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.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	District-approved averaging time	Fuel Sample
VOC emissions	District Method 25.3 Modified	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



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#### **The operator shall comply with the terms and conditions set forth below:**

The test(s) shall be conducted at least once every three years.

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.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by SCAQMD, the operator shall use SCAQMD Method 25.3 modified as follows:

- a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,
- b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and
- c) Analysis of Summa canisters per the canister analysis portion of AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified AQMD Method 25.3, nor does it mean that it may be used in lieu of AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

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 to demonstrate compliance with the Rule 1303 concentration and/or monthly emissions limit.



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**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

D29.4 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

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 during the first twelve months of operation and at least annually thereafter. The NO<sub>x</sub> 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 NO<sub>x</sub> 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 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C170, C178, C188, C194, C200, C206]

D29.5 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
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**The operator shall comply with the terms and conditions set forth below:**

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	EPA Method 201A and 202	District-approved averaging time	Outlet of the SCR serving this equipment
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment



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#### **The operator shall comply with the terms and conditions set forth below:**

The test shall be conducted after South Coast AQMD approval of the source test protocol, but no later than 180 days after initial start-up. The 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 F, (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 South Coast AQMD approved source test protocol. The protocol shall be submitted to the South Coast AQMD engineer no later than 90 days before the proposed test date and shall be approved by the South Coast AQMD before the test commences.

The test protocol shall include the identity of the testing lab, confirmation that the test lab is approved under the 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 South Coast AQMD Guidelines for Construction of Sampling and Testing Facilities, pursuant to Rule 217.

The sampling time for the PM10 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.

**[RULE 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]



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**The operator shall comply with the terms and conditions set forth below:**

D29.7 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

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

The NO<sub>x</sub> 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 NO<sub>x</sub> 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 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C183]

D82.1 The operator shall install and maintain a CEMS to measure the following parameters:



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**The operator shall comply with the terms and conditions set forth below:**

CO concentration in ppmv.

Concentrations shall be corrected to 15 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 SCAQMD Rule 218 CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from SCAQMD.

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

CO Emission Rate, lbs/hr =  $K * C_{co} * F_d [20.9 / (20.9\% - \%O_2 d)] [(Q_g * HHV) / 10E+06]$ , where:

1.  $K = 7.267 * 10E-08$  (lb/scf)/ppm
2.  $C_{co}$  = Average of four consecutive 15 min. average CO concentrations, ppm
3.  $F_d$  = 8710 dscf/MMBTU natural gas
4.  $\%O_2 d$  = Hourly average % by volume O<sub>2</sub> dry, corresponding to  $C_{co}$
- $Q_g$  = Fuel gas usage during the hour, scf/hr
6. HHV = Gross high heating value of fuel gas, BTU/scf

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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**The operator shall comply with the terms and conditions set forth below:**

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:

NO<sub>x</sub> concentration in ppmv.

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

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 SCAQMD REG XX CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from SCAQMD.

Rule 2012 provisional RATA testing shall be completed and submitted to the SCAQMD within 90 days of the conclusion of the turbine commissioning period. During the interim period between the initial start-up and the provisional certification date of the CEMS, the operator shall comply with the monitoring requirements of Rule 2012(h)(2) and 2012(h)(3).

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015; RULE 2012, 5-6-2005]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

D82.3 The operator shall install and maintain a CEMS to measure the following parameters:



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#### The operator shall comply with the terms and conditions set forth below:

NO<sub>x</sub> concentration in ppmv.

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

The CEMS shall be installed and operating no later than 90 days after initial start-up of the auxiliary boiler, and in accordance with an approved South Coast AQMD REG XX CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

Rule 2012 provisional RATA testing shall be completed and submitted to the South Coast AQMD within 90 days of the conclusion of the boiler commissioning period. During the interim period between the initial start-up and the provisional certification date of the CEMS, the operator shall comply with the monitoring requirements of Rule 2012(h)(2) and 2012(h)(3).

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015; RULE 2012, 5-6-2005]**

[Devices subject to this condition : D181]

D82.4 The operator 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 operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

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



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**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D181]

#### **E. Equipment Operation/Construction Requirements**

- E74.1 Notwithstanding the requirements of Section E conditions, the Operator may commence the construction of Phase II of this project if all the following condition(s) are met:

The BACT/LAER determination for the Phase II of this project shall be reviewed and modified (by South Coast 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.

**[40CFR 52.21 - PSD, 6-19-1978]**

[Devices subject to this condition : D163, D164, D165, C169, C170, D173, C177, C178, D181, C183, D185, C187, C188, D191, C193, C194, D197, C199, C200, D203, C205, C206, D209, D210]

- E144.1 The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D163, D164]

- E193.4 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

In accordance with all air quality mitigation measures stipulated in the final California Energy Commission decision for the 13-AFC-01 project.

**[CA PRC CEQA, 11-23-1970]**

[Devices subject to this condition : D163, D164, D165, C170, D173, C178, D181, C183, D185, C188, D191, C194, D197, C200, D203, C206, D209, D210]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

E193.5 The operator shall install this equipment according to the following requirements:

The Permit to Construct shall expire one year from the issuance date, unless an extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment.

Construction of Phase 1 of the project (defined as the combined cycle turbines and associated control equipment, the auxiliary boiler and associated control equipment, storage tank D163, and oil water separator D209) shall commence within 18 months from the date of the Permit to Construct, unless an extension is granted by the Permitting Authority.

Construction of Phase 2 of the project (defined as the simple cycle turbines and associated control equipment, storage tank D164, and oil water separator D210) shall commence within 18 months of May 31, 2020 unless an extension is granted by the Permitting Authority.

Construction shall not be discontinued for a period of 18 months or more at any time during Phase 1 or Phase 2.

**[RULE 205, 1-5-1990; 40CFR 52.21 - PSD, 6-19-1978]**

[Devices subject to this condition : D163, D164, D165, C169, C170, D173, C177, C178, D181, C183, D185, C187, C188, D191, C193, C194, D197, C199, C200, D203, C205, C206, D209, D210]

E193.8 The operator shall operate and maintain this equipment according to the following requirements:



## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

Total commissioning hours shall not exceed 996 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 996 hours, commissioning hours without control shall not exceed 216 hours.

Two turbines may be commissioned at the same time.

The operator shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, and natural gas fuel usage.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

E193.9 The operator shall operate and maintain this equipment according to the following requirements:



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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#### **The operator shall comply with the terms and conditions set forth below:**

Total commissioning hours shall not exceed 280 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 280 hours, commissioning hours without control shall not exceed 4 hours.

Four turbines may be commissioned at the same time.

The operator shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The operator shall provide the SCAQMD with written notification of the initial startup date. The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition and the records shall be made available to District personnel upon request. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, and natural gas fuel usage.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

E193.10 The operator shall operate and maintain this equipment according to the following requirements:



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#### The operator shall comply with the terms and conditions set forth below:

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

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

The operator shall provide the South Coast AQMD with written notification of the initial startup date. The operator shall maintain records in a manner approved by the South Coast AQMD to demonstrate compliance with this condition and the records shall be made available to 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, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

E193.11 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall only apply if this turbine supplies greater than 1,481,141 MWh-net electrical output to a utility power distribution system on both a 12-operating-month and a 3-year rolling average basis.

Compliance with the 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT.

**[40CFR 60 Subpart TTTT, 10-23-2015]**

[Devices subject to this condition : D165, D173]



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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

E193.12 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The 120 lbs/MMBtu CO<sub>2</sub> emission limit shall only apply if this turbine supplies no more than 1,481,141 MWh-net electrical output to a utility power distribution system on either a 12-operating-month or a 3-year rolling average basis.

Compliance with the 120 lbs/MMBtu CO<sub>2</sub> emission limit shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT.

**[40CFR 60 Subpart TTTT, 10-23-2015]**

[Devices subject to this condition : D165, D173]

E193.13 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The 120 lbs/MMBtu CO<sub>2</sub> emission limit for non-base load turbines shall apply.

Compliance with the 120 lbs/MMBtu CO<sub>2</sub> emission limit shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT, including applicable requirements for recordkeeping and reporting.

**[40CFR 60 Subpart TTTT, 10-23-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

E193.14 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:



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#### **The operator shall comply with the terms and conditions set forth below:**

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

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

$$\text{GHG} = 61.41 * \text{FF}$$

Where GHG is the greenhouse gas emissions in tons of CO<sub>2</sub> and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO<sub>2</sub> emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO<sub>2</sub> emissions from this equipment shall not exceed 610,480 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO<sub>2</sub> emissions shall not exceed 937.88 lbs per gross megawatt-hours (inclusive of equipment degradation).

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

**[RULE 1714, 12-10-2012]**

[Devices subject to this condition : D165, D173]

E193.15 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

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

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

$$\text{GHG} = 61.41 * \text{FF}$$

Where GHG is the greenhouse gas emissions in tons of CO<sub>2</sub> and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO<sub>2</sub> emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO<sub>2</sub> emissions from this equipment shall not exceed 120,765 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO<sub>2</sub> emissions shall not exceed 1356.03 lbs per gross megawatt-hours (inclusive of equipment degradation).

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

**[RULE 1714, 12-10-2012]**

[Devices subject to this condition : D185, D191, D197, D203]

E193.16 The operator shall construct, operate, and maintain this equipment according to the following requirements:

The equipment shall be equipped with a fixed cover to minimize VOC emissions.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D209, D210]



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**The operator shall comply with the terms and conditions set forth below:**

E448.1 The operator shall comply with the following requirements:

The total electrical output on a gross basis from Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Device D185, D191, D197, and D203, respectively) shall not exceed 1094.7 MW-gross at 59 deg F.

The gross electrical output shall be measured at the single generator serving each of the combined-cycle turbines, the single generator serving the common steam turbine, and the single generator servicing each of the simple-cycle turbines. The monitoring equipment shall meet ANSI Standard No. C12 or equivalent, and have an accuracy of +/- 0.2 percent. The gross electrical output from the generators shall be recorded at the CEMS DAS over a 15-minute averaging time period.

The operator shall record and maintain written records of the maximum amount of electricity produced from this equipment and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

**[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

#### **H. Applicable Rules**

H23.7 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
CO	District Rule	1146
NOX	District Rule	1146
NOX	District Rule	1100



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

[RULE 1100, 12-7-2018; **RULE 1146, 11-1-2013**; RULE 1146, 12-7-2018]

[Devices subject to this condition : D181]

#### **I. Administrative**

- I297.1 This equipment shall not be operated unless the facility holds 108377 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[**RULE 2005, 6-3-2011**; **RULE 2005, 12-4-2015**]

[Devices subject to this condition : D165]

- I297.2 This equipment shall not be operated unless the facility holds 108377 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[**RULE 2005, 6-3-2011**; **RULE 2005, 12-4-2015**]

[Devices subject to this condition : D173]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

- I297.3 This equipment shall not be operated unless the facility holds 68575 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185]

- I297.4 This equipment shall not be operated unless the facility holds 68575 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D191]

- I297.5 This equipment shall not be operated unless the facility holds 68575 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D197]



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

- I297.6 This equipment shall not be operated unless the facility holds 68575 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D203]

- I297.7 This equipment shall not be operated unless the facility holds 1351 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

#### **K. Record Keeping/Reporting**

- K40.4 The operator shall provide to the District a source test report in accordance with the following specifications:



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

#### **The operator shall comply with the terms and conditions set forth below:**

Source test results shall be submitted to the District no later than 90 days after the source tests required by conditions D29.2, D29.3, and D29.4 are conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 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 exhaust flow rates shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, the fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

- K40.5 The operator shall provide to the District a source test report in accordance with the following specifications:



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Source test results shall be submitted to the South Coast AQMD no later than 90 days after the source tests required by conditions D29.5 and D29.7 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 F, (4) the oxygen content of the exhaust gases, in percent, and (5) the fuel flow rate.

**[RULE 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

# EXHIBIT **3**



**South Coast**  
**AIR QUALITY MANAGEMENT DISTRICT**  
21865 E. Copley Drive, Diamond Bar, CA 91765-4182  
(909) 396-2000 <http://www.aqmd.gov>

**Receipt Date:** 11/09/2018 04:47:38 PM

**Receipt Number:** 91887

**Facility ID** 115394  
**Name** AES ALAMITOS, LLC  
**Address** 690 N STUDEBAKER RD

LONG BEACH, CA 90803 - 2221

**Payment Details**

Type	Check nbr	Amount	Check nbr	Amount	Amount
CASH	-	-	-	-	\$0.00
CHK	7553	\$6,641.41			
				<b>Checks Total:</b>	\$6,641.41
				<b>Total:</b>	\$6,641.41

**Comments** 2-- CHANGE OF COND

**Received By** AQMD Cashier

**Signature**

**Original Copy**



we are the energy

JPMorgan Chase Bank, National Associatio  
NEW YORK CITY NY

**Date**

November 05, 2018

VOID AFTER 180 DAYS

07553  
1-2/210

One Monument Circle, Indianapolis, IN 46204

**Amount**

\*\*\* Six thousand six hundred forty-one dollars and forty-one cents \*\*\*

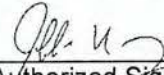
\$ \*\*6,641.41\*\*

Pay to the Order of:

SOUTH COAST AQMD

PO BOX 4943

DIAMOND BAR CA US 91765-0943

  
Authorized Signature

Authorized Signature

⑈07553⑈ ⑆021000021⑆ 100047353⑈

November 9, 2018

Ms. Vicky Lee  
Air Quality Engineer  
South Coast Air Quality Management District (SCAQMD)  
21865 Copley Drive  
Diamond Bar, CA 91765  
Work: (909) 396-2284  
E-mail: [vlee1@aqmd.gov](mailto:vlee1@aqmd.gov)

**Subject: AES Alamitos, LLC**  
**SCAQMD Facility ID: 115394**  
**Change of Condition Request for Permits to Construct**

Dear Ms. Lee:

AES Alamitos, LLC (Facility ID: 115394) is submitting this change of condition application for the Selective Catalytic Reduction No. CCGT-1 (AN 579161, Device C170) and Selective Catalytic Reduction No. CCGT-2 (AN 579166, Device C178) in the permits to construct for the facility located at 690 N. Studebaker Road, Long Beach, California. The change of condition D12.10 is requested in order to match the operating condition suggested by the manufacturer. A description of the change is included below.

**Proposed Permit Action**

AES is requesting changes to the permit condition for the Selective Catalytic Reduction No. CCGT-1 (AN 579161, Device C170) and Selective Catalytic Reduction No. CCGT-2 (AN 579166, Device C178) in the open Permit to Construct. The reason for the change is to reflect the manufacturer suggested operating condition. Please refer to the attached letter from the manufacturer that specifies the recommended the operating condition in Attachment B.

AES is requesting a revision to condition D12.10 to the following:

Condition D12.10

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR Reactor.

The operator 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 on the average of the continuous monitoring for that hour.

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

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between ~~570~~ **600 degrees F** and ~~692~~ **775 degrees F** except during startups and shutdowns.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

The requested changes in permit condition will not cause a change in emissions, nor an increase in health risk at any receptor location. As a result, an engineering evaluation is not required for these requested changes.

### Forms Included with This Application

Table 1 lists the forms included with this application. The forms are included as Attachment 1.

**Table 1: SCAQMD Forms Accompanying This Application**

Form	Title	Equipment
400-A	Application for Permit or Plan Approval	Selective Catalytic Reduction No. CCGT-1 (C170)
400-A	Application for Permit or Plan Approval	Selective Catalytic Reduction No. CCGT-2 (C178)
400-CEQA	California Environmental Quality Act (CEQA) Applicability	Project
400-A	Application for Permit or Plan Approval	RECLAIM/Title V Amendment
500-A2	Title V Application Certification	Title V Amendment

### Rule 301 – Fees

The processing fees were determined using Rule 301, Updated May 4, 2018, as shown in Table 2.

**Table 2: Permit Processing Fees (Updated May 4, 2018)**

Equipment/Item	Rule 301 Table IA/IB Description	Schedule	Requested Permit Action	Fee
Selective Catalytic Reduction No. CCGT-1 (AN 579161)	Control Systems, two in series)	C	Change of Condition	\$2,763.20
Selective Catalytic Reduction No. CCGT-2 (AN 579166)	Control Systems, two in series)	C	Change of Condition	\$1,381.60
RECLAIM/ Title V Amendment Fee [Rule 301(c)(1)]				\$2,496.24
<b>Total</b>				<b>\$6,641.04</b>

Ms. Vicky Lee  
November 9, 2018  
Page 3 of 3

## CLOSING

In addition to the changes in equipment description requested in this application, AES would like to request that the reissued permit include the change of condition identified above

Should you have any questions or concerns, please contact me at (909) 861-2729.

Sincerely,



Greg Wolffe  
Principal Scientist  
Yorke Engineering, LLC  
[Gwolffe@YorkeEngr.com](mailto:Gwolffe@YorkeEngr.com)

cc: Stephen O'Kane, AES Southland  
Paul Liao, Yorke Engineering, LLC  
Beverly Kennedy, Yorke Engineering, LLC

### Enclosures:

1. Attachment 1 – SCAQMD Forms
2. Attachment 2 – Manufacturer's Data
3. Attachment 3 – Copy of Permit to Construct (dated April 18, 2017)

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## **ATTACHMENT 1 – SCAQMD FORMS**

**Form 400-A**

**Form 400-CEQA**

**Forms 400-E-9b**

**Form 500-A2**



South Coast Air Quality Management District

**Form 400-A****Application Form for Permit or Plan Approval**

List only one piece of equipment or process per form.

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

**Section A - Operator Information**

1. Facility Name (Business Name of Operator to Appear on the Permit):

AES Alamitos, LLC

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

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

115394

**Section B - Equipment Location Address**4. Equipment Location Is: ☒ Fixed Location ☐ Various Location  
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road

Street Address

Long Beach

, CA

90803

City

Zip

Stephen O'Kane

Manager

Contact Name

Title

5624937840

5624937737

Phone #

Ext.

Fax #

E-Mail: Stephen.okane@aes.com

**Section C - Permit Mailing Address**

5. Permit and Correspondence Information:

☒ Check here if same as equipment location address

Address

City

State

Zip

Contact Name

Title

Phone #

Ext.

Fax #

E-Mail:

**Section D - Application Type**6. The Facility Is: ☐ Not In RECLAIM or Title V ☐ In RECLAIM ☐ In Title V ☒ In RECLAIM & Title V Programs

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

7a. New Equipment or Process Application:

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

7b. Facility Permits:

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

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

- ☐ Administrative Change  
☐ Alteration/Modification  
☐ Alteration/Modification without Prior Approval \*  
☒ Change of Condition  
☐ Change of Condition without Prior Approval \*  
☐ Change of Location  
☐ Change of Location without Prior Approval \*  
☐ Equipment Operating with an Expired/Inactive Permit \*

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

579166

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

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

07/01/2017

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

06/01/2020

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

06/01/2020

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):  
Change of operating temperature of Selective Catalytic  
Reduction equipment10. For identical equipment, how many additional  
applications are being submitted with this application?  
(Form 400-A required for each equipment / process)

11. Are you a Small Business as per AQMD's Rule 102 definition?

(10 employees or less and total gross receipts are  
\$500,000 or less OR a not-for-profit training center)☒ No ☐ Yes12. Has a Notice of Violation (NOV) or a Notice to  
Comply (NC) been issued for this equipment?  
If Yes, provide NOV/NC#:☒ No ☐ Yes**Section E - Facility Business Information**13. What type of business is being conducted at this equipment location?  
Power Generation14. What is your business primary NAICS Code?  
(North American Industrial Classification System)

221112

15. Are there other facilities in the SCAQMD  
jurisdiction operated by the same operator?☐ No ☒ Yes16. Are there any schools (K-12) within  
1000 feet of the facility property line?☐ No ☒ Yes**Section F - Authorization/Signature**

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

17. Signature of Responsible Official:

18. Title of Responsible Official:

Manager

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

20. Print Name:

Stephen O'Kane

21. Date:

11/09/2018

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

23. Check List:

☐ Authorized Signature/Date☐ Form 400-CEQA☐ Supplemental Form(s) (ie., Form 400-E-xx)☐ Fees Enclosed

AQMD USE ONLY		APPLICATION TRACKING #		CHECK #		AMOUNT RECEIVED \$		PAYMENT TRACKING #		VALIDATION	
DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE		TEAM	ENGINEER	REASON/ACTION TAKEN	



South Coast Air Quality Management District

**Form 400-A****Application Form for Permit or Plan Approval**

List only one piece of equipment or process per form.

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

**Section A - Operator Information**

1. Facility Name (Business Name of Operator to Appear on the Permit): <b>AES Alamitos, LLC</b>	2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): <b>115394</b>
3. Owner's Business Name (If different from Business Name of Operator):	

**Section B - Equipment Location Address**

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

690 North Studebaker Road  
Street Address  
Long Beach, CA 90803  
City Zip  
Stephen O'Kane Manager  
Contact Name Title  
5624937840 5624937737  
Phone # Ext. Fax #  
E-Mail: Stephen.okane@aes.com

**Section C - Permit Mailing Address**

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

Address  
City State Zip  
Contact Name Title  
Phone # Ext. Fax #  
E-Mail:

**Section D - Application Type**

6. The Facility Is: ☐ Not In RECLAIM or Title V ☐ In RECLAIM ☐ In Title V ☒ In RECLAIM & Title V Programs

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

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

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

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

Existing or Previous Permit/Application  
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:  
**579161**

8a. Estimated Start Date of Construction (mm/dd/yyyy): 07/01/2017  
8b. Estimated End Date of Construction (mm/dd/yyyy): 06/01/2020  
8c. Estimated Start Date of Operation (mm/dd/yyyy): 06/01/2020

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):  
Change of operating temperature of Selective Catalytic Reduction equipment

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

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

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

**Section E - Facility Business Information**

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

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

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ☐ No ☒ Yes

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

**Section F - Authorization/Signature**

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

17. Signature of Responsible Official: 	18. Title of Responsible Official: Manager	19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) <input type="radio"/> No <input checked="" type="radio"/> Yes
20. Print Name: Stephen O'Kane	21. Date: 11/09/2018	22. Do you claim confidentiality of data? (If Yes, see instructions.) <input checked="" type="radio"/> No <input type="radio"/> Yes

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

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED \$	PAYMENT TRACKING #	VALIDATION				
DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN



The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project <sup>1</sup> has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines § 15060(a)]. Form 400-CEQA and the instructions for guidance on completing this form are available at <http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms> or <http://www.aqmd.gov/home/permits/permit-application-forms>. For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one Form 400-CEQA is necessary for the entire project. If you need assistance completing this form, contact Permit Services at (909) 396-3385.

**Section A – Facility Information****1. Facility Name** (Business Name of Operator to Appear on the Permit):

AES Alamos, LLC

**2. SCAQMD Facility ID:**

115394

**3. Project Description:**

Change permit condition D12.10 to alter operating temperature range.

**Section B – Review For Exemption From Further CEQA Action**

Check "Yes" or "No" as applicable. If "Yes" is checked for any question in Section B, skip Section C and proceed to page 2 and complete Section D - Signatures.

	Yes	No	Is this application for:
1.	<input type="radio"/>	<input checked="" type="radio"/>	A request for a change of operator only (without equipment or process change modifications)?
2.	<input type="radio"/>	<input checked="" type="radio"/>	A functionally identical permit unit replacement with no increase in equipment unit rating or emissions?
3.	<input type="radio"/>	<input checked="" type="radio"/>	A change of daily VOC permit limit to a monthly VOC permit limit?
4.	<input type="radio"/>	<input checked="" type="radio"/>	Equipment damaged as a result of a disaster during state of emergency?
5.	<input type="radio"/>	<input checked="" type="radio"/>	A Title V (e.g., SCAQMD Regulation XXX) permit renewal without equipment or process change modifications?
6.	<input type="radio"/>	<input checked="" type="radio"/>	A Title V administrative permit revision?
7.	<input type="radio"/>	<input checked="" type="radio"/>	The conversion of an existing permit into an initial Title V permit?

**Section C – Review of Impacts Which May Trigger Further CEQA Review**

Check "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	
1.	<input type="radio"/>	<input checked="" type="radio"/>	Is this project specifically evaluated in a previously certified or adopted CEQA document? If "Yes" is checked, attach a copy of the signed Notice of Determination to this form.
2.	<input type="radio"/>	<input checked="" type="radio"/>	Is this project specifically exempted from CEQA by another entity (e.g., city or agency)? If "Yes" is checked, attach a copy of the signed Notice of Exemption or other documentation from the entity to this form.
3.	<input type="radio"/>	<input checked="" type="radio"/>	Is this project part of a larger project? If "Yes" is checked, attach a separate sheet to briefly describe the larger project.
4.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound listed on Form 400-CEQA, Table 1 - Regulated Substances List and Threshold Quantities for Accidental Release Prevention [ <a href="http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms">http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms</a> ]? If "Yes" is checked, attach a separate sheet to identify each hazardous material and corresponding quantity to be transported, stored, or used.
5.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project emit any air toxic listed on Form 400-CEQA, Table 2 - Other Air Toxics and Their Screening Levels [ <a href="http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms">http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms</a> ] <sup>2</sup> ? If "Yes" is checked, attach a separate sheet to identify each air toxic and corresponding quantity to be emitted.
6.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project require any demolition, excavation, and/or grading construction activities that encompass an area exceeding 20,000 square feet?

<sup>1</sup> A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.


<sup>2</sup> Form 400-CEQA, Table 2 - Other Air Toxics and Their Screening Levels, contains a list of air toxics that either do not have a cancer potency (CP) or reference exposure level (REL) approved by the Office of Environmental Health Hazards Assessment (OEHA) or have a combination of OEHA-approved and non-approved CPs or RELs.

## Section C – Review of Impacts Which May Trigger Further CEQA (concluded)

	Yes	No	
7.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project utilize a boiler, engine, or other combustion equipment that uses fuel (e.g., gasoline, diesel, natural gas, liquefied petroleum gas (LPG), or landfill gas)? If "Yes" is checked, then the applicant will need to calculate the amount of GHGs from fuel use via on the Greenhouse Gas (GHG) online estimator [ <a href="http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms">http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms</a> ], and attaching the printout or by conducting hand calculations and providing the documentation. Refer to the Instructions for Form 400-CEQA for guidance.
8.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project utilize other types of equipment not addressed in Question 7 that require the use of, or will generate, any chemicals listed on Form 400-CEQA, Table 3 - Greenhouse Gases [ <a href="http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms">http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms</a> ]? If "Yes" is checked, attach a separate sheet to identify each equipment unit, the chemical name(s), and the quantity of each chemical identified.
9.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project include the open outdoor storage of dry bulk solid materials that could generate dust? If "Yes" is checked, include a plot plan with the application package.
10.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project result in or make worse noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements? For example, landfills, materials recovery/recycling facilities (MRF), and compost materials or other types of greenwaste (e.g., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to SCAQMD Rule 402 – Nuisance.
11.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project cause an increase of emissions from marine vessels, trains and/or airplanes?
12.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project increase demand for potable water at the facility by more than 262,820 gallons per day? The following examples identify some, but not all, types of projects that may result in a "Yes" answer to this question: 1) a project that generates steam; 2) a project that uses water as part of operating air pollution control equipment; 3) a project that requires water as part of the production process; 4) a project that requires a new, or the expansion of an existing, sewage treatment facility, new water lines, sewage lines, sewage hook-ups etc.; 5) a project where the water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; 6) a project that requires new or the expansion of existing, water supply and conveyance facilities; and, 7) a project that requires water to hydrotest pipelines, storage tanks etc. for structural integrity.
13.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project create an increase in the mass inflow of effluents to a public wastewater treatment facility that would require a new, or revision to an existing, National Pollutant Discharge Elimination System (NPDES) or other related permit at the facility?
14.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project result in the need for more than 350 new employees?
15.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project result in an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?
16.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project result in an increase in customer traffic by more than 700 visits per day?
17.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project result in temporary or permanent noise or vibration in excess of what is allowed by the applicable local noise ordinance?
18.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project create a permanent need for new or additional solid waste disposal? Check "No" if the projected potential amount of solid waste to be generated by the project is less than five tons per day.
19.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project create a permanent need for new or additional hazardous waste disposal? Check "No" if the projected potential amount of hazardous wastes to be generated by the project is less than 42 cubic yards per day (or equivalent in pounds).
20.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project include equipment that after installation or modification will change the visual character of the site and its surroundings or block views?
21.	<input type="radio"/>	<input checked="" type="radio"/>	Will the project have equipment that will create a new source of external lighting that will be visible at the property line?

## Section D – SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

1. Signature of Responsible Official of Firm: 		2. Title of Responsible Official of Firm: Manager	
3. Print Name of Responsible Official of Firm: Stephen O'Kane		4. Date Signed: 11/09/2018	
5. Phone # of Responsible Official of Firm: (562) 493-7840	6. Fax # of Responsible Official of Firm: (562) 493-7737	7. Email of Responsible Official of Firm: stephen.okane@aes.com	
8. Signature of Preparer, (If prepared by person other than responsible official of firm): 		9. Title of Preparer: Senior Engineer	
10. Print Name of Preparer: Paul Liao		11. Date Signed: 11/9/2018	
12. Phone # of Preparer: (949) 573-1859	13. Fax # of Preparer: (949) 248-8499	14. Email of Preparer: PLiao@YorkeEngr.com	

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND ANY ATTACHMENTS WITH FORM 400-A.



South Coast Air Quality Management District

**Form 400-E-5****Selective Catalytic Reduction (SCR) System,  
Oxidation Catalyst, and Ammonia Catalyst**

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

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

Facility Name (Business Name of Operator That Appears On Permit):

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

AES Alamitos, LLC

115394

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):

690 N. Studebaker Road, Long Beach, CA 90803

☒ Fixed Location ☐ Various Locations**Section B - Equipment Description****Selective Catalytic Reduction (SCR)**

SCR Catalyst	Manufacturer: <u>Cornmetech</u>	Catalyst Active Material: <u>Titanium/Vanadium/Tungsten</u>
	Model Number: <u>CCGT-1</u>	Type: <u>Non-selective</u>
	Size of Each Layer or Module: L: <u>1</u> ft. <u>6</u> in. W: <u>25</u> ft. <u>8.5</u> in. H: <u>71</u> ft. <u>7.2</u> in.	
	No. of Layers or Modules: _____ Total Volume: <u>1289</u> cu. ft. Total Weight: _____ lbs.	
Reducing Agent	<input type="radio"/> Urea <input type="radio"/> Anhydrous Ammonia <input checked="" type="radio"/> Aqueous Ammonia _____ % Injection Rate: _____ lb/hr	
Reducing Agent Storage*	Diameter: _____ ft. _____ in. Height: _____ ft. _____ in. Capacity: _____ gal Pressure Setting: _____ psia * A separate permit may be needed for the storage equipment.	
Space Velocity	Gas Flow Rate/Catalyst Volume: _____ per hour	
Area Velocity	Gas Flow Rate/Wetted Catalyst Surface Area: _____ ft/hr	
Manufacturer's Guarantee	NOx: _____ ppm %O <sub>2</sub> : _____ NOx: _____ gm/bhp-hr Ammonia Slip: _____ ppm @ _____ %O <sub>2</sub>	
Catalyst Life	_____ years (expected)	
Cost	Capital Cost: _____ Installation Cost: _____ Catalyst Replacement Cost: _____	

**Oxidation Catalyst**

Oxidation Catalyst	Manufacturer: _____	Catalyst Active Material: _____
	Model Number: _____	Type: _____
	Size of Each Layer or Module: L: _____ ft. _____ in. W: _____ ft. _____ in. H: _____ ft. _____ in.	
	No. of Layers or Modules: _____ Total Volume: _____ cu. ft. Total Weight: _____ lbs.	
Space Velocity	Gas Flow Rate/Catalyst Volume: _____ per hour	
Manufacturer's Guarantee	VOC: _____ ppm VOC: _____ gm/bhp-hr %O <sub>2</sub> : _____ CO: _____ ppm CO: _____ gm/bhp-hr %O <sub>2</sub> : _____	
Catalyst Life	_____ years (expected)	
Cost	Capital Cost: _____ Installation Cost: _____ Catalyst Replacement Cost: _____	

**Form 400-E-5****Selective Catalytic Reduction (SCR) System,  
Oxidation Catalyst, and Ammonia Catalyst**

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

**Section B - Equipment Description (cont.)****Ammonia Catalyst**

<b>Ammonia Catalyst</b>	Manufacturer: _____ Catalyst Active Material: _____
	Model Number: _____ Type: _____
	Size of Each Layer or Module: L: _____ ft. _____ in. W: _____ ft. _____ in. H: _____ ft. _____ in.
	No. of Layers or Modules: _____ Total Volume: _____ cu. ft. Total Weight: _____ lbs.
<b>Space Velocity</b>	Gas Flow Rate/Catalyst Volume: _____ per hour
<b>Manufacturer's Guarantee</b>	NH <sub>3</sub> : _____ ppm %O <sub>2</sub> : _____
<b>Catalyst Life</b>	_____ years (expected)
<b>Cost</b>	Capital Cost: _____ Installation Cost: _____ Catalyst Replacement Cost: _____

**Section C - Operation Information**

<b>Operating Temperature</b>	Minimum Inlet Temperature: _____ 600 °F (from cold start) Maximum Temperature: _____ 775 °F
	Warm-up Time: _____ hr. _____ min. (maximum)
<b>Operating Schedule</b>	Normal: _____ hours/day _____ days/week _____ weeks/yr
	Maximum: _____ hours/day _____ days/week _____ weeks/yr

**Section D - Authorization/Signature**

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

<b>Preparer Info</b>	Signature: <u>Beverly Kennedy</u> Date: <u>10/31/2018</u>	Name: _____
	Title: _____ Company Name: _____	Phone #: _____ Fax #: _____
	<u>Senior Scientist</u> <u>Yorke Engineering</u>	Email: _____
<b>Contact Info</b>	Name: <u>Paul Liao</u>	Phone #: _____ Fax #: _____
	Title: <u>Senior Engineer</u> Company Name: <u>Yorke Engineering</u>	Email: _____

**THIS IS A PUBLIC DOCUMENT**

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

**Section I - Operator Information**

1. Facility Name (Business Name of Operator That Appears On Permit):

AES Alamitos, LLC

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

115394

3. This Certification is

a. ☒ Title V Application (Initial, Revision or Renewal)

submitted with a (Check one):

b. ☐ Supplement/Correction to a Title V Applicationc. ☐ MACT Part 14. Is Form 500-C2 included with this Certification? ☐ Yes ☒ No**Section II - Responsible Official Certification Statement**

Read each statement carefully and check each that applies – You must check 3a or 3b.

## 1. For Initial, Permit Renewal, and Administrative Application Certifications:

a. ☒ The facility, including equipment that are exempt from written permit per Rule 219, is currently operating and will continue to operate in compliance with all applicable requirement(s) identified in Section II and Section III of Form 500-C1,i. ☐ except for those requirements that do not specifically pertain to such devices or equipment and that have been identified as "Remove" on Section III of Form 500-C1.ii. ☐ except for those devices or equipment that have been identified on the completed and attached Form 500-C2 that will not be operating in compliance with the specified applicable requirement(s).b. ☐ The facility, including equipment that are exempt from written permit per Rule 219, will meet in a timely manner, all applicable requirements with future effective dates.

## 2. For Permit Revision Application Certifications:

a. ☒ The equipment or devices to which this permit revision applies, will in a timely manner comply with all applicable requirements identified in Section II and Section III of Form 500-C1.

## 3. For MACT Hammer Certifications:

a. ☐ The facility is subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63), also known as the MACT "hammer." The following information is submitted with a Title V application to comply with the Part 1 requirements of Section 112(j).b. ☒ The facility is not subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63).**Section III - Authorization/Signature**

I certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX and that based on information and belief formed after reasonable inquiry, the statement and information in this document and in all attached application forms and other materials are true, accurate, and complete.

1. Signature of Responsible Official:

2. Title of Responsible Official:

Manager

3. Print Name:

Stephen O'Kane

4. Date:

11/09/2018

5. Phone #:

(562) 493-7840

6. Fax #:

(562) 493-7737

7. Address of Responsible Official:

690 N. Studebaker Road

Long Beach

CA

90803

Street #

City

State


Zip

**Acid Rain Facilities Only: Please Complete Section IV**

**Acid Rain facilities must certify their compliance status of the devices subject to applicable requirements under Title IV by an individual who meets the definition of Designated (or Alternate) Representative in 40 CFR Part 72.**

## Section IV - Designated Representative Certification Statement

**For Acid Rain Facilities Only:** I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

1. Signature of Designated Representative or Alternate: 	2. Title of Designated Representative or Alternate:  Manager
3. Print Name of Designated Representative or Alternate:  Stephen O'Kane	4. Date:  11/09/2018
5. Phone #:  (562) 493-7840	6. Fax #:  (562) 493-7737
7. Address of Designated Representative or Alternate: 690 N. Studebaker Road Long Beach CA 90803	
Street #	City State Zip



South Coast Air Quality Management District

**Form 400-A****Application Form for Permit or Plan Approval**

List only one piece of equipment or process per form.

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

1. Facility Name (Business Name of Operator to Appear on the Permit):

AES Alamitos, LLC

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

115394

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

**Section B - Equipment Location Address**4. Equipment Location Is: ☒ Fixed Location ☐ Various Location  
(For equipment operated at various locations, provide address of initial site.)

690 North Studebaker Road

Street Address

Long Beach

CA

90803

City

Zip

Stephen O'Kane

Manager

Contact Name

Title

5624937840

5624937737

Phone #

Ext.

Fax #

E-Mail: Stephen.okane@aes.com

**Section C - Permit Mailing Address**

5. Permit and Correspondence Information:

☒ Check here if same as equipment location address

Address

City

State

Zip

Contact Name

Title

Phone #

Ext.

Fax #

E-Mail:

**Section D - Application Type**6. The Facility Is: ☐ Not In RECLAIM or Title V ☐ In RECLAIM ☐ In Title V ☒ In RECLAIM & Title V Programs

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

**7a. New Equipment or Process Application:**

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

**7b. Facility Permits:**

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

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

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

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

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

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

07/01/2017

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

06/01/2020

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

06/01/2020

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

Title V/RECLAIM Permit amendment

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

11. Are you a Small Business as per AQMD's Rule 102 definition?

(10 employees or less and total gross receipts are  
\$500,000 or less OR a not-for-profit training center)☒ No ☐ Yes12. Has a Notice of Violation (NOV) or a Notice to  
Comply (NC) been issued for this equipment?  
If Yes, provide NOV/NC#:☒ No ☐ Yes**Section E - Facility Business Information**13. What type of business is being conducted at this equipment location?  
Power Generation14. What is your business primary NAICS Code?  
(North American Industrial Classification System)

221112

15. Are there other facilities in the SCAQMD  
jurisdiction operated by the same operator?☐ No ☒ Yes16. Are there any schools (K-12) within  
1000 feet of the facility property line?☐ No ☒ Yes**Section F - Authorization/Signature**

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

17. Signature of Responsible Official:

18. Title of Responsible Official:

Manager

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

20. Print Name:

Stephen O'Kane

21. Date:

11/09/2018

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

23. Check List:

☐ Authorized Signature/Date☐ Form 400-CEQA☐ Supplemental Form(s) (ie., Form 400-E-xx)☐ Fees Enclosed

AQMD USE ONLY		APPLICATION TRACKING #		CHECK #	AMOUNT RECEIVED	PAYMENT TRACKING #		VALIDATION	
DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

---

## ATTACHMENT 2 – MANUFACTURER’S DATA

Haldor Topsoe, Inc.  
17629 El Camino Real  
Suite 300  
Houston, Texas 77058

Main: 281-228-5000  
Fax: 281-228-5129  
[www.topsoe.com](http://www.topsoe.com)

September 7, 2017

To:  
Vogt Power International.  
Purchase Order referenced: V0010927  
Project Number: V17505 and V17506

**Subject: V17505 Huntington Beach / V17506 Alamitos Temperature Range**

This is to confirm that the catalyst to be provided for project V17505 Huntington Beach is designed according to emission datasheet V17505-SRNL-0001. The catalyst is designed for the operating temperature range found in referenced datasheet, 636 F to 738 F, and the flow conditions that correspond to those temperatures.


This is to confirm that the SCR catalyst to be provided for VPI projects V17505 Huntington Beach and V17506 Alamitos is capable of NO<sub>x</sub> reduction from 450°F to 800°F. Operation during startup could even begin as low as 300°F in certain cases. The guaranteed operation of this SCR catalyst is based on the specific operating cases provided in VPI document V17505-SRNL-0001 where the range of expected SCR temperatures is approximately 636-738°F with typical temperature variations.

Should you have any questions, please contact us.

Sincerely yours,  
HALDOR TOPSOE, INC.

*Craig Sharp*

Joseph (Craig) Sharp  
Account Manager  
SCR/Denox Catalyst and Technology



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**ATTACHMENT 3 – COPY OF PERMIT TO CONSTRUCT (DATED APRIL 18, 2017)**



**FACILITY PERMIT TO OPERATE  
AES ALAMITOS, LLC**

**SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, NO. CCGT-2, 236.645 MW GROSS AT 28 F  HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-2  GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-1				<i>RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO2: 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart K K K K, 7-6-2006]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1) -BACT, 12-6-2002]</i>	
CO OXIDATION CATALYST, NO. CCGT-2, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN A/N: 579161 Permit to Construct Issued: 04/18/17	C177	D173 C178			E74.1, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor  
(3) Denotes RECLAIM concentration limit  
(5) (5A) (5B) Denotes command and control emission limit  
(7) Denotes NSR applicability limit  
(9) See App B for Emission Limits  
(2) (2A) (2B) Denotes RECLAIM emission rate  
(4) Denotes BACT emission limit  
(6) Denotes air toxic control rule limit  
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
SELECTIVE CATALYTIC REDUCTION, NO. CCGT-2, CORMETECH, TITANIUM/VANADIUM/TUNGSTEN, 1289 CU.FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH A/N: 579161 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C178	C177 S180		NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.9, D12.10, D12.11, D29.4, E74.1, E193.4, E193.5
STACK, TURBINE NO. CCGT-2, HEIGHT: 140 FT ; DIAMETER: 20 FT A/N: 579143 Permit to Construct Issued: 04/18/17	S180	C178			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor  
(3) Denotes RECLAIM concentration limit  
(5) (5A) (5B) Denotes command and control emission limit  
(7) Denotes NSR applicability limit  
(9) See App B for Emission Limits  
(2) (2A) (2B) Denotes RECLAIM emission rate  
(4) Denotes BACT emission limit  
(6) Denotes air toxic control rule limit  
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



**FACILITY PERMIT TO OPERATE  
AES ALAMITOS, LLC**

**SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
SELECTIVE CATALYTIC REDUCTION, AUXILIARY BOILER, BABCOCK & WILCOX, VANADIUM, 46 CU.FT.; WIDTH: 5 FT 5 IN; HEIGHT: 3 FT 8 IN; LENGTH: 7 FT 3 IN WITH A/N: 579166 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C183	D181 S211		NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.16, D12.15, D12.16, D12.17, D29.4, E74.1, E193.4, E193.5
STACK, AUXILIARY BOILER, HEIGHT: 80 FT ; DIAMETER: 3 FT A/N: 579158 Permit to Construct Issued: 04/18/17	S211	C183			
<b>System 2: SIMPLE-CYCLE TURBINES (AEC SCGT POWER BLOCK)</b>					

- \* (1) (1A) (1B) Denotes RECLAIM emission factor  
(3) Denotes RECLAIM concentration limit  
(5) (5A) (5B) Denotes command and control emission limit  
(7) Denotes NSR applicability limit  
(9) See App B for Emission Limits  
(2) (2A) (2B) Denotes RECLAIM emission rate  
(4) Denotes BACT emission limit  
(6) Denotes air toxic control rule limit  
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



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## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D163, D164]

#### **D. Monitoring/Testing Requirements**

D12.9 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 44 and 242 pounds per hour, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

D12.10 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 570 degrees F and 692 degrees F, except during startups and shutdowns.



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**FACILITY PERMIT TO OPERATE**  
**AES ALAMITOS, LLC**

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**SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

- D12.11 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 1.6 inches water column.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 6-3-2011; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

- D12.12 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 110 and 180 pounds per hour, except during startups and shutdowns.



## Rodgers, Talila

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**From:** Vicky Lee <VLee1@aqmd.gov>  
**Sent:** Thursday, May 30, 2019 7:15 PM  
**To:** Stephen O'Kane  
**Cc:** Bhaskar Chandan; Rizaldy Calungcagin  
**Subject:** RE: AES Permit Clarifications/Questions - Alamitos (ID 115394)--Auxiliary Boiler Update & Other Items Discussion

**USE CAUTION: External Sender**

Stephen,

Auxiliary Boiler, item 4—I am working on the auxiliary boiler evaluation to (1) revise the manufacturer and model for the boiler and the burner, and (2) revise condition E193.10 to increase commissioning period from 30 hr to 100 hr. We are targeting to submit the evaluation package to EPA for the minor Title V revision next week. I will let you know if we have any further questions. The auxiliary boiler application is A/N 604014, and the RECLAIM/Title V Revision application is A/N 604013.

All Other Items—I have addressed each remaining item below. All items, except item 6, will be added to applications previously submitted. **A change of condition application for the SCR for the Auxiliary Boiler will be required for item 6. Another RECLAIM/Title V Revision application is not required because I will use A/N 610360.**

### Alamitos

1. A63.2 - compliance with the operational CO limits are based only on an emission factor, and not the CEMS. Compliance with this limit should be per the emission factor until the CEMS is certified.

**V. Lee:** A/N 610354 & 610355 are modification applications submitted on 2/8/19 for the two combined-cycle turbines to increase the number of annual operating hours. I will use these applications to revise condition A63.2.

2. A63.10 - compliance with the CO emission limit is by emission factor at all times. Compliance with the limits should be based on CEMS data after CEMS certification.

**V. Lee:** Condition **A63.3** is the corresponding condition for the simple-cycle turbines. A/N 610356, 610357, 610358, A/N 610359 are modification applications submitted on 2/8/19 for the four simple-cycle turbines to decrease the number of annual operating hours. I will use these applications to revise condition A63.3.

3. F52.2 - limits on SF6 are facility wide and not limited to any device ID. We have 12 existing and much larger SF6 breakers, which are meeting the leak rate in the ARB rule, however, total SF6 from the site is already well above this limit. This condition and annual total SF6 limit is acceptable for the new breakers installed, but can't accommodate the leaks from the existing breakers (which are not listed in our existing Title V permit) – already addressed in our Title V renewal application

**V. Lee:** Condition F52.2 requirements are for the new turbines and steam turbine generator at the Alamitos Energy Center. Because F52.2 is a facility condition, the facility permit program shows the condition in both Sections D (Permits to Operate) and H (Permits to Construct) with

the implication that the facility includes the Alamitos Generating Station and the utility boilers. I will revise condition F52.2 to define the "facility" as the Alamitos Energy Center.

4. E193.10 - we are limited to 30 hours of commissioning on the aux boiler. There is no limit in the HB permit. We'll likely need about 100 hours, although this doesn't impact emissions since the emission factors for commissioning and operations are the same, this impacts when commissioning is supposed to end and clock starts for CEMS certification (90 days after start of normal operations)—

**V. Lee:** This issue was addressed in earlier emails in this string.

5. D12.9 - NH3 injection rate. Our lowest NH3 injection rates could be much less than listed, a lower NH3 injection rate of 20 lbs/hr is appropriate. (turbines)

**V. Lee:** A/N 608431 and A/N 608432 are change of condition applications submitted on 11/9/18 for the two SCR/CO Catalysts for Combined-Cycle Turbines to revise condition D12.10 to change the exhaust temperature limit from 570 – 692 deg F to 600 – 775 deg F. I will use these applications to change condition D12.9, as follows: "The operator shall maintain the ammonia injection rate between ~~44~~20 and 242 pounds per hour, except during startups and shutdowns".

**Please e-mail me an explanation for the proposed change. I will include your explanation in my engineering evaluation.**

6. D12.15 - NH3 injection rate. Our higher NH3 injection rates should be consistent with Huntington Beach, a higher NH3 injection rate of 3.9 lbs/hr is appropriate. (aux boiler)

**V. Lee:** **A change of condition application is required to be submitted for the Auxiliary Boiler SCR (device C183), currently permitted under A/N 579166. Please include an explanation for the proposed change in the application.** The change to condition D12.15 will be: "The operator shall maintain the ammonia injection rate between 0.3 and ~~4.4~~ 3.9 pounds per hour." **The application should clearly state on the Form 400-A that the RECLAIM/Title V Revision was already submitted as A/N 610360. Otherwise, the data techs may return the application to you because a RECLAIM/Title V Revision was not submitted at the same time.**

Please submit the change of condition application (non-expedited) for the Auxiliary SCR soon. I am evaluating all the applications, except for Auxiliary Boiler (A/N 604014) and RECLAIM/Title V Revision application (A/N 604013), in one engineering evaluation. Our plan is to issue the revised permits prior to the first fire of the first combined-cycle combustion turbine, scheduled for October 3, 2019.

Vicky Lee  
Air Quality Engineer  
909-396-2284

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**From:** Stephen O'Kane [mailto:stephen.okane@aes.com]  
**Sent:** Friday, May 24, 2019 9:37 AM  
**To:** Vicky Lee <VLee1@aqmd.gov>  
**Cc:** Bhaskar Chandan <BChandan@aqmd.gov>; Rizaldy Calungcagin <RCalungcagin@aqmd.gov>  
**Subject:** Re: AES Permit Clarifications/Questions - Alamitos (ID 115394), A/N 604014--Auxiliary Boiler

Thank you Vicky

Stephen O'Kane  
562-508-0962

Mr. Joseph Douglas  
April 16, 2020



Attachment 2

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING AND PERMITTING</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 179	PAGE 1
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AES ALAMITOS, LLC  
690 N. STUDEBAKER RD  
LONG BEACH, CA 90803-2221

FACILITY ID: 115394

EQUIPMENT LOCATION: 690 N. Studebaker Rd  
Long Beach, CA 90803-2221

Contact: Stephen O’Kane, Manager, Sustainability and Regulatory Compliance

## COMBINED-CYCLE TURBINES NON-COLD START EMISSIONS INCREASE

### EQUIPMENT DESCRIPTION

#### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**Note:** *The evaluation packages for the following two Title V permit applications were submitted to EPA for review on 2/25/20.*

(1) A/N 612392—Title V renewal, and

(2) A/N 610360—Significant Revision

*Applications were submitted for the two Combined-Cycle Turbines, four Simple-Cycle Turbines, two SCR/CO Catalysts for the Combined-Cycle Turbines, and Aqueous Ammonia Storage Tank-1 (A/N 604015, 604018, 604020, 608431-608433, 610354-610360) (“Prior Application”). The significant revision proposed to increase the annual operating hours for the combined-cycle turbines and decrease the annual operating hours for the simple-cycle turbines, and various permit condition changes and administrative revision changes.*

*The applications under evaluation here (A/N 618933 (TV/RECLAIM Rev), 618934—Combined-Cycle Turbine No. 2, 618936—Combined-Cycle Turbine No. 1) propose to increase the emissions limit for the non-cold startup emissions for the combined-cycle turbines set forth in condition C1.3.*

For the applications under evaluation (A/N 618933, -934, -936), the changes to the facility permit shown below are to the draft facility permit for the **Prior Application**. For clarity, only the changes for the applications under evaluation are shown. (Although applications were not submitted for the SCR/CO Oxidation Catalyst Systems, the control equipment is included in the equipment descriptions below (smaller font) and in this evaluation as applicable to provide context.)

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Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
<b>PROCESS 12: INTERNAL COMBUSTION – POWER GENERATION</b>					
<b>SYSTEM 1: COMBINED-CYCLE TURBINES (AEC CCGT POWER BLOCK)</b>					
GAS TURBINE, NO. CCGT-1, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH  A/N: <del>610354</del> <b>618936</b>  GENERATOR, NO. CCGT-1 , 236.645 MW GROSS AT 28 F  HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-1  GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-2	D165   [B166]  [B167]  [B168]	C169	NOX: MAJOR SOURCE**	<b>CO:</b> 1.5 PPMV NATURAL GAS (4) [RULE 1303(a)(1)- BACT, 5-10-1996; RULE 1303(a)(1)- BACT, 12-6-2002; RULE 1703(a)(2)- PSD- BACT, 10-7- 1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982];  <b>CO2:</b> 120 LBS/MMBTU NATURAL GAS (8) [40 CFR 60 Subpart TTTT, 10-23-2015];  <b>CO2:</b> 1000 LBS/GROSS MWH NATURAL GAS (8A) [40 CFR 60 Subpart TTTT, 10-23-2015]  <b>NOx:</b> 2 PPMV NATURAL GAS (4) [RULE 1703(a)(2)- PSD-BACT, 10-7- 1988; RULE 2005, 12- 4-2015]; NOx: 8.35 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6- 2005]; NOx: 15 PPMV NATURAL GAS (8) [40 CFR 60 SUBPART KKKK, 3- 20-2009]; NOx: 16.66 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6- 2005];	A63.2, A99.1, A99.2, A195.8, A195.9, A195.10, A327.1, B61.1, C1.3, C1.4, D29.2, D29.3, D82.1, D82.2, E193.4, E193.5, E193.8, E193.11, E193.12, E193.14, E448.1, I297.1, K40.4

Combined-Cycle Turbines-Increase Non-Cold Start Emissions

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				<b>PM10:</b> 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 8.5 LB/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978];  <b>SO2:</b> (9) [40 CFR 72 – Acid Rain Provisions, 11-24-1997]; SO2: 0.06 LBS/MMBTU NATURAL GAS (8) [40 CFR 60 SUBPART KKKK, 3-20-2009]  <b>VOC:</b> 2 PPMV NATURAL GAS (4) [RULE 1303-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. CCGT-1, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN  A/N: 608431	C169	D165, C170			E193.5
SELECTIVE CATALYTIC REDUCTION, NO. CCGT-1, CORMETECH, TITANIUM/VANADIUM/TUNGSTEN, 1289 CU. FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH  A/N: 608431  AMMONIA INJECTION, AQUEOUS AMMONIA	C170  [B171]	C169, S172		<b>NH3:</b> 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.9, D12.10, D12.11, D29.4, E193.4, E193.5
STACK, TURBINE NO. CCGT-1, HEIGHT: 150 FT; DIAMETER: 20 FT  A/N: <del>610354</del> <b>618936</b>	S172	C170			

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING AND PERMITTING</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 179	PAGE 4
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GAS TURBINE, NO. CCGT-2, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH  A/N: <del>610355</del> <b>618934</b>	D173	C177	NOX: MAJOR SOURCE**	<b>CO:</b> 1.5 PPMV NATURAL GAS (4) [RULE 1303(a)(1)- BACT, 5-10-1996; RULE 1303(a)(1)- BACT, 12-6-2002; RULE 1703(a)(2)- PSD- BACT, 10-7- 1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982];  <b>CO2:</b> 120 LBS/MMBTU NATURAL GAS (8) [40 CFR 60 Subpart TTTT, 10-23-2015];  <b>CO2:</b> 1000 LBS/GROSS MWH NATURAL GAS (8A) [40 CFR 60 Subpart TTTT, 10-23-2015]  <b>NOx:</b> 2 PPMV NATURAL GAS (4) [RULE 1703(a)(2)- PSD-BACT, 10-7- 1988; RULE 2005, 12- 4-2015]; NOx: 8.35 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6- 2005]; NOx: 15 PPMV NATURAL GAS (8) [40 CFR 60 SUBPART KKKK, 3- 20-2009]; NOx: 16.66 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6- 2005];  <b>PM10:</b> 0.01 GRAINS/SCF (5A) [RULE 475, 10-8- 1976; RULE 475, 8-7- 1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7- 1981]; PM10: 8.5	A63.2, A99.1, A99.2, A195.8, A195.9, A195.10, A327.1, B61.1, C1.3, C1.4, D29.2, D29.3, D82.1, D82.2, E193.4, E193.5, E193.8, E193.11, E193.12, E193.14, E448.1, I297.2, K40.4
GENERATOR, NO. CCGT-2 , 236.645 MW GROSS AT 28 F	[B174]				
HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-2	[B175]				
GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-1	[B176]				

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING AND PERMITTING</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 179	PAGE 5
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				<b>LB/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978];</b>  <b>SO<sub>2</sub>: (9) [40 CFR 72 – Acid Rain Provisions, 11-24-1997]; SO<sub>2</sub>: 0.06 LBS/MMBTU NATURAL GAS (8) [40 CFR 60 SUBPART KKKK, 3-20-2009];</b>  <b>VOC: 2 PPMV NATURAL GAS (4) [RULE 1303-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</b>	
CO OXIDATION CATALYST, NO. CCGT-2, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN  A/N: 608432	C177	D173, C178			E193.5
SELECTIVE CATALYTIC REDUCTION, NO. CCGT-2, CORMETECH, TITANIUM/VANADIUM/TUNGSTEN, 1289 CU. FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH  A/N: 608432  AMMONIA INJECTION, AQUEOUS AMMONIA	C178  [B179]	C177, S180		<b>NH<sub>3</sub>: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</b>	A195.15, D12.9, D12.10, D12.11, D29.4, E193.4
STACK, TURBINE NO. CCGT-2, HEIGHT: 150 FT; DIAMETER: 20 FT  A/N: <del>610355</del> <b>618934</b>	S180	C178			

- (1) Denotes RECLAIM emission factor  
(3) Denotes RECLAIM concentration limit  
(5)(5A)(5B) Denotes command & control emission limit  
(7) Denotes NSR applicability limit  
(9) See App B for Emission Limits

- (2) Denotes RECLAIM emission rate  
(4) Denotes BACT emissions limit  
(6) Denotes air toxic control rule limit  
(8)(8A)(8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(10) See Section J for NESHAP/MACT requirements

\*\* Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING AND PERMITTING</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 179	PAGE 6
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### **FACILITY CONDITIONS**

*Note: All facility conditions appear in both Section D (Permits to Operate) and Section H (Permits to Construct). Conditions F9.1, F18.1, and F24.1 are existing facility conditions from Section D. The other conditions are conditions for the AEC.*

F2.1 The operator shall limit emissions from this facility as follows:

Contaminant	Emissions Limit
PM2.5	Less than 100 tons in any one year

The operator 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 operator 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

FF1 = Boiler No. 1 monthly fuel usage in mmscf; EF1 = 1.19 lb/mmscf

FF2 = Boiler No. 2 monthly fuel usage in mmscf; EF2 = 1.19 lb/mmscf

FF3 = Boiler No. 3 monthly fuel usage in mmscf; EF3 = 1.19 lb/mmscf

FF4 = Boiler No. 4 monthly fuel usage in mmscf; EF4 = 1.19 lb/mmscf

FF5 = Boiler No. 5 monthly fuel usage in mmscf; EF5 = 1.19 lb/mmscf

FF6 = Boiler No. 6 monthly fuel usage in mmscf; EF6 = 1.19 lb/mmscf

FF7 = Combined-Cycle Turbine No. CCGT-1 monthly fuel usage in mmscf; EF7 = 3.92 lb/mmscf

FF8 = Combined-Cycle Turbine No. CCGT-2 monthly fuel usage in mmscf; EF8 = 3.92 lb/mmscf

FF9 = Auxiliary Boiler monthly fuel usage in mmscf; EF9 = 7.42 lb/mmscf

FF10 = Simple-Cycle Turbine No. SCGT-1 monthly fuel usage in mmscf; EF10 = 7.44 lb/mmscf

FF11 = Simple-Cycle Turbine No. SCGT-2 monthly fuel usage in mmscf; EF11 = 7.44 lb/mmscf

FF12 = Simple-Cycle Turbine No. SCGT-3 monthly fuel usage in mmscf; EF12 = 7.44 lb/mmscf

FF13 = Simple-Cycle Turbine No. SCGT-4 monthly fuel usage in mmscf; EF13 = 7.44 lb/mmscf

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING AND PERMITTING</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 179	PAGE 7
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Any changes to these emission factors must be approved in advance by the South Coast AQMD in writing and be based on unit specific source tests performed using South Coast AQMD-approved testing protocol.

AES Alamos, LLC shall submit written reports of the monthly PM<sub>2.5</sub> 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 PM<sub>2.5</sub> compliance demonstration shall be maintained on site for at least five years and made available upon 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, 11-4-16]

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[RULE 401, 3-2-1984; RULE 401, 11-9-2001]

F18.1 *This condition sets forth the Acid Rain SO<sub>2</sub> Allowance Allocation for affected units, Boilers No. 1 - 6, applicable to calendar years 2010 and beyond.*

[40 CFR 73 Subpart B, 1-11-1993]

F24.1 Accidental release prevention requirements of Section 112(r)(7):

a). The operator shall comply with the accidental release prevention requirements pursuant to 40 CFR Part 68 and shall submit to the Executive Officer, as a part of an annual compliance certification, a statement that certifies compliance with all of the requirements of 40 CFR Part 68, including the registration and submission of a risk management plan (RMP).

b). The operator shall submit any additional relevant information requested by the Executive Officer or designated agency.

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[RULE 40 CFR 68 – Accidental Release Prevention, 5-24-1996]

*Note: Facility condition F24.1 is applicable to the four existing ammonia tanks (Devices D19, D151, D152, and D153) in Section D (Permits to Operate) for the AGS facility because they are permitted to contain 29% aqueous ammonia. This condition is not applicable to the two new ammonia tanks (Devices D163, D164) installed for the AEC project because they are permitted to contain 19% ammonia. Condition F24.1 will be removed from the facility permit after the four existing tanks are removed from the facility.*

F52.1 The facility is subject to the applicable requirements of the following rules or regulations(s):

The facility shall submit a detailed retirement plan for the permanent shutdown of Boilers Nos. 1, 2, 6 and 3 (Devices D39, D42, D3, and D45, respectively), describing in detail the steps and schedule that will be taken to render Boilers Nos. 1, 2, 6, and 3 permanently inoperable.

The retirement plan shall be submitted to South Coast AQMD within 60 days after Permits to Construct for Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Devices D185, D191, D197, and D203 respectively) are issued.

AES shall not commence any construction of the Alamitos Energy Center Project including Gas Turbines Nos. CCGT-1, CCGT-2, SCGT-1, SCGT-2, SCGT-3, and SCGT-4, unless the retirement plan is approved in writing by South Coast AQMD. If South Coast AQMD notifies AES that the plan is not approvable, AES shall submit a revised plan addressing South Coast AQMD's concerns within 30 days.

Within 30 calendar days of actual shutdown but no later than January 10, 2020, AES shall provide South Coast AQMD with a notarized statement that Boilers Nos. 1, 2, and 6 are permanently shut down and that any re-start or operation of the boilers shall require new Permits to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

AES shall notify South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boilers Nos. 1, 2, and 6, or advise South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2019.

AES shall cease operation of Boilers Nos. 1, 2, and 6 within 90 calendar days of the first fire of Gas Turbines No. CCGT-1 or CCGT-2, whichever is earlier.

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Within 30 calendar days of actual shutdown but no later than January 10, 2021 (unless the December 31, 2020 ~~OTC~~ **Once-Through Cooling Policy** compliance date is extended by **the** SWRCB), AES shall provide South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

In the event that the State Water Resources Control Board (SWRCB) extends the December 31, 2020 **Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling** (Once-Through Cooling Policy) compliance date for Boiler No. 3, AES shall: (1) Notify South Coast AQMD within 3 months of the approval of an extension, and (2) Within 30 calendar days of actual shutdown of Boiler No. 3, provide South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention of Significant Deterioration Program.

AES shall notify South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boiler No. 3, or advise South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2020.

AES shall cease operation of Boiler No. 3 within 90 calendar days of the first fire of Gas Turbines No. SCGT-1, SCGT-2, SCGT-3, or SCGT-4, whichever is earliest.

[RULE 1304(a)—Modeling and Offset Exemption, 6-14-1996; RULE 1313(d), 12-7-1995]

F52.2 The facility is subject to the applicable requirements of the following rules or regulations(s):

The “facility” is defined as the Alamitos Energy Center. The equipment includes Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2, common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4.

For all circuit breakers at the facility utilizing SF6, including the circuit breakers serving Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2; common Steam Turbine Generator; and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4, the operator shall install, operate, and maintain enclosed-pressure SF6 circuit breakers with a maximum annual leakage rate of 0.5 percent by weight. The circuit breakers shall be equipped with a 10 percent by weight leak detection system.

The leak detection system shall be calibrated in accordance with manufacturer’s specifications. The manufacturer’s specifications and records of all calibrations shall be maintained on site.

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The total CO<sub>2</sub>e emissions from all circuit breakers shall not exceed 74.55 tons per calendar year.

The operator shall calculate the SF<sub>6</sub> emissions due to leakage from the circuit breakers by using the mass balance in equation DD-1 at 40 CFR Part 98, Subpart DD, on an annual basis.

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

[RULE 1714, 12-10-2012, RULE 1714, 3-1-2019]

### **DEVICE CONDITIONS**

*Note: Pursuant to current agency requirements, references to “SCAQMD,” “District” or “AQMD” in the conditions have been updated to “South Coast AQMD” in the engineering evaluation. Depending on how the condition is programmed in the facility permit program, the engineer may not be able to implement some of the updates in the facility permit program until the facility permit program is re-programmed in the future.*

### **COMBINED-CYCLE TURBINES**

A63.2 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 95,023 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 13,314 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 6324 LBS IN ANY CALENDAR MONTH
PM2.5	Less than or equal to 6324 LBS IN ANY CALENDAR MONTH
SO <sub>x</sub>	Less than or equal to 3616 LBS IN ANY CALENDAR MONTH
CO	Less than or equal to 194717 LBS IN ANY ONE YEAR
VOC	Less than or equal to 63488 LBS IN ANY ONE YEAR

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PM10	Less than or equal to 55633 LBS IN ANY ONE YEAR
PM2.5	Less than or equal to 55633 LBS IN ANY ONE YEAR
SOx	Less than or equal to 10483 LBS IN ANY ONE YEAR

For the purposes of this condition, the above emission limits shall be based on the emissions from a single turbine.

The turbine shall not commence with normal operation until the commissioning process has been completed. Normal operation commences when the turbine is able to supply electrical energy to the power grid as required under contract with the relevant entities. The South Coast AQMD shall be notified in writing once the commissioning process for each turbine is completed.

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

The operator shall calculate the monthly emissions for CO, VOC, PM10, PM2.5, 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, 61.18 lb/mmcf; VOC, 8.86 lb/mmcf; PM10/PM2.5, 5.11 lb/mmcf; and SOx, 2.92 lb/mmcf.

For normal operation, the emission factors shall be as follows: VOC, 4.70 lb/mmcf; PM10/PM2.5, 3.92 lb/mmcf; and SOx, 2.24 lb/mmcf.

For normal operation, the CO emissions shall be measured with the 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, 15.28 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.

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Compliance with the annual emission limits shall be based on a 12-operating month-rolling-average basis, following completion of the commissioning period.

The emission factors for the monthly emission limits shall be the same as the emission factors used to demonstrate compliance with the annual emission limits, except the annual emission factor for SO<sub>x</sub> is 0.75 lb/mmcf.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1304.1, 9-6-2013; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]

[Devices subject to this condition: D165, D173]

- A99.1 The 16.66 lbs/mmcsf NO<sub>x</sub> emission limit(s) shall only apply during the turbine commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

[RULE 2012, 5-6-2005]

[Devices subject to this condition: D165, D173]

- A99.2 The ~~8.35~~ **8.79** lbs/mmcsf NO<sub>x</sub> emission limit(s) shall only apply during the interim period after commissioning but prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

[RULE 2012, 5-6-2005]

[Devices subject to this condition: D165, D173]

- A195.8 The 2.0 PPMV NO<sub>x</sub> emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

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[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173]

- A195.9 The 1.5 PPMV CO emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]

[Devices subject to this condition: D165, D173]

- A195.10 The 2.0 PPMV VOC emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[RULE 1303(a)(1)-BACT; 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

- A327.1 For the purpose of determining compliance with South Coast AQMD Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

[RULE 475, 10-8-1976; RULE 475, 8-7-1978]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

- B61.1 The operator shall not use natural gas containing the following specified compounds:

Compound	Range	Grain per 100 scf
H2S	Greater than	0.25

This concentration limit is an annual average based on monthly samples of natural gas composition or gas supplier documentation. Gaseous fuel samples shall be tested using South Coast AQMD Method 307-91 for total sulfur calculated as H2S.

[RULE 1303(a)(1)-BACT; 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

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C1.3 The operator shall limit the number of start-ups to no more than 62 in any one calendar month.

The number of cold startups shall not exceed 15 in any calendar month, with no more than 2 startups in any one day.

The number of cold startups shall not exceed 80 in any calendar year, and the number of startups shall not exceed 500 in any calendar year.

For the purposes of this condition, a cold startup is defined as a startup which occurs after the combustion turbine has been shut down for 48 hours or more. A cold startup shall not exceed 60 minutes. The NO<sub>x</sub> emissions from a cold startup shall not exceed 61 lbs. The CO emissions from a cold startup shall not exceed 325 lbs. The VOC emissions from a cold startup shall not exceed 36 lbs.

For the purposes of this condition, a non-cold startup is defined as a startup which occurs after the combustion turbine has been shut down less than 48 hours. A non-cold startup shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a non-cold startup shall not exceed 47 ~~32~~ lbs. The CO emissions from a non-cold startup shall not exceed 137 lbs. The VOC emissions from a non-cold startup shall not exceed 25 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173]

C1.4 The operator shall limit the number of shutdowns to no more than 62 in any one calendar month.

The number of shutdowns shall not exceed 500 in any calendar year.

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Each shutdown shall not exceed 30 minutes. The NOx emissions from a shutdown event shall not exceed 10 lbs. The CO emissions from a shutdown event shall not exceed 133 lbs. The VOC emissions from a shutdown event shall not exceed 32 lbs.

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173]

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NOx emissions	South Coast AQMD Method 100.1	1 hour	Outlet of the SCR serving this equipment
CO emissions	South Coast AQMD Method 100.1	1 hour	Outlet of the SCR serving this equipment
SOx emissions	South Coast AQMD Laboratory Method 307-91	South Coast AQMD Approved Averaging Time	Fuel Sample
VOC emissions	South Coast AQMD method 25.3 Modified	1 hour	Outlet of the SCR serving this equipment
PM10 emissions	EPA Method 201A/ South Coast AQMD Method 5.1	South Coast AQMD Approved Averaging Time	Outlet of the SCR serving this equipment
PM 2.5	EPA Method 201A and 202	South Coast AQMD Approved Averaging Time	Outlet of the SCR serving this equipment
NH3 emissions	South Coast AQMD Method 207.1	1 hour	Outlet of the SCR serving this

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| equipment

The test shall be conducted after South Coast AQMD approval of the source test protocol, but no later than 180 days after initial start-up. 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 to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, the combined-cycle turbine and steam turbine generating output in MW-gross and MW-net, and the simple-cycle turbine generating output in MW-gross and MW-net.

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

The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The sampling time for PM and PM2.5 tests shall be 4 hours or longer as necessary to obtain a measureable amount of sample.

The tests shall be conducted when the combined-cycle turbine is operating at loads of 45, 75, and 100 percent of maximum load, and the simple-cycle turbine is operating at loads of 50, 75, and 100 percent of maximum load.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by South Coast AQMD, the operator shall use South Coast AQMD Method 25.3 modified as follows:

- a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,
- b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and
- c) Analysis of Summa canisters per the canister analysis portion of South Coast AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

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The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified South Coast AQMD Method 25.3, nor does it mean that it may be used in lieu of South Coast AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
SOx emissions	South Coast AQMD Laboratory Method 307-91	South Coast AQMD Approved Averaging Time	Fuel Sample
VOC emissions	South Coast AQMD method 25.3 Modified	1 hour	Outlet of the SCR serving this equipment
PM10 emissions	EPA Method 201A/ South Coast AQMD Method 5.1	South Coast AQMD Approved Averaging Time	Outlet of the SCR serving this equipment

The test(s) shall be conducted at least once every three years.

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 when this equipment is operating at 100 percent of maximum load.

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For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by South Coast AQMD, the operator shall use Method 25.3 modified as follows:

- a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,
- b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and
- c) Analysis of Summa canisters per the canister analysis portion of South Coast AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified South Coast AQMD Method 25.3, nor does it mean that it may be used in lieu of South Coast AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

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

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002, RULE 1703(a)(2)-PSD-BACT, 10-7-1988]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

D82.1 The operator shall install and maintain a CEMS to measure the following parameters:

CO concentration in ppmv.

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

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

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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 operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

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

CO Emission Rate, lbs/hr =  $K * C_{co} * F_d [20.9 / (20.9\% - \%O_2 d)] [(Q_g * HHV) / 10E+06]$ , where:

1.  $K = 7.267 * 10E-08$  (lb/scf)/ppm
2.  $C_{co}$  = Average of four consecutive 15 min. average CO concentrations, ppm
3.  $F_d$  = 8710 dscf/MMBTU natural gas
4.  $\%O_2 d$  = Hourly average % by volume  $O_2$  dry, corresponding to  $C_{co}$
5.  $Q_g$  = Fuel gas usage during the hour, scf/hr
6. HHV = Gross high heating value of fuel gas, BTU/scf

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:

NO<sub>x</sub> concentration in ppmv.

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

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 REG XX CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

Rule 2012 provisional RATA testing shall be completed and submitted to the South Coast AQMD within 90 days of the conclusion of the turbine commissioning period. During the interim period between the initial start-up and the provisional certification date of the

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CEMS, the operator shall comply with the monitoring requirements of Rule 2012(h)(2) and 2012(h)(3).

[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015; RULE 2012, 5-6-2005]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

- E193.4 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

In accordance with all air quality mitigation measures stipulated in the final California Energy Commission decision for the 13-AFC-01 project.

[CA PRC CEQA, 5-12-2017]

[Devices subject to this condition: D163, D164, D165, C170, D173, C178, D181, C183, D185, C188, D191, C194, D197, C200, D203, C206, D209, D210]

- E193.5 The operator shall install this equipment according to the following requirements:

The Permit to Construct shall expire one year from the issuance date, unless an extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment.

Construction of Phase 1 of the project (defined as the combined cycle turbines and associated control equipment, the auxiliary boiler and associated control equipment, storage tank D163, and oil water separator D209) shall commence within 18 months from the date of the Permit to Construct, unless an extension is granted by the Permitting Authority.

Construction of Phase 2 of the project (defined as the simple cycle turbines and associated control equipment, storage tank D164, and oil water separator D210) shall commence within 18 months of June 30, 2022 unless an extension is granted by the Permitting Authority.

Construction shall not be discontinued for a period of 18 months or more at any time during Phase 1 or Phase 2.

[RULE 205, 1-5-1990, 40 CFR 52.21 – PSD, 6-19-1978]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle), D181 (auxiliary boiler), C169, C170, C177, C178 (combined-cycle control),

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C187, C188, C193, C194, C199, C200, C205, C206 (simple-cycle control), C183 (auxiliary boiler control), D163, D164 (ammonia tanks), D209, D210 (oil-water separators)]

- E193.8 The operator shall operate and maintain this equipment according to the following requirements:

Total commissioning hours shall not exceed 996 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 996 hours, commissioning hours without control shall not exceed 216 hours.

Two turbines may be commissioned at the same time.

The operator shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, and natural gas fuel usage.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2)-PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173]

- E193.11 The operator shall upon completion of the construction, operate and maintain this equipment according to the following requirements:

The 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall only apply if this turbine supplies greater than 1,481,141 MWh-net electrical output to a utility power distribution system on both a 12-operating-month and a 3-year rolling average basis.

Compliance with the 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT.

[40 CFR 60 Subpart TTTT, 10-23-2015]

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[Devices subject to this condition: D165, D173]

- E193.12 The operator shall upon completion of the construction, operate and maintain this equipment according to the following requirements:

The 120 lbs/MMBtu CO<sub>2</sub> emission limit shall only apply if this turbine supplies no more than 1,481,141 MWh-net electrical output to a utility power distribution system on either a 12-operating-month or a 3-year rolling average basis.

Compliance with the 120 lbs/MMBtu CO<sub>2</sub> emission limit shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT.

[40 CFR 60 Subpart TTTT, 10-23-2015]

[Devices subject to this condition: D165, D173]

- E193.14 The operator shall upon completion of the construction, operate and maintain this equipment according to the following requirements:

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

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

$$\text{GHG} = 61.41 * \text{FF}$$

Where GHG is the greenhouse gas emissions in tons of CO<sub>2</sub> and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO<sub>2</sub> emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO<sub>2</sub> emissions from this equipment shall not exceed 861,119 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO<sub>2</sub> emissions shall not exceed 916.01 lbs per gross megawatt-hours (inclusive of equipment degradation).

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

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[RULE 1714, 12-10-2012, RULE 1714, 3-1-2019]

[Devices subject to this condition: D165, D173]

E448.1 The operator shall comply with the following requirements:

The total electrical output on a gross basis from Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Device D185, D191, D197, and D203, respectively) shall not exceed 1094.7 MW-gross at 59 deg F.

The gross electrical output shall be measured at the single generator serving each of the combined-cycle turbines, the single generator serving the common steam turbine, and the single generator servicing each of the simple-cycle turbines. The monitoring equipment shall meet ANSI Standard No. C12 or equivalent, and have an accuracy of +/- 0.2 percent. The gross electrical output from the generators shall be recorded at the CEMS DAS over a 15-minute averaging time period.

The operator shall record and maintain written records of the maximum amount of electricity produced from this equipment and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD.

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

1297.1 This equipment shall not be operated unless the facility holds ~~108377~~ **112607** pounds of NOx RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 12-4-2015]

[Devices subject to this condition: D165]

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- I297.2 This equipment shall not be operated unless the facility holds ~~108377~~ **112607** pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 12-4-2015]

[Devices subject to this condition: D173]

- K40.4 The operator shall provide to the South Coast AQMD a source test report in accordance with the following specifications:

Source test results shall be submitted to the South Coast AQMD no later than 90 days after the source tests required by conditions D29.2, D29.3, and D29.4 are conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 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 exhaust flow rates shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, the fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]

[Devices subject to this condition: D165, D173 (combined-cycle), D185, D191, D197, D203 (simple-cycle)]

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### **BACKGROUND AND FACILITY DESCRIPTION**

**NOTE: This evaluation will follow the organization of the Final Determination Of Compliance (FDOC), issued on 11/18/16. The tables in this evaluation that were in the FDOC will have the same numbering as in the FDOC.**

#### **Existing Facility—Alamitos Generating Station (AGS)**

Southern California Edison (SCE) installed Utility Boiler No. 1 in 1956, No. 2 in 1957, No. 3 in 1961, No. 4 in 1962, No. 5 in 1969, and No. 6 in 1966. AB 1890 was adopted in 1996 and was the start of a process to deregulate electricity generation in California. As part of the deregulation process, the investor owned utilities, including SCE, were required to divest much of their conventional generation. Consequently, SCE sold the power plant to the AES Corporation in 1998.

AES Alamitos, LLC (AES) (ID 115394), a wholly owned subsidiary of The AES Corporation (AES), operates the existing Alamitos Generating Station (AGS), which consisted of six utility boilers (Units 1 - 6), six Selective Reduction Systems (SCRs), four aqueous ammonia tanks (29 wt. %), and Rule 219 exempt equipment. Update: As discussed below, Boilers Nos. 1, 2, and 6 were permanently retired as of 12/31/19.

The six electric utility boiler generators were permitted as summarized in the table below. The table is revised here to reflect the issuance of A/N 619108 to remove retired Boilers Nos. 1, 2, and 6 from the facility permit.

For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation, currently under EPA review, the facility had requested that condition F52.1 be revised to set the permanent shutdown date for Boilers Nos. 1, 2, and 6 as 12/31/19. AES has shut down these boilers as of 12/31/19, and has submitted all necessary documentation (including a notarized statement) required under Condition F52.1. The South Coast AQMD has verified that the subject boilers were shut down according to the approved boiler retirement plan. These boilers were retired to provide emission offsets to offset the generating capacity of the AEC's new Combined-Cycle Block, consisting of Turbines Nos. CCGT-1 (D165) and No. CCGT-2 (D173). The three boilers are required to be removed from the Title V/RECLAIM permit before AES can stop the RTU transmittals for the RECLAIM reporting.

**Table 1 – Existing Utility Boilers**

<b>Application No. (Permit No.)</b>	<b>Equipment Description (Device No.)</b>	<b>Rating</b>
A/N 408704 (F97795)	Boiler No. 1, Babcock and Wilcox, Natural Gas (D39)	<del>1785 MMBtu/hr, 175 MW</del>
A/N 408705 (F97796)	Boiler No. 2, Babcock and Wilcox, Natural Gas (D42)	<del>1785 MMBtu/hr, 175 MW</del>
A/N 408706 (F97797)	Boiler No. 3, Babcock and Wilcox, Natural Gas (D45)	3350 MMBtu/hr, 320 MW
A/N 408707 (F97798)	Boiler No. 4, Babcock and Wilcox, Natural Gas (D48)	3350 MMBtu/hr, 320 MW
A/N 408728	Boiler No. 5, Babcock and Wilcox,	4750 MMBtu/hr, 480 MW

Combined-Cycle Turbines-Increase Non-Cold Start Emissions

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(F97901)	Natural Gas (D51)	
A/N 408708 (F57292)	Boiler No. 6, Babcock and Wilcox, Natural Gas (D3)	4752.2 MMBtu/hr, 480 MW
<b>Total Generating Capacity</b>		<del>19,772.2 MMBtu/hr, 1950 MW</del> <b>11,450 MMBtu/hr, 1120 MW</b>

The AGS facility remains subject to Title V, Acid Rain, and RECLAIM (Cycle 1). The facility is in compliance with all federal, state, and local rules and regulations.

### **Alamitos Energy Center**

- **Permitting History of Alamitos Energy Center (AEC)**

On 12/20/13, AES Southland, LLC (AES), a wholly owned subsidiary of The AES Corporation, submitted applications for Permits to Construct a combined-cycle gas turbine project, the Alamitos Energy Center (original AEC). On 12/27/13, AES submitted an Application for Certification (AFC) for the original AEC to the California Energy Commission (CEC). This repowering project was proposed to replace the six utility boilers (Units 1 - 6) at the AGS. The original AEC project was to consist of four 3-on-1 combined-cycle gas turbine power blocks, with twelve natural-gas-fired combustion turbine generators, twelve heat recovery steam generators, twelve SCR and CO oxidation catalyst systems, and four steam turbine generators; two aqueous ammonia tanks; and three oil/water separators. The AEC was to have a net generating capacity of 1936 MW and a gross generating capacity of 1995 MW. In November 2014, AES received notice from Southern California Edison (SCE) that it was shortlisted for a power purchase agreement (PPA). The power plant configuration selected by SCE for a PPA was different from the project configuration proposed for the original AEC. Consequently, on December 17, 2014, AES requested the South Coast AQMD to cancel the permit applications.

On 10/23/15, AES Southland Energy, LLC (AES), a different wholly-owned subsidiary of The AES Corporation, submitted new applications for Permits to Construct an amended AEC in the configuration selected by SCE. On 10/26/15, AES submitted a Supplemental Application for Certification (SAFC) (13-AFC-01) for the amended AEC to the CEC. AES will construct, own, and operate the AEC, a natural-gas-fired, air-cooled, combined- and simple-cycle electrical generating facility with a gross generating capacity of 1094.702 megawatts (MW) and net generating capacity of 1072.67 MW. The proposed AEC will replace four existing electric utility boiler generator Units 1, 2, 3 and 6 with a new gas turbine generating system. The new generating system will consist of two natural gas-fired GE 7FA.05 combined-cycle gas turbine generators configured with a shared steam turbine generator, and four natural gas-fired GE LMS100PB simple-cycle turbine generators. The combined generating capacity of the AEC will be 1094.7 megawatts (MW) (nominal) which replaces most of the generating capacity of the existing Unit 1 (175 MW), Unit 2 (175 MW), Unit 3 (320 MW), and Unit 6 (480 MW), except for 55.3 MW. The new AEC will be equipped with air pollution control equipment, which consists of catalysts (selective catalytic reduction and oxidation catalysts). Additional new proposed equipment will include an

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auxiliary boiler equipped with selective catalytic reduction, two aqueous ammonia storage tanks, and two oil/water separators.

In February 2016, AES was informed that permit conditions will be included to limit annual emissions and cold start-ups on an annual and monthly basis. On 3/30/16, AES submitted proposed revisions to the applications that had been submitted on 10/23/15, primarily to increase the number of cold startups for the combined-cycle turbines on a monthly and annual basis. The revisions included revised emissions calculations and modeling, and incorporated revisions resulting from previous discussions with the South Coast AQMD over the course of permitting for the Huntington Beach Energy Project (HBEP) and AEC. The South Coast AQMD did not require new applications to be submitted to modify the applications submitted on 10/23/15. On 4/12/16, AES submitted revised sections for Air Quality, Biological Resources, and Public Health Assessment to the CEC to update the SAFC submitted on 10/26/15.

The South Coast AQMD issued the Preliminary Determination of Compliance (PDOC) and proposed revised Title V permit for the AEC project on 6/30/16. The original public notice was published on 7/8/16. The CEC made the Preliminary Staff Assessment (PSA) available on July 13, 2016. The South Coast AQMD reissued the PDOC and proposed Title V permit for renote on 11/10/16. The renote was to provide interested parties the opportunity to review the PDOC concurrently with the PSA. The second public notice was published on 11/17/16. The South Coast AQMD issued the Final Determination of Compliance (FDOC) package, including the Draft Facility Permit for FDOC, on 11/18/16, based on the original notice published on 7/8/16. The FDOC included an “Addendum—Responses To Comments Received” which set forth the written comments submitted by (1) AES Alamitos on July 19, 2016 and (2) Helping Hand Tools (Rob Simpson) on August 9, 2016, and the South Coast AQMD responses to these comments.

CEC released the Final Staff Assessment (FSA) Part 2 (Air Quality/Greenhouse Gas Emissions and Public Health) on 12/8/16. On 12/2/16, a Title V hearing request was submitted by Harvey Eder. On 12/20/16, the PDOC re-noticing public comment period ended. On 12/20/16, Bob Sarvey from Helping Hand Tools submitted a comment letter. On 1/13/17, South Coast AQMD sent a letter denying the Title V hearing to Harvey Eder. On 2/8/17, South Coast AQMD sent a response letter to Bob Sarvey. On 2/9/17, South Coast AQMD forwarded its response letter to Bob Sarvey’s comment letter to the EPA for a 45-day review. (The South Coast AQMD response letter to Bob Sarvey’s comment letter is not included in the “Addendum—Responses To Comments Received” in

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the FDOC, which was issued on 11/18/16. The FDOC was not revised as a result of Mr. Sarvey's comments.)

On 3/1/17, EPA provided early termination of review. On 3/27/17, the EPA 45-day review period would have ended absent the early termination. On 3/28/17, the public period (60 days) to petition EPA to object to the permit started, with an end date of 5/27/17.

The CEC issued the Presiding Member's Proposed Decision (PMPD) on 2/13/17. The CEC approved the SAFC for the amended AEC on 4/12/17 by adopting the Energy Commission Order, which in turn adopted the PMPD, Errata, and the Committee recommendations set forth therein for the SAFC. These adopted documents and recommendations comprise the Commission's Decision and were incorporated by reference into the Order. The Order was adopted, issued, effective, and final on 4/12/17.

- **Permits to Construct Issued**

On 4/18/17, the South Coast AQMD issued Permits to Construct for the following equipment for the Alamitos Energy Center. The cover letter explained that the permit would become effective May 22, 2017, unless a petition is filed with the EPA's Environmental Appeals Board (EAB), by that date pursuant to 40 CFR §124.19. In the event that a petition is filed with the EAB, construction of the facility is not authorized under this permit until resolution of the EAB petition(s). No EAB petition was filed.

**Note:** On 11/18/16, the South Coast AQMD issued the Final Determination of Compliance (FDOC) and the Draft Facility Permit for FDOC. Comments were received on the FDOC and draft facility permit. The *FDOC Addendum--Permits To Construct Issuance*, dated 4/18/17, lists and describes the minor equipment description and permit condition changes made to the Draft Facility Permit for FDOC that were incorporated into the Permits to Construct.

**Table 1A – Permits to Construct Issued**

Application No.	Equipment Description
579140	RECLAIM/Title V Significant Revision
579142	GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-1
579143	GE 7FA.05 Combined-Cycle Gas Turbine Generator, Unit CCGT-2
579145	GE LMS-100PB Simple-Cycle Gas Turbine Generator, Unit SCGT-1
579147	GE LMS-100PB Simple-Cycle Gas Turbine Generator, Unit SCGT-2
579150	GE LMS-100PB Simple-Cycle Gas Turbine Generator, Unit SCGT-3
579152	GE LMS-100PB Simple-Cycle Gas Turbine Generator, Unit SCGT-4
579158	Auxiliary Boiler
579160	Air Pollution Control Equipment, SCR/CO Catalyst for Turbine, Unit CCGT-1
579161	Air Pollution Control Equipment, SCR/CO Catalyst for Turbine, Unit CCGT-2
579162	Air Pollution Control Equipment, SCR/CO Catalyst for Turbine, Unit SCGT-1
579163	Air Pollution Control Equipment, SCR/CO Catalyst for Turbine, Unit SCGT-2

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Application No.	Equipment Description
579164	Air Pollution Control Equipment, SCR/CO Catalyst for Turbine, Unit SCGT-3
579165	Air Pollution Control Equipment, SCR/CO Catalyst for Turbine, Unit SCGT-4
579166	Air Pollution Control Equipment, SCR for Auxiliary Boiler
579167	Aqueous Ammonia Storage Tank for Combined-Cycle Turbines
579168	Aqueous Ammonia Storage Tank for Simple-Cycle Turbines
579169	Oil/Water Separator for Combined-Cycle Turbines
579170	Oil/Water Separator for Simple-Cycle Turbines

- **Permits to Construct Extension**

Because the AEC project is a multi-year, multi-phase project, condition E193.5 sets forth requirements for the extension of the expiration date for the Permits to Construct. As discussed below, AES is currently in compliance with the condition E193.5 requirements.

Condition E193.5 states in part: “The Permit to Construct shall expire one year from the issuance date, unless an extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment.” On 4/17/18, the South Coast AQMD extended the expiration date of the Permits to Construct from 4/17/18 to 4/17/19. The South Coast AQMD’s policy regarding multi-year projects is to grant a one-year permit to construct extension as long as the project proponent is meeting the increments of progress towards completing construction. AES had provided a permit extension request letter, dated 3/2/18, that indicated construction of the combined cycle units (Power Block 1) was initiated on August 7, 2017 and was currently on-going. Construction on Power Block 1 was expected to continue through to the 4<sup>th</sup> quarter of 2019. Construction of the simple cycle units (Power Block 2) was expected to begin in the third quarter of 2020. In addition, AES provided a major project milestones table. Based on the information provided, the South Coast AQMD extended the expiration date an additional year.

On 4/12/19, the South Coast AQMD extended the expiration date of the Permits to Construct to 4/17/20. AES had provided a permit extension request letter, dated 3/15/19, that reiterated construction of the combined cycle gas turbine generators (Power Block 1) was initiated on August 7, 2017 and was currently on-going. As of March 15, 2019, all above ground structures and equipment have been erected and placed on foundations. Construction of Power Block 1 is approximately 70 percent completed and is expected to continue through to the 4<sup>th</sup> quarter of 2019 followed by commissioning of the combined-cycle gas turbine generators. First fire of the first combined-cycle turbine is scheduled for October 3, 2019. **Update:** The construction of Power Block 1 continued into the 4<sup>th</sup> quarter of 2019. The first fire for Combined-Cycle Turbine No. 1 occurred on 10/3/19 and for Combined-Cycle Turbine No. 2 on 10/11/19. The commissioning of both turbines were completed on 12/31/19, with commercial operation scheduled to follow.

Construction of the simple cycle gas turbine generators (Power Block 2) was expected to begin in the third quarter of 2020 (a delay from May 2020 in the FDOC) after the combined cycle gas

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turbine generators have reached commercial operation. Construction of Power Block 2 could not commence until construction and commissioning of Power Block 1 was complete and existing AES Alamitos generating station units 1, 2 and 6 have been permanently retired from service. The start of construction of Power Block 2 is constrained by the space on the site dedicated to Power Block 1 construction activity and interconnection capacity in the switchyard serving the site. Based on the information provided, the South Coast AQMD extended the expiration date an additional year.

**Update:** As shown below in *Table 3 - AEC Schedule Major Milestones*, the start of construction of Power Block 2 has been postponed to third quarter 2022.

- **Project Description**

The Alamitos Energy Center (AEC) is permitted to consist of two gas turbine power blocks.

- **Power Block 1** consists of one 2-on-1 combined-cycle gas turbine (CCGT) power block with two natural-gas-fired combustion turbine generators (CTGs), two unfired heat recovery steam generators (HRSGs), an steam turbine generator (STG), and an air-cooled condenser. The CTGs are shown on the facility permit as No. CCGT-1 (D165) and No. CCGT-2 (D173). An auxiliary boiler (D181) equipped with an SCR (C183) provides enhanced startup times for the CTGs.

For the purpose of the equipment description on the facility permit, the applicable operating scenario is the scenario that yields the highest Btu/hr consumption for the turbine. From *Table 15 - Combined-Cycle Turbine Operating Scenarios*, below, the applicable operating scenario is Case 1, based on 100% load, 28 °F ambient temperature, and without inlet cooling. At those conditions, each combustion turbine generator is rated 236.645 MW-gross and 235.907 MW-net, at 28 °F. The steam generator is rated 219.615 MW-gross and 208.965 MW-net, at 28 °F.

For the purposes of Rule 1304(a)(2) compliance demonstration and Rule 1304.1 fee calculation, the applicable operating scenario is the scenario that yields the maximum gross output for the equipment (two combined-cycle turbines and the steam generator). The applicable operating scenario is Case 12, based on 100% load, 59 °F. At those conditions, each combustion turbine generator is rated 231.197 MW-gross and 230.459 MW-net, at 59 °F. The steam generator is rated 230.557 MW-gross and 215.402 MW-net, at 59 °F.

Two selective catalytic reduction (SCR) systems (C170, C178) and CO oxidation catalysts (C169, C177) are utilized for control of NO<sub>x</sub> and CO/VOC emissions, respectively. One 40,000-gallon ammonia (NH<sub>3</sub>) storage tank (D163) stores 19% aqueous ammonia which is the reducing agent in the SCRs. An oil/water separator (D209) is used to collect equipment wash water and rainfall. This power block is collectively the AEC CCGT and is located on the southern-most portion of the AEC site.

- **Power Block 2** will consist of four simple-cycle gas turbines (SCGTs) with intercoolers. The CTGs are shown on the facility permit as No. SCGT-1 (D185), No. SCGT-2 (D191), No.

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SCGT-3 (D197), and No. SCGT-4 (D203). For the purposes of the equipment description, Rule 1304(a)(2) compliance demonstration, and Rule 1304.1 fee calculation, the applicable scenario from *Table 31 - Simple-Cycle Turbine Operating Scenarios* is Case 12, based on 100% load, 59 °F. At those conditions, each combustion turbine generator is rated 100.438 MW-gross and 99.087 MW-net, at 59 °F. Four SCR/CO oxidation catalysts systems (C188/C187, C194/C193, C200/C199, C206/C205), a second 40,000-gallon aqueous ammonia tank (D164), and a second oil/water separator (D210) are included. This power block is collectively the AEC SCGT and will be located on the northern portion of the AEC site.

The AEC will meet the demand for new generation in the Los Angeles basin local electrical reliability area caused in large part by the closure of the San Onofre Nuclear Generating Station and anticipated retirement of older, natural-gas-fired generation currently using once-through ocean water cooling.

The California State Water Resources Control Board's *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (OTC Policy) was adopted on 5/4/2010 and became effective on 10/1/2010. The Policy applies to existing power plants that currently have the ability to withdraw cooling water from the State's coastal and estuarine waters using a single-pass system, also known as once-through cooling (OTC). The existing Utility Boilers at AGS use once-through ocean water cooling. The repowering will bring the AGS into compliance by the current facility compliance date of December 31, 2020 by eliminating the use of ocean water for once-through cooling at the site. The proposed combined-cycle combustion turbine generators will employ an air-cooled condenser for the steam turbine cycle heat rejection system, which receives exhaust water from the low-pressure section of the steam turbine and condense it to water for reuse. The proposed simple-cycle turbines will employ one air-cooled closed loop fluid cooler per two CTGs to reject waste heat from the intercooler and other gas turbine auxiliaries.

The technology for AEC will be configured and deployed as a multi-stage generating (MSG) asset designed to generate power across a wide range of capacity with relatively constant thermal efficiency and maximum operating flexibility. The project includes multiple generators, often termed "embedded generating units," whereby combinations of embedded generating units comprise the full operational capability for each power block, from minimum to maximum generating capacity. AEC will have the ability to generate power across a wide range of output from minimum turndown of a single AEC SCGT to maximum output of the entire project. The AEC CCGT, including the steam turbine generator, is designed to function in a 1-on-1 configuration at minimum load up to the maximum heat input of two combustion turbines and two HRSGs operating at 100 percent load.

AEC is being constructed on the brownfield site of the existing AGS, and located on an approximately 21-acre site within the larger 71.3-acre AGS parcel. The AGS parcel is bounded to the north by the SCE switchyard and State Route 22 (East 7<sup>th</sup> Street); to the east by the San Gabriel River and, beyond that, the Los Angeles Department of Water and Power Haynes Generating

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Station; to the south by the former Plains West Coast Terminals petroleum storage facility and undeveloped property; and to the west by the Los Cerritos channel, AGS cooling-water canals, and the residences west of the channel.

The demolition of the existing and operating Utility Boilers 1 – 6 is not necessary for the construction of AEC. These units will continue to provide essential electrical service concurrent with the construction of the AEC CCGT power block. Units 1, 2, and 6 will be retired once the AEC CCGT reaches the commissioning stage and become operational.

**Update:** For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation, currently under EPA review, the facility requested that condition F52.1 be revised to set the permanent shutdown date for Boilers 1, 2, and 6 as December 31, 2019. AES has shut down these boilers as of December 31, 2019, and has submitted all necessary documentation (including a notarized statement) required under Condition F52.1. The South Coast AQMD has verified that the subject boilers were shut down according to the approved boiler retirement plan.

Units 3, 4 and 5 may operate through December 31, 2020, the current facility compliance date imposed by the OTC Policy. **Update:** The State Water Board is planning to extend the OTC compliance date for Units 3, 4, and 5 to December 31, 2023. Any extension of the OTC compliance date for Unit 3, however, cannot go beyond 90-days of the start of operation of the simple-cycle gas turbines, which is currently identified as 4<sup>rd</sup> quarter 2023 (see *Table 2--AES Rule 1304(a)(2) Offset Plan* below). The **Prior Application** evaluation has updated condition F52.1 to reflect this possible extension of the OTC deadline.

The AEC facility will be federal Title V, Acid Rain, and RECLAIM facility (Cycle 1).

- **Modeling and Offset Exemption**

South Coast AQMD Rule 1304(a)(2) provides a modeling and offset exemption for utility boiler repower projects. The exemption applies to: “The source is replacement of electric utility steam boiler(s) with combined cycle gas turbine(s), intercooled, chemically-recuperated gas turbines, other advanced gas turbine(s); solar, geothermal, or wind energy or other equipment, to the extent that such equipment will allow compliance with Rule 1135 or Regulation XX rules. The new equipment must have a maximum electrical power rating (in megawatts) that does not allow basinwide electricity generating capacity on a per-utility basis to increase. If there is an increase in basin-wide capacity, only the increased capacity must be offset.” Offsets are provided from the South Coast AQMD internal offset accounts.

The initial purpose of this exemption was to facilitate the replacement of older, less efficient utility boilers and steam turbines with newer lower NO<sub>x</sub>-emitting gas turbines for electric power generating systems to comply with *Rule 1135—Emissions of Oxides of Nitrogen from Electric Power Generating Systems*. As the RECLAIM program subsequently superseded Rule 1135, the exemption was expanded to include modifications to comply with RECLAIM requirements.

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Rule 1304(a)(2) provides an exemption for new qualifying equipment, such as combined-cycle turbines and simple-cycle turbines with intercoolers, that have a maximum electrical rating (in megawatts) that is less than or equal to the maximum electrical rating (in megawatts) of the electric utility steam boiler(s) that the new equipment will replace. Both the new equipment and the existing electric utility boiler(s) must have the same owner and be located in the basin. This exemption is discussed in more detail under the rule analysis for *Rule 1303(b)(1)—Modeling*, below.

▪ **Condition F52.1—Retirement Plan**

Condition F52.1 sets forth requirements for the utility boilers retirement plan, permanent shutdown of the utility boilers, and first fire of the turbines to ensure compliance with Rule 1304(a)(2). The **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)** evaluation, currently under EPA review, discussed and implemented the following changes to condition F52.1.

F52.1 The facility is subject to the applicable requirements of the following rules or regulations(s):

The facility shall submit a detailed retirement plan for the permanent shutdown of Boilers Nos. 1, 2, 6 and 3 (Devices D39, D42, D3, and D45, respectively), describing in detail the steps and schedule that will be taken to render Boilers Nos. 1, 2, 6, and 3 permanently inoperable.

The retirement plan shall be submitted to ~~SCAQMD~~ **South Coast AQMD** within 60 days after Permits to Construct for Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Devices D185, D191, D197, and D203 respectively) are issued.

AES shall not commence any construction of the Alamos Energy **Center** Project including Gas Turbines Nos. CCGT-1, CCGT-2, SCGT-1, SCGT-2, SCGT-3, and SCGT-4, unless the retirement plan is approved in writing by ~~SCAQMD~~ **South Coast AQMD**. If ~~SCAQMD~~ **South Coast AQMD** notifies AES that the plan is not approvable, AES shall submit a revised plan addressing ~~SCAQMD~~ **South Coast AQMD's** concerns within 30 days.

Within 30 calendar days of actual shutdown but no later than ~~December 29, 2019~~ **January 10, 2020**, AES shall provide ~~SCAQMD~~ **South Coast AQMD** with a notarized statement that Boilers Nos. 1, 2, and 6 are permanently shut down and that any re-start or operation of the boilers shall require new Permits to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

AES shall notify ~~SCAQMD~~ **South Coast AQMD** 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boilers Nos. 1, 2, and 6, or advise

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SCAQMD South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to ~~December 29, 2019~~ **December 31, 2019**.

AES shall cease operation of Boilers Nos. 1, 2, and 6 within 90 calendar days of the first fire of Gas Turbines No. CCGT-1 or CCGT-2, whichever is earlier.

Within 30 calendar days of actual shutdown but no later than ~~December 31, 2020~~ **January 10, 2021 (unless the December 31, 2020 OTC compliance date is extended by SWRCB)**, AES shall provide SCAQMD South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

**In the event that the State Water Resources Control Board (SWRCB) extends the December 31, 2020 Once Through Cooling Policy compliance date for Boiler No. 3, AES shall: (1) Notify South Coast AQMD within 3 months of the approval of an extension, and (2) Within 30 calendar days of actual shutdown of Boiler No. 3, provide South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention of Significant Deterioration Program.**

AES shall notify SCAQMD South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boiler No. 3, or advise SCAQMD South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2020.

AES shall cease operation of Boiler No. 3 within 90 calendar days of the first fire of Gas Turbines No. SCGT-1, SCGT-2, SCGT-3, or SCGT-4, whichever is earliest.

[RULE 1304(a)—Modeling and Offset Exemption, 6-14-1996; RULE 1313(d), 12-7-1995]

On 4/2/20, the Water Board provided minor edits regarding nomenclature, which will be incorporated, as shown in condition F52.1 under Facility Conditions above.

➤ **Table 2 – AES Rule 1304(a)(2) Offset Plan**

The **Prior Application** evaluation updated FDOC Table 2, as reproduced below for reference.

**Table 2 – AES Rule 1304(a)(2) Offset Plan**

Project	Phase	First Fire or Shutdown Date	MW-gross
Huntington Beach Energy Project (HBEP)	Combined-Cycle Block <sup>a</sup>	<del>10/1/2019</del> <b>10/3/2019<sup>f</sup></b>	693.822
	HBGS Unit 1 Retired	<del>11/1/2019</del> <b>12/31/2019<sup>f</sup></b>	215

Combined-Cycle Turbines-Increase Non-Cold Start Emissions

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Project	Phase	First Fire or Shutdown Date	MW-gross
	RBGS Unit 7 Retired	<del>10/1/2019</del> <b>9/30/2019<sup>f</sup></b>	480
	Simple-Cycle Block <sup>b</sup>	11/1/2023	201.628
	HBGS Unit 2 Retired	12/31/2020	215
	MW Installed		895.45
	MW Retired		910
	Surplus MW		14.55
<b>Redondo Beach Energy Project (RBEP)</b>  <b>NOTE: REPOWERING PROJECT IS CANCELLED.</b>	<del>Combined Cycle Block<sup>c</sup></del>	<del>11/1/2019</del>	<del>546.4</del>
	<del>RBGS Unit 5 Retired</del>	<del>12/31/2019</del>	<del>175</del>
	<del>RBGS Unit 8 Retired</del>	<del>12/31/2019</del>	<del>480</del>
	<del>MW Installed</del>		<del>546.4</del>
	<del>MW Retired</del>		<del>655</del>
	<del>Surplus MW (HBEP &amp; RBEP)</del>		<del>123.15</del>
Alamitos Energy Center (AEC)	<del>Combined-Cycle Block<sup>c</sup></del>	<del>10/1/2019</del> <b>10/3/2019<sup>g</sup></b>	692.951
	<del>AGS Unit 1 Retired</del>	<del>12/29/2019</del> <b>12/31/2019<sup>g</sup></b>	175
	<del>AGS Unit 2 Retired</del>	<del>12/29/2019</del> <b>12/31/2019<sup>g</sup></b>	175
	<del>AGS Unit 6 Retired</del>	<del>12/29/2019</del> <b>12/31/2019<sup>g</sup></b>	480
	<del>AGS Unit 3 Retired</del>	<del>12/31/2020</del>	320
	<del>Simple-Cycle Block<sup>d</sup></del>	<del>6/1/2021</del> <b>11/1/2023<sup>g</sup></b>	401.751
	<del>MW Installed</del>		<del>1,094.702</del>
	<del>MW Retired</del>		<del>1150</del>
Total MWs	Total MW Installed		<del>2,536.552</del> <b>1990.152</b>
Installed and Retired	Total MW Retired		<del>2,715.00</del> <b>2060.00</b>

<sup>a</sup> Based on 65.8 F with evaporative coolers operating.

<sup>b</sup> ~~Based on 65.8 F with evaporative coolers operating.~~

<sup>c</sup> Based on 59 F without evaporative coolers operating.

<sup>d</sup> Based on 59 F without evaporative coolers operating.

<sup>e</sup> Based on 33 F without evaporative coolers operating.

<sup>f</sup> **Letter dated 5/10/19 from Stephen O'Kane to Sr. Manager Bhaskar Chandan re revised Boiler Retirement Schedule for the Huntington Beach Energy Project (Facility ID 115389).**

<sup>g</sup> **Letter dated 5/10/19 from Stephen O'Kane to Sr. Manager Bhaskar Chandan re revised Boiler Retirement Schedule for the Alamitos Energy Center (Facility ID 115394).**

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- **Proposed Schedule**

The **Prior Application** evaluation updated FDOC Table 3, as reproduced below for reference.

**Table 3 - AEC Schedule Major Milestones**

Activity	Dates	Commercial Operation
Demolition of Unit 7	January 2017 – May 2017	Not Applicable
Auxiliary Boiler Commissioning	<del>January 2020</del> <b>August 1, 2019<sup>a</sup></b>	Not Applicable
Construction of AEC CCGT.	<del>June 2017</del> <b>August 7, 2017<sup>b</sup> – March 2020</b> <b>Fourth Quarter 2019<sup>b</sup></b>	<del>Second</del> <b>First Quarter 2020</b> (April 1, 2020)
Construction of AEC SCGT.	<del>May 2020</del> <b>Third Quarter 2022<sup>c</sup> – August 2021</b> <b>December 2023<sup>c</sup></b>	<del>Third Quarter 2021</del> <b>First Quarter 2024<sup>d</sup></b>

<sup>a</sup> **E-mail, dated 8/1/19, from Jeff Miller, AES, to Vicky Lee regarding auxiliary boiler first fire.**

<sup>b</sup> **Letter, dated 3/15/19, from Stephen O’Kane to Sr. Manager Bhaskar Chandan re Permit to Construct Extension (Facility ID 115394).**

<sup>c</sup> **Letter dated 5/10/19 from Stephen O’Kane to Sr. Manager Bhaskar Chandan re revised Boiler Retirement Schedule for the Alamitos Energy Center (Facility ID 115394).**

<sup>d</sup> **E-mail dated 8/12/19 from Stephen O’Kane to Vicky Lee in response to request for updates to Table 3.**

**New South Coast AQMD Applications Submitted, 2/11/20**

On 2/11/20, AES submitted applications for the two combined-cycle turbines to increase the NOx emissions limit for non-cold starts set forth in condition C1.3 from 17 lbs to 32 lbs. Yorke Engineering provided an application document entitled *Modification of Non-Cold Start Emission Limit for Combined Cycle Gas Turbines*, dated February 2020.

In January 2020, AES completed the commissioning phase, including equipment performance and emission testing, of the two combined-cycle turbines. On 1/27/20 when performance and emission testing data first became available, AES first became aware the turbines could meet all emissions limits for normal operations, startups and shutdowns, except for the 17 lb mass emission limit for NOx during a non-cold start set forth in condition C1.3.

For the **FDOC**, the emission estimate of 17 lbs assumed a constant ramp-up in gas turbine load and fuel flow up to the point the combined-cycle turbines and associated SCR systems can control emission down to BACT levels. During the testing of these turbines, it was discovered that the gas turbines may have to halt the ramp-up while waiting for the electrical generator to synchronize to the electrical grid. The synchronization to the grid can occur within 10 seconds but may take as long as 5 or 6 minutes, thereby causing a significant increase to the total NOx mass emissions for a non-cold start, up to the proposed 32 lbs. See *Startup of Combined-Cycle Turbines* under **EMISSIONS CALCULATIONS** below for detailed discussion for the proposed increase in NOx emissions.

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On 2/5/20, AES filed a regular variance (Case No. 5278-2) to seek a variance to the 17 lb NO<sub>x</sub> non-cold startup emission limits in Condition C1.3 and is proposing a revised limit of 32 lbs NO<sub>x</sub> per non-cold startup event. The hearing date was scheduled for 3/18/20, but was postponed (continued) to April 28 due to the COVID-19 related restrictions on public meetings at the Hearing Board.

**Table 4 – Modification Applications**

Application No.	Submittal Date	Deemed Complete Date	Equipment Description	Fees
618936	2/11/20	2/21/20	Combined-Cycle Turbine CCGT-1 (A/N 579142)	\$22,654.60 * 1.5 (XPP) = \$33,981.90
618934	2/11/20	2/21/20	Combined-Cycle Turbine CCGT-2 (A/N 579143)	[\$22,654.60 * 0.5 (identical)] * [1.5 (XPP)] = \$16,990.95
618933	2/11/20	2/21/20	RECLAIM/Title V Revision	\$2,729.86
<b>Total Fees</b>				<b>\$53,702.71</b>

Fees are based on *Rule 301—Permitting and Associated Fees*, amended 7/12/19.

### **California Energy Commission**

The California Energy Commission (CEC) is the lead agency for licensing thermal power plants 50 megawatts and larger under the California Environmental Quality Act (CEQA) and has a certified regulatory program under CEQA. Under its certified program, the CEC is exempt from having to prepare an environmental impact report. Its certified program, however, does require environmental analysis of the project, including an analysis of alternatives and mitigation measures to minimize any significant adverse effect the project may have on the environment.

The CEC's certification process subsumes all requirements of local, regional, state, and federal agencies required for the construction of a new plant. The CEC coordinates its review of the proposed facility with the agencies that will be issuing permits to ensure that its certification incorporates the conditions that are required by these various agencies. As the AEC will be rated at greater than 50 megawatts, it is subject to the CEC's certification process.

As discussed above, on 12/27/13, AES submitted an *Application for Certification (AFC)* for the original AEC to the CEC. On 10/26/15, AES submitted a *Supplemental Application for Certification (SAFC)* (13-AFC-01) for the amended AEC. On 4/12/16, AES submitted revised sections for Air Quality, Biological Resources, and Public Health Assessment. On 4/12/17, the CEC approved the *Supplemental Application for Certification* for the amended AEC on 4/12/17 by adopting the Energy Commission Order.

On 4/4/19, AES submitted the *Petition for Post-Certification Amendment, Modification of Gas Turbine Operating Hours and Combined Cycle Gas Turbine (CCGT) Stack Height* to amend the CEC License. The **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation

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includes other application changes that were not included in the *Petition* and has been forwarded to the CEC.

### **PROCESS DESCRIPTION**

#### **A/N 618936, A/N 618934—Combined-Cycle Combustion Turbine Generators Nos. CCGT-1, CCGT-2 (permitted under A/N 579142, 579143)**

- **FDOC Summary**

The 2-on-1 combined-cycle gas turbine power block will consist of the following equipment:

- Two General Electric (GE) 7FA.05 natural-gas fired combustion turbine generators (CTGs). Each combustion turbine generator is rated 236.645 MW-gross and 235.907 MW-net, at 28 °F, and 231.197 MW-gross and 230.459 MW- net, at 59 °F ambient temperature. The CTGs will be equipped with evaporative coolers on the inlet air system and dry low NOx combustors, GE DLN 2.6. The use of the evaporative coolers is not intended as power augmentation (i.e., to produce additional power above rated nominal net capacity), but rather will be employed to mitigate CTG ambient condition degradation and to maintain the facility at or near the nominal generating capacity. The dry low-NOx combustors reduces the NOx concentrations to 9 ppm.
- One, single-flow, impulse, down exhaust condensing steam turbine generator (STG) rated 219.615 MW-gross and 208.965 MW-net, at 28 °F, and 230.557 MW-gross and 215.402 MW-net, at 59 °F.
- Two heat recovery steam generators (HRSGs) of the horizontal gas flow, triple-pressure, natural-circulation type. Each HRSG is equipped with an emission reduction system consisting of a CO catalyst and SCR in the outlet ductwork. The HRSGs will not employ supplemental firing.
- One air-cooled condenser and one closed-loop fin fan cooler.
- One 230-kV interconnection to the existing SCE switchyard, which is adjacent to the site.

Combustion air will flow through the inlet air filters, evaporative inlet air coolers, associated air inlet ductwork, and silencers before being compressed in the CTG's compressor section and then entering the CTG's combustion sections. Natural gas will be mixed with the compressed air prior to being introduced to the combustion sections and ignited. The hot combustion gases will expand through the power turbine section of the CTGs, causing them to rotate and drive the CTG compressors and two electric generators. The CTG exhaust gases of approximately 1,100 °F will be used to generate steam in the HRSGs. The hot combustion exhaust gases will exit the turbine sections and enter the HRSGs where they will heat water (feed water), converting it to superheated steam. The HRSGs will use a triple pressure design reheat system. High-pressure, intermediate-pressure, and low-pressure steam will be delivered to the steam turbine. As the steam expands as it passes through the steam turbine, the thermal energy is converted to mechanical energy as the

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turbine rotates and then converted to electrical energy as the steam turbine turns a third generator (STG). The low-pressure steam exiting the steam turbine will enter the air-cooled condenser, which will remove heat from the low-pressure steam (causing the steam to condense to water) and release the heat to the ambient air. The condensed water, or condensate will be returned to the HRSG feed water system for reuse. The combustion gases exiting the HRSG will enter the control equipment consisting of the oxidation catalyst and selective catalytic reduction system.

The use of an air-cooled condenser to condense exhaust steam from the STG will eliminate the significant water demand required for condensing STG exhaust steam in a conventional surface condenser/cooling tower arrangement. To condense steam in an air-cooled condenser, large fans blow ambient air across finned tubes through which low-pressure steam flows. The low-pressure steam is cooled until it condenses. The condensate is collected in a receiver located under the air-cooled condenser. Condensate pumps will return the condensate from the receiver back to the HRSGs for reuse.

AES reviewed electrical production rates over a range of site-specific ambient conditions and operating profiles for the combined-cycle turbines, which are summarized in *Table 15 - Combined-Cycle Turbine Operating Scenarios* (cases 1 - 14), below. For the AEC site, the maximum gross output for the equipment (two combined-cycle turbines and steam generator) occurs at 59 °F ambient conditions, without evaporative coolers operating (case 12). The maximum electrical production rates are incorporated in *Table 2 – AES Rule 1304(a)(2) Offset Plan*, above.

- **Application (A/N 618936, 618934)**

The proposed increase in the NO<sub>x</sub> emission limit for non-cold starts will not change the process description for the combined-cycle turbines.

## **EMISSIONS CALCULATIONS**

### **Alamitos Generating Station—Existing Facility**

Baseline emissions for the AGS are required to evaluate compliance with federal regulations, as discussed in the Rule Evaluation section below.

- **Potential to Emit Emissions**

FDOC Table 13 is reproduced below.

**Table 13 - Alamitos Generating Station Potential to Emit Emissions**

	<b>Boiler No. 1</b>	<b>Boiler No. 2</b>	<b>Boiler No. 3</b>	<b>Boiler No. 4</b>	<b>Boiler No. 5</b>	<b>Boiler No. 6</b>	<b>AGS Total</b>
CO (tpy)	2937.06	2937.06	3307.28	3307.28	4691.59	4691.59	21,871.86
NO <sub>x</sub> (tpy)	66.5	66.5	124.80	124.80	126.5	126.5	635.60
PM <sub>10</sub> (tpy)	56.6	56.6	106.20	106.20	150.7	150.7	627.0
PM <sub>2.5</sub> (tpy)	8.83	8.83	16.58	16.58	23.52	23.52	97.86
ROG (tpy)	41	41	76.86	76.86	109	109	453.72
SO <sub>2</sub> (tpy)	4.5	4.5	8.38	8.38	11.9	11.9	49.56

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	Boiler No. 1	Boiler No. 2	Boiler No. 3	Boiler No. 4	Boiler No. 5	Boiler No. 6	AGS Total
CO <sub>2</sub> (tpy)	914,554.06	914,554.06	1,716,389.96	1,716,389.96	2,434,814.44	2,434,814.44	10,131,516.92
CH <sub>4</sub> (tpy)	17.24	17.24	32.35	32.35	45.9	45.9	190.98
N <sub>2</sub> O (tpy)	1.7	1.7	3.24	3.24	4.59	4.59	19.06
CO <sub>2</sub> e (tpy)	915,491.66	915,491.66	1,718,164.23	1,718,164.23	2,437,329.76	2,437,329.76	10,141,971.30

- **Actual Emissions**

FDOC Table 14 is reproduced below.

**Table 14 – Alamos Generating Station Actual Emissions (2013 & 2014)**

		NO <sub>x</sub>	CO	ROG	PM <sub>10</sub> / PM <sub>2.5</sub>	SO <sub>x</sub>	CO <sub>2</sub> e
Year	Unit	lb/year (tpy)					tpy
<b>2013</b>	<b>1</b>	2,647	23,163	441	227	132	13,145
	<b>2</b>	4,433	64,091	457	830	249	24,677
	<b>3</b>	29,338	108,183	7,289	6,905	2,302	219,554
	<b>4</b>	18,576	14,976	3,298	4,656	2,328	219,662
	<b>5</b>	22,645	430,872	4,005	6,084	3,042	310,231
	<b>6</b>	17,642	72,405	1,786	2,848	1,553	154,020
<b>2014</b>	<b>1</b>	2,296	43,095	621	320	186	18,702
	<b>2</b>	9,794	252,396	1,350	2,454	736	73,661
	<b>3</b>	39,237	42,794	9,796	9,281	3,094	309,806
	<b>4</b>	29,729	1,743	4,938	6,972	3,486	349,018
	<b>5</b>	2,798	75,627	603	916	458	45,880
	<b>6</b>	10,750	22,257	1,347	2,148	1,171	117,162
<b>Total 2013</b>		95,284	713,690	17,276	21,550	9,606	941,292
<b>Total 2014</b>		94,604	437,913	18,656	22,090	9,131	914,231
<b>2-Year Average</b>		94,944 (47.47)	575,802 (287.90)	17,966 (8.98)	21,820 (10.91)	9,369 (4.68)	927,761

NO<sub>x</sub>, CO, ROG, PM<sub>10</sub>/PM<sub>2.5</sub>, and SO<sub>x</sub> are based on AGS's Annual Emissions Reports. CO<sub>2</sub>e emissions are based on actual gas usage.

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**Alamitos Energy Center—New Facility**

**A/N 618936, 618934—Combined-Cycle Combustion Turbine Generators Nos. CCGT-1, CCGT-2 (permitted under A/N 579142, 579143) (A/N 604015/A/N 610354 for CCGT-1, A/N 604018/610355 for CCGT-2 submitted to EPA for review on 2/25/20)**

The combined-cycle CTGs will emit combustion emissions consisting of criteria pollutants, toxic pollutants, and greenhouse gases. The two CTGs will have identical emissions. Emissions are based on manufacturer data and engineering estimates.

**A. Criteria Pollutants**

Emissions calculations for CTGs are complex because emissions from four operational modes must be considered.

▪ **Worst Case Operating Scenario**

To determine the worst case operating scenario that yields the highest controlled emissions, the applicant provided fourteen operating scenarios corresponding to a full range of possible turbine loads and ambient temperatures, which bound the expected normal operating range of each proposed CTG. The operating scenarios are for three load conditions (100%, 75%, and approximately 45%) at four ambient temperatures (28 °F, 59.0 °F, 65.3 °F, and 107 °F), and with or without evaporative cooling of the inlet air to the turbines.

The following table summarizes the operating scenarios data and is the same as *Table 15* in the FDOC.

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**Table 15 – Combined-Cycle Turbine Operating Scenarios**

Case No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CTG Load Level (%)	100	75	45	100	100	75	44	100	100	75	48	100	75	44
CTG Inlet Air Cooling	Off	Off	Off	On	Off	Off	Off	On	Off	Off	Off	Off	Off	Off
<b>Ambient Conditions</b>														
Ambient Temperature (°F)	28.0	28.0	28.0	65.3	65.3	65.3	65.3	107	107	107	107	59.0	59.0	59.0
Ambient Relative Humidity (%)	76%	76%	76%	87%	87%	87%	87%	11%	11%	11%	11%	60%	60%	60%
<b>Combustion Turbine Performance</b>														
Gross GTG Output, kW (one CTG)	236,645	177,484	106,017	229,659	227,708	170,781	101,102	217,778	194,136	145,602	92,797	231,197	173,398	101,727
Net CTG Output, kW (one CTG)	235,907	176,746	105,279	228,921	226,970	170,043	100,364	217,040	193,398	144,864	92,059	230,459	172,660	100,989
CTG Heat Input, MMBtu/hr (LHV) (one CTG)	2,052	1,619	1,245	2,029	2,019	1,568	1,179	1,942	1,754	1,403	1,126	2,032	1,582	1,182
CTG Heat Input, MMBtu/hr (HHV) (one CTG)	2,275	1,795	1,380	2,250	2,239	1,739	1,307	2,153	1,945	1,556	1,249	2,253	1,755	1,310
CTG Exhaust Temperature, °F (one CTG)	1,104	1,112	1,215	1,142	1,142	1,153	1,215	1,119	1,162	1,204	1,215	1,139	1,144	1,215
Gross 2x1 Combined-Cycle, kW	692,905	529,868	355,002	688,980	684,653	519,700	342,082	628,950	569,016	435,703	307,722	692,951	524,659	342,458
Net 2x1 Combined-Cycle, kW	680,779	516,621	344,352	672,444	668,221	505,408	331,820	612,912	554,506	423,721	297,721	676,320	510,231	332,184
Gross STG Output, kW	219,615	174,900	142,968	229,662	229,237	178,138	139,878	193,394	180,744	144,499	122,128	230,557	177,863	139,004
<b>Stack Parameters</b>														
Stack Exit Temperature, °F	216	178	170	213	215	175	170	221	223	198	184	209	174	170
Stack Diameter, ft.	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Stack Exit Velocity, ft/sec	67.0	51.2	40.0	66.0	66.2	48.9	38.8	66.3	59.9	46.0	39.9	65.6	49.3	38.7
<b>CTG Outlet/Catalyst Inlet concentrations</b>														
NOx, ppmvd (dry, 15% O <sub>2</sub> )	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
CO, ppmvd (dry, 15% O <sub>2</sub> )	7.08	7.27	7.52	6.97	7.01	7.10	7.59	7.24	7.31	7.28	8.12	7.02	7.17	7.62
VOC, ppmvd (dry, 15% O <sub>2</sub> )	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
<b>Catalyst Outlet/Stack Emissions Rates</b>														
NOx, 2.0 ppmvd (dry, 15% O <sub>2</sub> ) BACT, lb/hr as NO <sub>2</sub>	16.5	13.0	10.0	16.3	16.2	12.6	9.47	15.6	14.1	11.3	9.05	16.3	12.7	9.49

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CO, 1.5 ppmvd (dry, 15% O <sub>2</sub> ) BACT, lb/hr	7.53	5.94	4.57	7.44	7.41	5.76	4.33	7.13	6.44	5.15	4.13	7.46	5.81	4.34
VOC, 2.0 ppmvd (dry, 15% O <sub>2</sub> ) BACT, lb/hr	5.75	4.54	3.49	5.68	5.66	4.39	3.30	5.44	4.92	3.93	3.16	5.69	4.43	3.31
PM <sub>10</sub> /PM <sub>2.5</sub> , lb/hr (including ammonium sulfate, assuming 100% conversion from SO <sub>3</sub> ) <sup>1</sup>	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50
SO <sub>2</sub> short-term rate (0.75 grains/100 scf), lb/hr <sup>2</sup>	4.86	3.84	2.95	4.81	4.78	3.72	2.79	4.60	4.16	3.33	2.67	4.82	3.75	2.80
SO <sub>2</sub> long-term rate (0.25 grains/100 scf), lb/hr	1.62	1.28	0.98	1.60	1.59	1.24	0.93	1.53	1.39	1.11	0.89	1.61	1.25	0.93
SCR NH <sub>3</sub> slip, 5.0 ppmvd (dry, 15% O <sub>2</sub> ) BACT, lb/hr	15.3	12.0	9.26	15.1	15.0	11.7	8.77	14.4	13.0	10.4	8.38	15.1	11.8	8.79

<sup>1</sup> A percentage of the SO<sub>2</sub> in the turbine exhaust is assumed to oxidize to SO<sub>3</sub> in the CO catalyst and SCR. The SO<sub>3</sub> reacts with ammonia in the SCR to form ammonium sulfate particulates. Total PM<sub>10</sub> is comprised of the ammonium sulfate particulates and the PM<sub>10</sub> in the turbine exhaust.

<sup>2</sup> Southern California Gas Company, Rule No. 30-Transportation of Customer-Owned Gas, allows up to 0.75 gr. S/100 scf total sulfur.

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Case 1, based on 100% load, 28 °F ambient temperature, and without inlet cooling, is the worst case operating scenario that yields the highest controlled emissions. The emissions rates for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and the short-term SO<sub>2</sub> rate (0.75 grains/100 scf) were used to calculate the normal operation emissions component for the maximum daily emissions and maximum monthly emissions. Since Case 1 is the scenario that yields the highest Btu/hr consumption for each turbine, it is also the basis for the equipment description on the facility permit.

Case 4, based on 100% load, 65.3 °F ambient temperature, and with inlet cooling, is the worst case operating scenario that yields the highest emission rates for the average annual temperature. The emissions rates for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and the long-term SO<sub>2</sub> rate (0.25 grains/100 scf) were used to calculate the normal operation emissions component for maximum annual emissions. Condition B61.1 requires testing to confirm the long-term SO<sub>2</sub> rate of 0.25 grains/100 scf, which is expected to be the average content.

Case 12, based on 100% load, 59 °F ambient temperature, and without inlet cooling, yields the maximum gross output for the equipment (two combined-cycle turbines and the steam generator). This maximum rating is used for the purposes of Rule 1304(a)(2) compliance demonstration and Rule 1304.1 fee calculation.

The air dispersion modeling and health risk assessment analyses discussed below also refer to the case numbers from the above table.

▪ Four Operational Modes

CTGs operate in four operational modes: commissioning, start-up, shutdown, and normal operation. The emissions from the four operating modes are estimated differently.

The following provides an explanation of the four operating modes, and the proposed parameters and emissions associated with each mode. In AES Response Letter, dated 12/11/15, the applicant has clarified that the combustors are not expected to require tuning after commissioning.

Commissioning

- The **FDOC** provided a complete analysis of the commissioning emissions.
- The **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation reproduced the FDOC evaluation for commissioning emissions. Although no changes to commissioning emissions or schedule were requested, the commissioning emissions analysis were included for two reasons. One, the commissioning emissions were required to re-evaluate the 30-day averages. Maximum monthly emissions and 30-day averages for each pollutant are based on the higher of the emissions for a commissioning month or a normal operating month. Two, the

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commissioning emissions were required to re-evaluate the number of RECLAIM RTCs required by conditions I297.1 and I297.2.

- For **A/N 618933-618934, 618936**, AES did not request any changes to commissioning emissions or schedule. The commissioning for both combined-cycle turbines were completed on 12/31/19. The re-evaluation of the 30-day averages and the number of RECLAIM RTCs required by conditions I297.1 and I297.2 are discussed below.

An abbreviated version of FDOC Table 16 is reproduced below.

**Table 16 - Combined-Cycle Turbine Commissioning Activity Parameters and Emissions**

Activity	Duration (hr)	CTG Load (%)	Fuel Use (MMSCF/hr)	Fuel Use (MMSCF/Activity)	Reduction (%)			Total Controlled Emissions, lb				
					NOx (SCR)	CO (OxCat)	VOC (OxCat)	NOx	CO	VOC	SOx	PM <sub>10</sub> /PM <sub>2.5</sub>
Total for One CTG	996			1656.24				27,597	101,328	14,682	4,841	8,466

#### Startup of Combined-Cycle Turbines

For **A/N 618933-618934, 618936**, AES requested an increase in the NOx emission limit for non-cold starts set forth in condition C1.3 from 17 lbs to 32 lbs. AES is not requesting any other changes to the start-up limits in condition C1.3.

The Yorke Engineering *Modification of Non-Cold Start Emission Limit for Combined Cycle Gas Turbine* application document provided a discussion of the Proposed Modifications on pp. 7 – 9, as summarized below.

In January 2020, AES completed the commissioning phase, including equipment performance and emission testing, of the two combined-cycle turbines. On 1/27/20 when performance and emission testing data first became available, AES first became aware the turbines could meet all emissions limits for normal operations, startups and shutdowns, except for the 17 lb mass emission limit for NOx during a non-cold start set forth in condition C1.3.

For the **FDOC**, AES provided its best engineering estimates for NOx, CO, and VOC during startups and the time required to meet Minimum Emission Compliant Load (MECL) and BACT levels for these pollutants. These emission estimates assumed a constant ramp-up in gas turbine load and fuel flow up to the point the combined-cycle turbines and associated SCR systems can control emission down to MECL BACT levels. On 1/27/20, AES became aware that the gas turbines may have to halt the ramp-up to BACT levels while waiting for the electrical generator to synchronize to the electrical grid. The gas turbine must operate at the full-speed, no-load level, during which NOx is emitted at a relatively high rate, while

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waiting for the generator to synchronize with the electrical grid. The synchronization to the grid can occur within 10 seconds but may take as long as 5 or 6 minutes, depending on the voltage and frequency of the grid at the time. Although the data confirm the non-cold starts can meet the Condition 1.3 limit of 30 minutes, the wait for synchronization while the turbine is operating at an elevated NOx emission rate, will cause an increase to the total NOx mass emissions for a non-cold start.

On p. 8 of the Yorke Engineering *Modification of Non-Cold Start Emission Limit for Combined Cycle Turbines*, Figure 2-2: *Emission Profiles for Non-Cold Start Events* shows emission profiles for 26 non-cold start events to date at AES Alamitos and AES Huntington Beach (ID 115389) for the two combined-cycle turbines at each facility. Both facilities have the same combined-cycle gas turbine technology and have been commissioned and tested on the same schedule. As shown in Figure 2-2, the NOx emissions range from 16.5 pounds to 31.9 pounds per non-cold start. *Appendix B – Non-Cold Start Up Emissions Data*, provides AEC U1B – 1-Minute Data Report from 1/15/20 to 1/30/20, and AEC U1A – Minute Data Report from 1/15/20 to 1/24/20.

Therefore, condition C1.3 will be revised to increase the NOx emission limit for non-cold starts from 17 lbs to 32 lbs.

The following discussion on start-ups remains the same as for the **FDOC**.

A startup event occurs each time a CTG is started up. A startup begins with the initiation of combustion, and concludes when BACT emissions levels are achieved or the startup is aborted by a trip. During start-up operations, the turbine operates at elevated average concentration rates for NOx, CO, and VOC due to the phased-in effectiveness of the SCR and CO oxidation catalysts.

Two startup scenarios have been developed for the combined-cycle turbines.

- 1) For a **cold start event**, the combustion turbine and the steam generation system are all at ambient temperature at the time of the startup, which occurs when 48 hours or more has elapsed between a shutdown event and a system startup event. For the cold start event, the time from fuel initiation until reaching the baseload operating rate is expected to take up to 60 minutes.
- 2) A **non-cold start event** occurs less than 48 hours from a shutdown event. The time from fuel initiation until reaching the baseload operating rate is expected to take up to 30 minutes.

**Non-cold starts** include (a) **warm start events** that occur 10 hours or more but less than 48 hours from a shutdown event and (b) **hot start events** that occur less than

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10 hours of a shutdown event. Emissions and duration are the same for warm start events and hot start events.

*Shutdown of Combined-Cycle Turbines*

For **A/N 618933-618934, 618936**, AES did not request any changes to the shutdown limits in condition C1.4.

The following discussion on shutdowns remains the same as for the FDOC.

A shutdown event occurs each time a CTG is shut down. A shutdown starts at the initiation of the turbine shutdown sequence and ends with the cessation of turbine firing. Typically, during the shutdown process, the emission rates will be less than during the start-up process but may be slightly greater than during normal operation because the ammonia injection into the SCR reactor have ceased operation, but the SCR and CO catalysts remain at elevated temperatures and continue controlling for a portion of the shutdown.

The duration of a shutdown event is expected to take up to 30 minutes.

▪ *Startup/Shutdown Emissions*

The following table provides the durations and emissions for the three types of startup events and the shutdown event.

The **Prior Application** evaluation revised *Table 17* in the FDOC to designate warm starts and hot starts collectively as “non-cold starts.”

For **A/N 618933-618934, 618936**, the NO<sub>x</sub> emissions for a non-cold start will be increased from 17 lb to 32 lb.

**Table 17 – Combined-Cycle Turbine Start-up/Shutdown Emission Rates**

	Duration Minutes (hr)	NO <sub>x</sub> lb/event	CO lb/event	VOC lb/event	PM <sub>10</sub> lb/hr (lb/event)	PM <sub>2.5</sub> lb/hr (lb/event)	SO <sub>2</sub> lb/hr (lb/event)
Cold Start	60 (1.0)	61.0	325	36.0	< 8.50 (8.50)	< 8.50 (8.50)	Short-term: < 4.86 (4.86) Long-term: < 1.62 (1.62)
Non-Cold Start	30 (0.5)	<del>17.0</del> <b>32</b>	137	25.0	< 8.50 (4.25)	< 8.50 (4.25)	Short-term: < 4.86 (2.43) Long-term: < 1.62 (0.81)
Shutdown	30 (0.5)	10.0	133	32.0	< 8.50 (4.25)	< 8.50 (4.25)	Short-term: < 4.86 (2.43) Long-term: < 1.62 (0.81)

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▪ Startup/Shutdown Conditions

For **A/N 618933-618934, 618936**, the following analysis remains the same as for the FDOC, except that the NO<sub>x</sub> limit for non-cold starts will be increased in condition C1.3.

In lieu of requiring steady state BACT at all times, EPA accepted an alternative BACT which limits and minimizes emissions during periods when steady state BACT is not achievable, such as during startups and shutdowns. Condition no. C1.3 provides limits for startups, and condition no. C1.4 provides limits for shutdowns. The limits are necessary because condition nos. A195.8, A195.9, and A195.10 state that BACT for NO<sub>x</sub>, CO, and VOC, respectively, shall not apply during startups and shutdowns. The startup limits include: (1) number of cold starts per calendar month and year; (2) number of non-cold starts per calendar month and year; (3) number of starts per day; (4) duration of cold starts and non-cold starts; and (5) NO<sub>x</sub>, CO, and VOC emission limits per cold start and non-cold start. The shutdown limits include: (1) number of shutdowns per calendar month and year; (2) duration of shutdowns; and (3) NO<sub>x</sub>, CO, and VOC emission limits per shutdown.

Condition nos. C1.3 and C1.4 will remain the same as in the FDOC, except that the NO<sub>x</sub> limit for non-cold starts will be increased from the current 17 lb to 32 lb in condition C1.3.

Normal Operation

For **A/N 618933-618934, 618936**, the following analysis remains the same as for the FDOC.

Normal operation occurs after the CTGs, HRSGs, SCR/CO catalysts, and STG are working optimally. The emissions during normal operations are assumed to be fully controlled to BACT levels, and exclude emissions due to commissioning, startup and shutdown periods, which are not subject to BACT levels. NO<sub>x</sub> is controlled to 2.0 ppmvd, CO to 1.5 ppmvd, and VOC to 2.0 ppmvd, all 1-hr averages, at 15% O<sub>2</sub>.

• Maximum Daily, Monthly, Annual, NSR Emissions Calculations

For the **Prior Application** (**A/N 604015, 604018, 604020, 608431-608433, 610354-610360**) evaluation, the analysis for the maximum daily emissions, maximum monthly emissions, and associated emission factors and permit condition limits remained the same as for the FDOC.

For **A/N 618933-618934, 618936**, the changes to the FDOC resulting from the proposed increase in non-cold start NO<sub>x</sub> emissions from 17 lb to 32 lb are shown below.

▪ Maximum Daily Emissions per Turbine

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Maximum daily emissions during normal operations are calculated to determine whether BACT/LAER are applicable. The BACT/LAER analysis under *Regulation XIII—New Source Review* below explains that the applicability threshold is an increase of 1 lb/day of uncontrolled emissions for non-RECLAIM pollutants. This maximum daily emissions are based on realistic maximum daily emissions, not the 30-day averages. The 30-day averages are used for offsets, not BACT/LAER applicability.

As discussed below, *Rule 1303(a)(1)* requires BACT/LAER for NO<sub>x</sub> (non-RECLAIM), PM<sub>10</sub>, SO<sub>x</sub>, VOC, and ammonia. *Rules 1701(b)(1)* and *1703(a)(2)* require BACT/LAER for CO. *Rule 2005(c)(1)(A)* requires BACT/LAER for NO<sub>x</sub> for new RECLAIM facilities and *Rule 2005(c)(2)(A)* for existing RECLAIM facilities. For PSD pollutants at AEC, *Rule 1703(a)(2)* requires top-down PSD BACT analyses for NO<sub>x</sub> and PM<sub>10</sub> (with CO included for completeness).

▪ Commissioning Month

Maximum daily emissions for the commissioning month are not necessary to be determined because commissioning will take place once during the life of the turbines.

▪ Normal Operating Month

For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation, the maximum daily emissions remained the same as the FDOC.

For **A/N 618933-618934, 618936**, the maximum daily emissions are re-evaluated below. The normal operating emission rates are from *Table 15* (case 1) above, and the startup and shutdown emissions per event are from *Table 17 above*. The SO<sub>x</sub> emission rates are based on the short-term rate (0.75 grains/100 scf).

For strict BACT/LAER applicability for non-RECLAIM pollutants, the increase in daily emissions are based on uncontrolled emissions. As it is already known that the installation of a combined-cycle turbine requires BACT/LAER, the maximum controlled daily emissions for normal operations are shown in the table below.

The table shows that the maximum hourly emissions for NO<sub>x</sub> will **not** increase as a result of the proposed increase in non-cold start emissions because the maximum hourly emissions are based on cold start emissions, which will not increase. Therefore, the BACT/LAER analyses performed for the FDOC under *Rule 1303(a)(1)*, *Rule 2005(c)(1)(A)/(c)(2)(A)*, and *Rule 1703(a)(2)* will remain the same as the FDOC.

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**Table 18 - Combined-Cycle Turbine Maximum Daily Emissions**

Pollutants	No. of Normal Operating Hr	Normal Operation Emission Rate, lb/hr (Case 1)	No. of Cold Startups	Lb/cold Startup	No. of Non-Cold Startups	Lb/Non-Cold Startup	No. of Shutdowns	Lbs/Shutdown	Maximum Daily Emissions lb/day
NOx	21	16.5	2	61	0	<del>17</del> <b>32</b>	2	10	488.50 <b>(No Change)</b>
CO	21	7.53	2	325	0	137	2	133	1074.13
VOC	21	5.75	2	36	0	25	2	32	256.75
PM <sub>10</sub> /PM <sub>2.5</sub>	21	8.50	2	8.50	0	4.25	2	4.25	204.00
SOx	21	4.86	2	4.86	0	2.43	2	2.43	116.64

No. of normal operating hours = 24 hr/day – (2 cold start/day)(1.0 hr/cold start) - (0 non-cold start/day) (0.5 hr/non-cold start) - (2 shutdowns/day)(0.5 hr/shutdown) = 21 hr

Maximum Daily Emissions, lb/day = (no. normal operating hours) (normal emission rate, Case 1) + (no. starts, cold) (lb/startup, cold) + (no. startups, non-cold) (lb/startup, non-cold) + (no. shutdowns) (lb/shutdown)

- Maximum Monthly Emissions and Emission Factors per Turbine

Condition A63.2 specifies the monthly emissions limits for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SOx. Monthly limits are required to establish a basis for calculating offset requirements and ensure compliance with BACT requirements. RECLAIM rules do not allow a monthly limit for NOx. The monthly emissions for NOx, however, are indirectly limited by the monthly emissions limits for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SOx. The number of RECLAIM RTCs required are determined on an annual basis and reflected in conditions I297.1 and I297.2, as discussed below for the maximum annual emissions analysis.

The maximum monthly emissions and 30-day averages for each pollutant are based on the highest emissions of any month, including commissioning month(s), combination commissioning/normal operating month, and normal operating month. AES indicated there will be no combination commissioning/normal operating month. Therefore, the FDOC evaluated the maximum commissioning month(s) emissions and maximum normal operating month emissions only. In addition, the commissioning emission factors and normal operating emission factors are included in condition A63.2 for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SOx. The commissioning emission factor and the post-commissioning/pre-CEMS certification emission factor are included in conditions A99.1 and A99.2, respectively, for NOx.

- Commissioning Months

- Maximum Monthly Emissions, Commissioning

For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation, the maximum monthly emissions for commissioning remained the same as the FDOC.

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For **A/N 618933-618934, 618936**, the maximum monthly emissions for commissioning for all criterial pollutants, including NO<sub>x</sub>, will remain the same as for the FDOC because AES has not requested any changes to the commissioning.

*Table 19* below is the same as in the FDOC. The table summarizes the maximum monthly emissions for each pollutant from any one of the six months of commissioning. *Table 19* is included here because *Table 23* below compares the maximum commissioning month emissions with the maximum normal operating month emissions to determine the maximum monthly emissions limits and associated 30-day averages. Although condition no. A63.2 does not include a monthly limit for NO<sub>x</sub>, NO<sub>x</sub> is included in *Table 23* because the determination of 30-day averages for all pollutants, including RECLAIM pollutants, is required for the internal NSR Data Summary Sheet.

**Table 19 – Combined-Cycle Turbine Maximum Monthly Emissions, Commissioning**

Pollutants	Month	Commissioning Emissions, lb/month
NO <sub>x</sub>	One	14,293.5
CO	One	95,023.2
VOC	One	13,314.0
PM <sub>10</sub> /PM <sub>2.5</sub>	All months	1411
SO <sub>x</sub>	Five	809

- **Commissioning Emission Factors**

For **A/N 618933-618934, 618936**, the commissioning period emission factors in condition no. A63.2 for CO (61.18 lb/mmcf), VOC (8.86 lb/mmcf), PM<sub>10</sub>/PM<sub>2.5</sub> (5.11 lb/mmcf), and SO<sub>x</sub> (2.92 lb/mmcf), and in condition no. A99.1 for NO<sub>x</sub> (16.66 lb/mmcf) will remain the same as for the FDOC. As explained in the Rule 2012 analysis below, condition no. A99.1 specifies the interim emission factor for NO<sub>x</sub> for the commissioning period (no certified CEMS), during which the CTGs are assumed to be operating at uncontrolled and partially controlled levels. For each pollutant, the emission factor is calculated as the total emissions for the commissioning period divided by the total fuel usage for the commissioning period, both of which are shown in *Table 16 - Combined-Cycle Turbine Commissioning Activity Parameters and Emissions* above and both of which will remain the same as for the FDOC.

- **Normal Operating Month**

- **Maximum Normal Operating Month Emissions**

For the **FDOC**, the applicant requested (1) 674.5 normal operating hours, (2) 15 cold starts (15 hr total), (3) 12 warm starts (6 hr total), (4) 35 hot starts (17.5 hr total), and (5) 62 shutdowns (31 hr total), for a total of 744 hours per month. The normal operating emission rates are from *Table 15* (case 1) above, and the startup and shutdown emissions per event are from *Table 17* above. The SO<sub>x</sub> emission rates are based on the short-term rate (0.75 grains/100 scf). (In an e-mailed dated 2/2/16, AES clarified that

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0.75 grains/100 scf will be used for daily and monthly emissions, instead of the 0.25 grains/100 scf initially proposed.)

For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation, the maximum normal operating month emissions remained the same as the FDOC.

For **A/N 618933-618934, 618936**, the table below shows the maximum normal operating month emissions. The only change to *Table 21* in the FDOC is that the NOx emissions for a non-cold start will increased from 17 lb to 32 lb and therefore, the maximum normal operating month emissions for NOx will increase from 13,463.25 lb/month to 14,168.25 lb/month.

**Table 21 - Combined-Cycle Turbine Maximum Monthly Emissions, Normal Operations**

Pollutants	No. of Normal Operating Hours	Normal Operation Emission Rate, lb/hr (Case 1)	No. of Cold Starts	Lb/Cold Start	No. of Non-Cold Starts	Lb/Non-cold start	No. of Shut downs	Lb/Shut down	Maximum Monthly Emissions lb/month (tons/month)
NOx	674.5	16.5	15	61	47	<del>17</del> 32	62	10	<del>13,463.25 (6.73)</del> 14,168.25 (7.08)
CO	674.5	7.53	15	325	47	137	62	133	24,638.99 (12.32)
VOC	674.5	5.75	15	36	47	25	62	32	7577.38 (3.79)
PM <sub>10</sub> /PM <sub>2.5</sub>	674.5	8.50	15	8.50	47	4.25	62	4.25	6324.00 (3.16)
SOx	674.5	4.86	15	4.86	47	2.43	62	2.43	3615.84 (1.81)

Maximum Monthly Emissions, lb/month = (no. normal operating hours) (normal emission rate, Case 1) + (no. startups, cold) (lb/startup, cold) + (no. startups, non-cold) (lb/startup, non-cold) + (no. shutdowns) (lb/shutdown)

▪ **Normal Operating Emission Factors**

For **A/N 618933-618934, 618936**, the only change to *Table 22* in the FDOC, as shown below, is that normal operating emission factors in condition no. A99.2 for NOx will increase from 8.35 lb/mmscf to 8.79 lb/mmscf. As explained in the Rule 2012 analysis below, condition no. A99.2 specifies the interim emission factor for NOx for the normal operating period after commissioning has been completed but before the CEMS is certified, during which the CTGs are assumed to be operating at BACT levels. The emission factor is calculated as the maximum normal operating month emissions in *Table 21* divided by the total fuel usage for the month.

The normal operating emission factors are calculated as shown in the table below.

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**Table 22 - Combined-Cycle Turbine Normal Operating Emission Factors - Monthly Limits**

Pollutants	Maximum Monthly Emissions, lb/month ( <i>Table 21</i> )	Emission Factors, lb/mmcf
NOx	<del>13,463.25</del> <b>14,168.25</b>	<del>8.35</del> <b>8.79</b>
CO	24,638.99	15.28
VOC	7577.38	4.70
PM <sub>10</sub> /PM <sub>2.5</sub>	6324.0	3.92
SOx	3615.84	2.24

Emission factor, lb/mmcf = (lb/month) (month/1612 mmscf)

Where max monthly fuel usage = (744 hours, incl. startups/shutdowns)  
(2275 MMBtu/hr, Case 1) (mmscf/1050 MMBtu) = 1612 mmscf/month

▪ Permit Conditions—Monthly Emissions Limits

Condition no. A63.2 specifies the maximum monthly emissions limits per turbine for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SOx. For each pollutant, the maximum monthly emissions and 30-day averages for each pollutant are based on the higher of the emissions for a commissioning month (*Table 19*) or a normal operating month (*Table 21*). Although condition no. A63.2 will not include a monthly limit for NOx, it is included in the table below because the determination of 30-day averages for all pollutants, including RECLAIM pollutants, is required for the internal NSR Data Summary Sheet.

For A/N 618933-618934, 618936, the 30-day average for NOx will remain 476.45 lb/day for the NSR Data Summary Sheet.

**Table 23 – Combined-Cycle Turbine Maximum Monthly Emissions and Thirty-Day Averages**

Pollutants	Maximum Commissioning Month Emissions, lb/month (lb/day)	Maximum Normal Operating Month Emissions, lb/month (lb/day)	Maximum Monthly Emissions, lb/month	30-Day Averages, lb/day
NOx	14,293.5 lb/month (476.45 lb/day)	<del>13,463.25 lb/month</del> <b>14,168.25 lb/month</b> (448.78 lb/day) <b>(472.28 lb/day)</b>	14,294	476.45
CO	95,023.2 lb/month (3167.44 lb/day)	24,638.99 lb/month (821.30 lb/day)	95,023	3167.44
VOC	13,314.0 lb/month (443.8 lb/day)	7577.38 lb/month (252.58 lb/day)	13,314	443.8
PM <sub>10</sub> /PM <sub>2.5</sub>	1411 lb/month (47.03 lb/day)	6324.0 lb/month (210.8 lb/day)	6324	210.8
SOx	809 lb/month	3615.84 lb/month	3616	120.53

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	(27.0 lb/day)	(120.53 lb/day)		
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- Maximum Annual Emissions per Turbine

The **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*), proposed to increase the total annual operating hours by 1905 hours/turbine, from the permitted 4640 hr/turbine (**FDOC**) to 6545 hr/turbine, with no changes to the number of annual startups and shutdowns per turbine. The breakdown became (1) ~~4100 (FDOC)~~ 6005 hours of normal operation, (2) 80 cold starts (80 hr), (3) 420 non-cold starts (210 hr), and (5) 500 shutdowns (250 hr) for a total ~~4640 (FDOC)~~ 6545 hour for maximum annual emissions per turbine.

**A/N 618933-618934, 618936** proposes to increase the NO<sub>x</sub> emissions for the non-cold starts from 17 lb (**FDOC**) to 32 lb. The maximum annual emissions for the commissioning year and the maximum annual emissions for a normal operating year are calculated below.

- Commissioning Year

For the **FDOC**, the maximum annual emissions for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SO<sub>x</sub> set forth in condition A63.2 were based on a normal operating year. The condition specifies that compliance with the annual emission limits shall be based on a 12-operating month-rolling-average basis, following completion of the commissioning period.

The maximum commissioning year emissions were used only to determine the NO<sub>x</sub> RTC holding for the first year of operation as set forth in conditions I297.1 and I297.2. The NO<sub>x</sub> RTC holding requirement is not an enforceable emission limit because a RECLAIM facility has the flexibility to exceed the RTC holding requirement.

As discussed under the Rule 2005(c)(2) analysis below, the appropriate RTC holding condition is I297. This condition specifies the pounds of NO<sub>x</sub> RTCs that are required to be held in the facility's allocation account to offset the annual emissions for the first year of operation only. The first year of operation is the commissioning year.

The maximum commissioning year emissions were calculated by adding the total emissions for the six months of commissioning from *FDOC Table 16* to six months of maximum monthly normal operating emissions from *FDOC Table 21*. The calculations were shown in *FDOC Table 24 – Combined-Cycle Turbine Maximum Annual Emissions, Commissioning Year*. *FDOC Table 24* indicated that the maximum commissioning year NO<sub>x</sub> emissions will be 108,377 lb/yr, which were reasonably higher than the 83,850 lb/yr derived for a maximum normal operating year in *FDOC Table 25 - Combined-Cycle Turbine Maximum Annual Emissions, Normal Operating Year*. NO<sub>x</sub> emissions are typically higher for a commissioning year than for a normal operating year because of the uncontrolled emissions during the commissioning period. Accordingly, *FDOC* conditions I297.1 and I297.2 required each turbine to hold 108,377 pounds of RTCs per year.

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For the **Prior Application** evaluation, *Table 24 - Combined-Cycle Turbine Maximum Annual Emissions, Commissioning Year*, was the same as for the FDOC. The maximum annual emissions for a commissioning year remained the same as for the FDOC because both (1) the total emissions for the 6-month commissioning period and (2) the six months of maximum normal operating month emissions remained the same as for the FDOC. Therefore, conditions I297.1 and I297.2 continued to require each turbine to hold 108,377 pounds of RTCs per year.

For **A/N 618933-618934, 618936**, the maximum normal operating month emissions will increase from 13,463.25 lb/month to 14,168.25 lb/month as shown in revised *Table 21-- Combined-Cycle Turbine Maximum Monthly Emissions, Normal Operations* above. The changes to FDOC *Table 24* are shown below. Conditions I297.1 and I297.2 will be revised to require each turbine to hold ~~108,377~~ **112,607** pounds of RTCs the first year.

**Table 24 – Combined-Cycle Turbine Maximum Annual Emissions, Commissioning Year**

Pollutants	Commissioning Year Emissions, lb/yr (tpy)
NOx	(27,597 lb/commissioning) + ( <del>13,463.25</del> <b>14,168.25</b> lb/month)(6 normal operating months) = <del>108,377 lb/yr</del> <b>112,606.5 lb/yr</b> ( <del>54.19 tpy</del> <b>56.30 tpy</b> )
CO	(101,328 lb/commissioning) + (24,638.99 lb/month)(6 normal operating months) = 249,161.94 lb/yr (124.58 tpy)
VOC	(14,682 lb/commissioning) + (7577.38 lb/month)(6 normal operating months) = 60,146.28 lb/yr (30.07 tpy)
PM <sub>10</sub> /PM <sub>2.5</sub>	(8,466 lb/commissioning) + (6324.0 lb/month)(6 normal operating months) = 46,410.0 lb/yr (23.21 tpy)
SOx	(4,841 lb/commissioning) + (3615.84 lb/month)(6 normal operating months) = 26,536.04 lb/yr (13.27 tpy)

▪ **Normal Operating Year**

Because the monthly emissions limits in condition A63.2 are applicable each and every month, the annual emissions limits are the monthly emissions multiplied by twelve months, unless limited by permit condition. For power plants, the electric power demand is seasonal. The maximum monthly emissions are determined based on summer months when electric power demand is high. However, the same high demand is not required the rest of the year.

For the **FDOC**, the applicant requested (1 ) 4100 hours of normal operation, (2) 80 cold starts, (3) 88 warm starts, (4) 332 hot starts, and (5) 500 shutdowns, for a total of 4640 hours for maximum annual emissions per turbine. When warm starts and hot starts were updated to the term “non-cold starts,” the itemization becomes (1) 4100 hours of normal operation, (2) 80 cold starts (80 hr), (3) 420 non-cold starts (warm and hot) (210 hr), and (5) 500 shutdowns (250 hr), for a total of 4640 hours. The normal operation emission rates

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were from FDOC *Table 15* (case 4), and the startup and shutdown emissions per event from FDOC *Table 17*. The SOx emission rates were based on the long-term rate (0.25 grains/100 scf).

The **Prior Application** evaluation proposed to increase the total annual operating hours by 1905 hours per turbine, from the permitted 4640 hr per turbine to 6545 hr per turbine, with no changes to the number of annual startups and shutdowns per turbine. The breakdown became (1) ~~4100 (FDOC)~~ **6005** hours of normal operation, (2) 80 cold starts (80 hr), (3) 420 non-cold starts (210 hr), and (5) 500 shutdowns (250 hr) for a total ~~4640 (FDOC)~~ **6545** hour for maximum annual emissions per turbine.

**A/N 618933-618934, 618936** proposes to increase the NOx emissions for the non-cold start from 17 lb to 32 lb. The changes shown below are to *Table 25* for the **Prior Application**. The maximum NOx emissions will increase from 114,901.5 (57.45 tpy) to 121,201.5 (60.6 tpy).

**Table 25 - Combined-Cycle Turbine Maximum Annual Emissions,  
Normal Operating Year**

Pollutants	No. of Normal Operating Hours	Normal Operation Emission Rate, lb/hr (Case 4)	No. of Cold Starts	lb/cold start	No. of Non-Cold Starts	lb/non-cold start	No. of Shut downs	lb/shutdown	Maximum Annual Emissions lb/yr (tpy)
NOx	6005	16.3	80	61	420	<del>17</del> <b>32</b>	500	10	<del>114,901.5 (57.45 tpy)</del> <b>121,201.5 (60.6 tpy)</b>
CO	6005	7.44	80	325	420	137	500	133	194,717.2 (97.36)
VOC	6005	5.68	80	36	420	25	500	32	63,488.4 (31.74 tpy)
PM <sub>10</sub> /PM <sub>2.5</sub>	6005	8.50	80	8.50	420	4.25	500	4.25	55,632.5 (27.82 tpy)
SOx	6005	1.60	80	1.62	420	0.81	500	0.81	10,482.8 (5.24 tpy)

Maximum Annual Emissions, lb/yr = (no. normal operating hours) (normal emission rate, Case 4) + (no. startups, cold) (lb/startup, cold) + (no. startups, non-cold) (lb/startup, non-cold) + (no. shutdowns) (lb/shutdown)

- Permit Conditions—Annual Emissions Limits**

For **A/N 618933-618934, 618936**, the annual emission limits for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SOx for a normal operating year will remain the same as for the **Prior Application**. As with the monthly limits, an annual emissions limit may not be added for NOx because AEC will be a RECLAIM facility and such a limit is not allowed by RECLAIM rules. The annual emissions for NOx, however, are indirectly limited by the annual emissions limits for CO, VOC, PM<sub>10</sub>/PM<sub>2.5</sub>, and SOx. Additionally, the toxic pollutants and greenhouse gases are indirectly limited by these annual emissions limits.

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▪ New Source Review (NSR) Database Entries

For **A/N 618933-618934, 618936**, the 30-day averages for all pollutants remain the same as for the FDOC, pursuant to updated *Table 23* above.

This section develops the internal NSR Data Summary Sheet entries.

Operating Schedule: 52 wks/yr, 7 days/wk, 24 hr/day (annualized schedule)

The 30-day averages per turbine are from *Table 23*. The uncontrolled emissions (R1) and controlled emissions (R2) are back calculated from the 30-day averages for the purpose of input into the internal NSR Data Summary Sheet only.

NO<sub>x</sub>

$$R2 = (476.45 \text{ lb/day})(\text{day}/24 \text{ hr}) = 19.85 \text{ lb/hr}$$

$$R1 = (19.85 \text{ lb/hr})(9 \text{ ppm uncontrolled}/2 \text{ ppm controlled per case 1}) = 89.33 \text{ lb/hr}$$

$$30\text{-DA} = 476.45 \text{ lb/day}$$

CO

$$R2 = (3167.44 \text{ lb/day})(\text{day}/24 \text{ hr}) = 131.98 \text{ lb/hr}$$

$$R1 = (131.98 \text{ lb/hr})(7.08 \text{ ppm uncontrolled}/1.5 \text{ ppm controlled per case 1}) = 622.95 \text{ lb/hr}$$

$$30\text{-DA} = 3167.44 \text{ lb/day}$$

ROG

$$R2 = R1 \text{ (Appx. 0\% control efficiency per case 1)}$$

$$R2 = R1 = (443.8 \text{ lb/day})(\text{day}/24 \text{ hr}) = 18.49 \text{ lb/hr}$$

$$30\text{-DA} = 443.8 \text{ lb/day}$$

PM<sub>10</sub>

$$R2 = R1 = (210.8 \text{ lb/day})(\text{day}/24 \text{ hr}) = 8.78 \text{ lb/hr}$$

$$30\text{-DA} = 210.8 \text{ lb/day}$$

SO<sub>x</sub>

$$R2 = R1 = (120.53 \text{ lb/day})(\text{day}/24 \text{ hr}) = 5.02 \text{ lb/hr}$$

$$30\text{-DA} = 120.53 \text{ lb/day}$$

**B. Toxic Pollutants**

The toxic air pollutant (TAC) and hazardous air pollutant (HAP) emissions rates are used for the Rule 1401 health risk assessment (HRA) below. For **A/N 618933-618934, 618936**, the emissions rates, as shown in *Table 26* below, will remain the same as for **Prior Application** because the hourly emissions rates will remain the same. Also, the annual emissions rates will remain the same because the annual operating hours will remain 6545 hr/yr per turbine.

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**Table 26 - Combined-Cycle Turbine Toxic Air Contaminants/Hazardous Air Pollutants**

Compound	CAS	TAC/HAP	Emission Factor <sup>1</sup> (Lb/MMBtu)	Lb/hr	Lb/yr	TPY
Ammonia <sup>5</sup>	766417	TAC		15.74	101,879.79	50.94
Acetaldehyde <sup>2</sup>	75070	TAC & HAP	1.76E-04	0.39	2591.25	1.30
Acrolein <sup>2</sup>	107028	HAP & TAC	3.62E-06	0.008	53.30	0.03
Benzene <sup>2</sup>	71432	HAP & TAC	3.26E-06	0.0072	48.0	0.024
1,3-Butadiene	106990	HAP & TAC	4.3E-07	0.0010	6.33	0.0032
Ethylbenzene	100414	HAP & TAC	3.2E-05	0.071	471.14	0.24
Formaldehyde <sup>2</sup>	50000	HAP & TAC	3.6E-04	0.80	5300.27	2.65
Hexane	110543	HAP & TAC	Not available	--		--
Naphthalene	91203	HAP & TAC	1.3E-06	0.0029	19.14	0.0096
PAHS (excluding naphthalene) <sup>3, 4</sup>	1151	HAP & TAC	(2.2E-06 – 1.3E-06) * 0.5 = 0.45E-06	0.0010	6.63	0.0033
Propylene (propene) <sup>5</sup>	115071	TAC	Not available			--
Propylene Oxide	75569	HAP & TAC	2.9E-05	0.063	426.97	0.21
Toluene	108883	HAP & TAC	1.3E-04	0.29	1913.99	0.96
Xylene	1330207	HAP & TAC	6.4E-05	0.14	942.27	0.47
Total Annual HAPS Emissions per Combined-Cycle Turbine, TPY					11,779.29	5.90
Total Annual Toxic Air Contaminants Emissions per Combined-Cycle Turbine, TPY						56.84

- <sup>1</sup> Emission factors based on AP-42, Section 3.1, Final Section, Table 3.1-3--Emission Factors for Hazardous Air Pollutants from Natural Gas-Fired Stationary Gas Turbine (Uncontrolled), April 2000, unless otherwise noted in footnote 2.
- <sup>2</sup> Acetaldehyde, acrolein, benzene, and formaldehyde emission factors are based on AP-42, Section 3.1, Background Information, Table 3.4-1--Summary of Emission Factors for Natural Gas-Fired Gas Turbines, April 2000. These emission factors include control by CO catalyst.
- <sup>3</sup> Carcinogenic PAHs only. Naphthalene was subtracted from the total PAHs and considered separately in the HRA.
- <sup>4</sup> Per Section 3.1.4.3 of AP-42, PAH emissions were assumed to be controlled by 50 percent by the oxidation catalyst.
- <sup>5</sup> Ammonia and propylene are toxic air contaminants for the purpose of Rule 1401, but not federal hazardous air pollutants.

The hourly and annual emissions are calculated as follows:

For compounds other than ammonia

Hourly emissions, lb/hr = (Emission Factor) (maximum hourly heat input rate of  
2275 MMBtu/hr (Case 1))

Annual emissions, lb/yr = (Emission Factor) (average annual heat input rate of  
14,722,986 MMBtu/yr)

Where average annual heat input = (6545 hr/yr)(2249.5013 MMBtu/hr (Case 4))  
= 14,722,986 MMBtu/yr

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*Note: Case 4 in Table 15 shows 2250 MMBtu/hr, but AES used the more precise value of 2249.5013 MMBtu/hr for the FDOC.*

#### Ammonia

Maximum hourly emissions, lb/hr = (2275 MMBtu/hr (case 1)) (8710 dscf/MMBtu)  
(5 ppm NH<sub>3</sub> /10<sup>6</sup>) (20.9/( 20.9-15.0)) (17 lbs NH<sub>3</sub>/379 scf) = 15.74 lb /hr

Maximum annual emissions, lb/yr = (6545 hr/yr)  
(2249.5013 MMBtu/hr (case 4)) (8710 dscf/MMBtu)(5 ppm NH<sub>3</sub> /10<sup>6</sup>)  
(20.9/( 20.9-15.0)) (17 lbs NH<sub>3</sub>/379 scf) = (6545 hr/yr)(15.566 lb/hr) =  
101,879.79 lb/yr = 50.94 tpy

### **C. Greenhouse Gases (GHG)**

- Combustion: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O

Combustion of natural gas in the turbines will result in emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O.

For **A/N 618933-618934, 618936**, the emissions rates will remain the same as for the **Prior Application** because the annual operating hours will remain 6545 hr/yr per turbine.

As shown above for the toxic pollutants emissions calculations for the **Prior Application**, the average annual heat input rate increased from 10,437,686 MMBtu/yr (**FDOC**) to 14,722,986 MMBtu/yr, based on the proposed increase from the permitted 4640 hr/turbine to 6545 hr/turbine.

Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are from the US EPA website, Emission Factors for Greenhouse Gas Inventories, Table 1—Stationary Combustion Emission Factors, revised March 9, 2018. (See table at [https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors\\_mar\\_2018\\_0.pdf](https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf).)

For each combined-cycle turbine:

CO<sub>2</sub>: 53.06 kg CO<sub>2</sub>/MMBtu

CH<sub>4</sub>: 1 g CH<sub>4</sub>/MMBtu

N<sub>2</sub>O: 0.10 g N<sub>2</sub>O/MMBtu

CO<sub>2</sub> = (14,722,986 MMBtu/yr)(53.06 kg/MMBtu)(2.2046 lb/kg)  
= 1,722,237,129 lb/yr = 861,118.56 tpy

CH<sub>4</sub> = (14,722,986 MMBtu/yr)(1 g/MMBtu)(2.205 x 10<sup>-3</sup> lb/g)  
= 32,464.18 lb/yr = 16.23 tpy

N<sub>2</sub>O = (14,722,986 MMBtu/yr)(0.1 g/MMBtu)(2.205 x 10<sup>-3</sup> lb/g)

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$$= 3246.42 \text{ lb/yr} = 1.62 \text{ tpy}$$

Pursuant to Table A–1 to Subpart A of 40 CFR Part 98—Global Warming Potentials, as amended by 79 FR 73779, 12/11/14: (1) CH<sub>4</sub> is equivalent to 25 times the global warming potential of CO<sub>2</sub>, and (2) N<sub>2</sub>O is equivalent to 298 times of CO<sub>2</sub>.

$$\begin{aligned} \text{CO}_2\text{e, tpy} &= (1,722,237,129 \text{ lb/yr CO}_2)(1 \text{ lb CO}_2\text{e/lb CO}_2) + (32,464.18 \text{ lb/yr CH}_4)(25 \\ &\quad \text{lb CO}_2\text{e/lb CH}_4) + 3246.42 \text{ lb/yr N}_2\text{O})(298 \text{ lb CO}_2\text{e/lb N}_2\text{O}) \\ &= 1,724,016,167 \text{ lb/yr} = 862,008.08 \text{ tpy} = 71,834.01 \text{ tons/month} \end{aligned}$$

- Circuit Breakers: SF<sub>6</sub>

For the **Prior Application**, the SF<sub>6</sub> emissions calculations remained the same as for the FDOC, because the increase in annual operating hours for the combined-cycle turbines did not affect the SF<sub>6</sub> leakage rate. For **A/N 618933-618934, 618936**, the SF<sub>6</sub> emissions calculations also will remain the same as for the FDOC. Thus condition F52.2 will continue to specify a CO<sub>2</sub>e facility-wide annual limit for SF<sub>6</sub> (74.55 tpy) to enforce the BACT requirements for the circuit breakers located at the CCGT (17.44 tpy) and SCGT (57.11 tpy) power blocks.

$$\text{CCGT: } 34,884 \text{ lb/yr} = 17.44 \text{ tpy} = 1.45 \text{ tons/month CO}_2\text{e}$$

- New Source Review (NSR) Database Entries

This section develops the internal NSR Data Summary Sheet entries. For **A/N 618933-618934, 618936**, the entries are the same as for the **Prior Application** because the annual operating hours will remain 6545 hr/yr per turbine.

$$\begin{aligned} \text{Operating Schedule: } &52 \text{ wks/yr, } 7 \text{ days/wk, } 24 \text{ hrs/day (annualized schedule)} \\ &\rightarrow 8736 \text{ hr/yr} \end{aligned}$$

The hourly emissions are back calculated from the annual emissions and used for the purpose of input for the internal NSR Data Summary Sheet only.

$$\text{CO}_2 = (1,722,237,129 \text{ lb/yr}) (\text{yr} / 8736 \text{ hr}) = 197,142.53 \text{ lb/hr}$$

$$\text{CH}_4 = (32,464.18 \text{ lb/yr}) (\text{yr} / 8736 \text{ hr}) = 3.72 \text{ lb/hr}$$

$$\text{N}_2\text{O} = (3246.42 \text{ lb/yr}) (\text{yr} / 8736 \text{ hr}) = 0.37 \text{ lb/hr}$$

$$\text{SF}_6 = (34,884 \text{ lb/yr}) (\text{yr} / 8736 \text{ hr}) = 3.99 \text{ lb/hr}$$

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# 11. Facility Maximum Monthly and Annual Emissions, Normal Operation

## a. Maximum Monthly Emissions, Normal Operations

For A/N 618933-618934, 618936, the facility maximum monthly emissions are the same as for the FDOC and the **Prior Application**, except the maximum monthly emissions for NOx will increase from 6.73 tons per month to 7.08 tons per month for each combined-cycle turbine, as shown in *Table 21 - Combined-Cycle Turbine Maximum Monthly Emissions, Normal Operations* above. Consequently, the facility maximum monthly emissions for NOx will increase from 27.48 tons/month to 28.18 tons/month.

**Table 43 - Facility Maximum Monthly Emissions, Normal Operations**

Equipment	Tons/Month						
	NOx	CO	VOC	PM <sub>10</sub> /PM <sub>2.5</sub>	SOx	NH <sub>3</sub>	CO <sub>2e</sub>
Combined-Cycle Turbine	<del>6.73</del> <b>7.08</b>	12.32	3.79	3.16	1.81		50,925.87
Combined-Cycle Turbine	<del>6.73</del> <b>7.08</b>	12.32	3.79	3.16	1.81		50,925.87
Circuit Breakers for Combined-Cycle Turbine Power Block							1.45
Simple-Cycle Turbine	3.49	2.75	0.99	2.32	0.60		10,074.12
Simple-Cycle Turbine	3.49	2.75	0.99	2.32	0.60		10,074.12
Simple-Cycle Turbine	3.49	2.75	0.99	2.32	0.60		10,074.12
Simple-Cycle Turbine	3.49	2.75	0.99	2.32	0.60		10,074.12
Circuit Breakers for Simple-Cycle Turbine Power Block							4.76
Auxiliary Boiler	0.057	0.30	0.051	0.057	0.016		922.72
SCR/CO Catalyst for Combined-Cycle Turbine						2.92	
SCR/CO Catalyst for Combined-Cycle Turbine						2.92	
SCR/CO Catalyst for Simple-Cycle Turbine						0.60	
SCR/CO Catalyst for Simple-Cycle Turbine						0.60	
SCR/CO Catalyst for Simple-Cycle Turbine						0.60	
SCR/CO Catalyst for Simple-Cycle Turbine						0.60	
SCR for Auxiliary Boiler						0.018	
Ammonia Tank for Combined-Cycle Turbines						0	
Ammonia Tank for Simple-Cycle Turbines						0	
Oil/Water Separator for Combined-Cycle Turbines			0.0000075				
Oil/Water Separator for Simple-Cycle Turbines			0.0000011				
Facility Total	<del>27.48</del> <b>28.18</b>	35.94	11.59	15.66	6.04	8.26	143,077.15

## b. Maximum Daily Emissions, Normal Operations

For the FDOC, the facility maximum daily emissions were calculated to include in the public notice that was required for Rule 212(c)(2) and significant Title V revision. For that purpose only, the daily emissions were the monthly emissions from the table above, divided

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by 30 days. For **A/N 618933-618934, 618936**, public notice is not required by Rule 212 or for this minor Title V revision.

c. **Maximum Annual Emissions, Normal Operations**

The facility maximum annual emissions are calculated for the *Rule Evaluation* section below. For the **Prior Application**, the maximum annual emissions for the combined-cycle turbines and associated SCRs increased, and the maximum annual emissions for the simple-cycle turbines and associated SCRs decreased from the emissions shown in *Table 45* in the FDOC.

For **A/N 618933-618934, 618936**, the maximum annual emissions for NO<sub>x</sub> for the combined-cycle turbines will further increase from 57.45 tpy to 60.60 tpy as shown in *Table 25 - Combined-Cycle Turbine Maximum Annual Emissions, Normal Operating Year* above. The changes shown below are to *Table 45* for the **Prior Application**. Consequently, the facility maximum annual emissions for NO<sub>x</sub> will increase from 146.78 tons/yr to 153.08 tons/yr.

**Table 45 - Facility Maximum Annual Emissions, Normal Operations**

Equipment	Tons/Year						
	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub> / PM <sub>2.5</sub>	SO <sub>x</sub>	NH <sub>3</sub>	CO <sub>2e</sub>
Combined-Cycle Turbine	<del>57.45</del> <b>60.60</b>	97.36	31.74	27.82	5.24		862,008.08
Combined-Cycle Turbine	<del>57.45</del> <b>60.60</b>	97.36	31.74	27.82	5.24		862,008.08
Circuit Breakers for Combined-Cycle Turbine Power Block							17.44
Simple-Cycle Turbine	7.80	12.27	2.27	3.30	0.29		54,241.29
Simple-Cycle Turbine	7.80	12.27	2.27	3.30	0.29		54,241.29
Simple-Cycle Turbine	7.80	12.27	2.27	3.30	0.29		54,241.29
Simple-Cycle Turbine	7.80	12.27	2.27	3.30	0.29		54,241.29
Circuit Breakers for Simple-Cycle Turbine Power Block							57.11
Auxiliary Boiler	0.68	3.60	0.61	0.68	0.19		11,072.68
SCR/CO Catalyst for Combined-Cycle Turbine						50.94	
SCR/CO Catalyst for Combined-Cycle Turbine						50.94	
SCR/CO Catalyst for Simple-Cycle Turbine						3.21	
SCR/CO Catalyst for Simple-Cycle Turbine						3.21	
SCR/CO Catalyst for Simple-Cycle Turbine						3.21	
SCR/CO Catalyst for Simple-Cycle Turbine						3.21	
SCR for Auxiliary Boiler						0.21	
Ammonia Tank for Combined-Cycle Turbines						0	
Ammonia Tank for Simple-Cycle Turbines						0	
Oil/Water Separator for Combined-Cycle Turbines			0.00009				

Combined-Cycle Turbines-Increase Non-Cold Start Emissions

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Oil/Water Separator for Simple-Cycle Turbines			0.000013				
<b>Facility Total</b>	<del>146.78</del> <b>153.08</b>	247.40	73.17	69.52	11.83	114.93	1,952,128.55
<b>Post-Modification – Pre-Modification</b>	<del>± 6.30</del>	0.00	0.00	0.00	0.00	0.00	0.00

## **RULE EVALUATION**

The modified AEC project is expected to comply with all applicable South Coast AQMD rules and regulations, and federal and state regulations, as follows:

### **DISTRICT RULES AND REGULATIONS**

#### **Rule 205—Expiration of Permit to Construct**

Section 70.6 of 40 CFR Part 70 and South Coast AQMD Rule 3004(a) and (b) require each Title V permit to include emission limitations and standards, including those operational requirements and limitations that assure compliance with all applicable requirements, at the time of permit issuance.

Rule 205, 40 Part 52.21(r)(2), and Rule 1713(c) provide expiration requirements for permits to construct.

**Rule 205**—This rule provides that a permit to construct shall expire one year from the date of issuance unless an extension of time has been approved in writing by the Executive Officer. This requirement is set forth in condition 1.b in Section E: Administrative Conditions of the facility permit. Section E is comprised of a standard list of operating conditions that apply to all permitted equipment at the facility unless superseded by condition(s) listed elsewhere in the permit.

**40 Part 52.21**--Rule 1714(c) incorporates by reference the provisions of 40 Part 52.21--Prevention of Significant Deterioration of Air Quality. Part 52.21(r)(2) states: "Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Administrator may extend the 18-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date."

§52.21(j)(4) states: "For phased construction projects, the determination of best available control technology shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the applicable stationary source may be required to demonstrate the adequacy of any previous determination of best available control technology for the source."

**Rule 1713, adopted 10/7/88**--Rule 1713(c) states: "A permit to construct shall become invalid if construction is not commenced within 24 months after receipt of such approval, if construction is discontinued for a period of 24 months or more, or if construction is not completed within a reasonable

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time. The Executive Officer may extend the 24-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within 24 months of the projected and approve commencement date.”

The requirements for Rule 205, 40 Part 52.21, and Rule 1713 are consolidated in conditions E74.1 and E193.5.

**Analysis:**

The **Permits to Construct Extension** section above provides a complete discussion. Because the AEC project is a multi-year, multi-phase project, condition E193.5 sets forth requirements for the extension of the expiration date for the Permits to Construct. Condition E193.5 states in part: “The Permit to Construct shall expire one year from the issuance date, unless an extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment.”

On 4/17/18, the South Coast AQMD extended the expiration date of all Permits to Construct to 4/17/19. On 4/12/19, the South Coast AQMD extended the expiration date of all Permits to Construct to 4/17/20. Since the construction of the combined-cycle units (Power Block 1, Phase 1) was initiated on 8/7/17, which is within one year of the date of issuance of the Permits to Construct on 4/18/17, condition E193.5 did not require the Permits to Construct for Phase 1 to be extended. AES requested the one-year extensions as recommended by the South Coast AQMD.

For the **FDOC**, *Table 3 - AEC Schedule Major Milestones* indicated the construction of AEC SCGT will start in May 2020. For the **Prior Application**, the letter dated 5/10/19 from Stephen O’Kane to Sr. Manager Bhaskar Chandan regarding the revised Boiler Retirement Schedule for the Alamos Energy Center (Facility ID 115394), indicated the AEC SCGT construction start date has been moved to July 2022. Accordingly, *Table 3* was updated to indicate AEC SCGT construction date has been changed to Third Quarter 2022.

**Rule 212—Standards for Approving Permits, as amended 3/1/19**

**Rule 2005(h) –Public Notice for RECLAIM (requires compliance with Rule 212)**

Public notice is **not** required for this project, as discussed below.

• **Rule 212(c)(1)**

Public notice is required for any new or modified permit unit, source under Regulation XX (RECLAIM), or equipment under Regulation XXX (Title V) that may emit air contaminants located within 1000 feet from the outer boundary of a school. This subdivision shall not apply to a modification of an existing facility if the Executive Officer determines that the modification will result in a reduction of emissions of air contaminants from the facility and no increase in health risk at any receptor location. (This paragraph shall not apply to modifications that have no potential to affect emissions.)

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**Analysis:**

For **A/N 618933-618934, 618936**, although the combined-cycle turbines maximum monthly emissions and maximum annual emissions will increase for each combined-cycle turbine, this paragraph will **not** require public notice because the closest combined-cycle turbine will **no longer** be located within 1000 feet of the outer boundary of a school.

For the **FDOC**, the nearest K-12 school—Rosie the Riveter Charter High School, 690 N. Studebaker Road, Long Beach, CA 90803--was located 971 feet away from the closest combined-cycle turbine. Consequently, Rule 212(c)(1) public notice was required. For the **Prior Application**, public notice was not required. In an e-mail dated 8/12/19, Stephen O’Kane indicated that the school is no longer on site. The building has been repurposed for AES use. (On 8/2/19, Jeff Miller, Compliance Manager, had stated this occurred in late spring 2019.)

Planning, Rule Development & Area Sources (PRDAS) staff was requested to use Google Earth and a map of the AGS facility to provide an accurate distance from the closest combined-cycle turbine to the outer boundary of the next closest K-12 school. In an e-mail dated 8/9/19, PRDAS staff indicated the distance from the outer boundary of Kettering Elementary School, 550 Silvera Avenue, Long Beach, CA 90803, to the nearest combined-cycle turbine is 2021 feet, which is farther than 1000 ft threshold.

• ***Rule 212(c)(2)***

Public notice is required for any new or modified facility which has on-site emission increases exceeding any of the daily maximums specified in subdivision (g) of this rule.

**Analysis:**

This paragraph will **not** require public notice because the on-site emission increases from the project will not exceed the daily maximum thresholds set forth in subdivision (g) for VOC, NO<sub>x</sub>, PM<sub>10</sub>, and CO, as shown in the table below. As discussed above, the 30-day averages for the combined-cycle and simple-cycle turbines will remain the same as for the **FDOC** and **Prior Application**. For the purposes of this rule, an on-site emission increase is interpreted as an increase in the 30-day average.

**Table 47 - Rule 212(c)(2) Applicability**

	VOC	NO <sub>x</sub>	PM <sub>10</sub>	SO <sub>x</sub>	CO	Lead
AEC 30-day averages increase, lb/day	0	0	0	0	0	0
Rule 212(c)(2) Daily Maximum Increase, lb/day	30	40	30	60	220	3
Increase Exceed Daily Maximum?	No	No	No	No	No	No

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- **Rule 212(c)(3)**

Public notice is required for any new or modified permit unit, source under Regulation XX or equipment under XXX with increases in emissions of toxic air contaminants, for which the Executive Officer has made a determination that a person may be exposed to a maximum individual cancer risk greater than, or equal to one in a million ( $1 \times 10^{-6}$ ), per guidelines published by the Executive Officer under Rule 1401(e), for facilities with more than one permitted unit, source, or equipment, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ( $10 \times 10^{-6}$ ) using the risk assessment procedures and toxic air contaminants specified under Rule 1402.

**Analysis:**

This paragraph will **not** require public notice. As the maximum hourly and annual emissions rates remain the same as for revised *Table 26 - Combined-Cycle Turbine Toxic Air Contaminants/Hazardous Air Pollutants* for the **Prior Application**, the health risks also remain the same as for *Table 68--Model Results for HRA for Combined-Cycle Turbines* for the **Prior Application**. The health risks for each combined-cycle turbine continue to remain less than the Rule 1401 cancer and non-cancer limits of 10 in one million (for permit units with T-BACT), and hazard indices (chronic and acute) of 1, respectively.

**Rule 218 – Continuous Emission Monitoring**

The combined-cycle turbines are each equipped with an oxidation catalyst to control CO emissions. A CO CEMS is required to be installed on each turbine to demonstrate compliance with the CO emission limit. In accordance with paragraphs (c), (e), (f), the facility is required to submit an “Application for CEMS” for each CO CEMS and to adhere to retention of records requirements and reporting requirements once approval to operate the CO CEMS is granted. Subsequent to the issuance of the permits to construct on 4/18/17, AES submitted a CEMS application on 8/22/18 for a CO CEMS (Rule 218) and a NO<sub>x</sub> CEMS (RECLAIM) for the combined-cycle and simple-cycle turbines. In a letter dated 2/20/19, South Coast AQMD Source Test Engineering granted initial approval for both CEMS for the turbines. The facility has completed all certification tests (RATA, linearity, drift, NO<sub>x</sub> converter efficiency, etc.) and is planning to submit their CEMS certification package in April 2020.

**Rule 401 – Visible Emissions**

This rule prohibits the discharge of visible emissions for a period aggregating more than three minutes in any one hour which is as dark or darker in shade than Ringelmann No. 1. Visible emissions are not expected from the turbines during normal operation because they will be firing exclusively on pipeline quality natural gas.

**Update:** The facility received 45 public complaints (44 received from 10/5/19 – 11/7/19) during the uncontrolled first fire phase of the commissioning of the two new combined-cycle turbines. The public complaints, consisting of visible emissions (smoke), noise and chemical odor, resulted in two Notices

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of Violation, P67928 and P67929. The facility filed a Variance petition to allow the facility to complete the uncontrolled phase of the startup operation of the CCGTs. The Variance was granted by the South Coast AQMD Hearing Board. The uncontrolled startup phase has now concluded, and the facility is no longer operating under a Variance. The facility is currently in compliance with the opacity requirements of the permit.

#### **Rule 402 – Nuisance**

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. Nuisance problems are not expected from the turbines and other equipment during normal operation. Update: See Rule 401.

#### **Rule 403 – Fugitive Emissions**

The purpose of this rule is to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. The provisions of this rule apply to any activity or man-made condition capable of generating fugitive dust. This rule includes the prohibition of fugitive dust emissions that remains visible in the atmosphere beyond the property line of the emission source.

During normal operations, fugitive emissions are not expected from the operation of the turbines and other equipment. Compliance with Rule 403 is expected.

#### **Rule 407 – Liquid and Gaseous Air Contaminants**

This rule limits the gas turbines to 2000 ppmv CO. The CO emissions from the combined-cycle turbines will be controlled by an oxidation catalyst to the BACT limit of 1.5 ppmvd at 15% O<sub>2</sub>.

The SO<sub>2</sub> portion of the rule does not apply per subdivision (c)(2), because the natural gas fired in the CTGs will comply with the sulfur limit in Rule 431.1. Therefore, compliance with this rule is expected.

#### **Rule 409 – Combustion Contaminants**

This rule restricts the combustion generated PM emissions from combustion equipment to 0.23 grams per cubic meter (0.1 grain per cubic foot) of gas, calculated to 12% CO<sub>2</sub>, averaged over 15 minutes.

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The **FDOC** provided the following analysis which indicated the combined-cycle turbines will be in compliance with Rule 409. For **A/N 618933-618934, 618936**, the analysis remains the same because the PM<sub>10</sub> hourly emission rate for the combined-cycle turbines remains the same as the FDOC.

- Combined-Cycle Turbines

Each combined-cycle turbine is expected to meet this limit at the maximum firing load based on the calculations shown below, which shows the grain loading is expected to be 0.007 gr/scf.

$$\text{Grain Loading} = [(A * B)/(C * D)] * 7000 \text{ gr/lb}$$

where:

A = Maximum PM<sub>10</sub> emission rate during normal operation, 8.5 lb/hr (case 1)

B = Rule specified percent of CO<sub>2</sub> in the exhaust (12%)

C = Percent of CO<sub>2</sub> in the exhaust (approx. 4.29% for natural gas)

D = Stack exhaust flow rate, scf/hr

$$D = F_d * \frac{20.9}{(20.9 - \% O_2)} * TFD = 8710 * \frac{20.9}{17.9} * 2275 = 23.1E+06 \text{ scf/hr}$$

where:

F<sub>d</sub> = Dry F factor for fuel type, 8710 dscf/MMBtu

O<sub>2</sub> = Rule specific dry oxygen content in the effluent stream, 3%

TFD = Total fired duty measured at HHV, 2275 MMBTU/hr (case 1)

$$\text{Grain Loading} = [(8.5 * 12) / (4.29) (23.1E+06)] * 7000 = 0.007 \text{ gr/scf} < 0.1 \text{ gr/scf limit}$$

**Rule 431.1 – Sulfur Content of Gaseous Fuels**

The natural gas supplied to the gas turbines is expected to comply with the 16 ppmv sulfur limit (calculated as H<sub>2</sub>S) specified in this rule, because commercial grade natural gas has an average sulfur content of 4 ppm.

**Rule 474—Fuel Burning Equipment-Oxides of Nitrogen, amended 12/4/81**

As Rule 474 was last amended on 12/4/81, this rule continues to be superseded by NO<sub>x</sub> RECLAIM pursuant to *Rule 2001--Applicability*, amended **10/5/18**, *Table 1—Rules Not Applicable To RECLAIM Facilities For Requirements Pertaining To NO<sub>x</sub> Emissions If Rule Was Adopted Or Amended Prior To October 5, 2018*.

**Rule 475 – Electric Power Generating Equipment**

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This rule applies to power generating equipment greater than 10 MW installed after May 7, 1976, and establishes a limit for combustion contaminants (particulate matter) of 11 lbs/hr or 0.01 grains/scf. Compliance is achieved if either the mass limit or the concentration limit is met.

The **FDOC** provided the following analysis which indicated the combined-cycle turbines will be in compliance with Rule 475. For **A/N 618933-618934, 618936**, the analysis remains the same because the PM<sub>10</sub> emission rate for the combined-cycle turbines remains the same as the FDOC.

- **Combined-Cycle Turbines**

Each CTG is expected to meet this limit at the maximum firing load based on the calculations shown below, which shows the concentration is expected to be 0.0026 gr/scf.

$$\text{Combustion Particulate (gr/scf)} = (\text{PM}_{10}, \text{lb/hr} / \text{Stack Exhaust Flow, scf}) * 7000 \text{ gr/lb}$$

$$\text{PM}_{10} = 8.5 \text{ lb/hr (case 1)}$$

$$\text{Stack exhaust flow} = 23.1\text{E}+06 \text{ scf/hr (see Rule 409 analysis, above)}$$

$$\text{Combustion Particulate} = (8.5 / 23.1\text{E}+06) * 7000 = 0.0026 \text{ gr/scf} < 0.01 \text{ gr/scf limit}$$

**Rule 1134 – Emissions of NO<sub>x</sub> from Stationary Gas Turbines, as amended 4/5/19**

For the **FDOC**, *Rule 1134*, amended 8/8/97, was superseded by NO<sub>x</sub> RECLAIM pursuant to *Rule 2001--Applicability*, amended **12/4/15**, *Table 1--Existing Rules Not Applicable to RECLAIM Facilities for Requirements Pertaining to NO<sub>x</sub> Emissions*.

For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*), *Rule 1134*, amended 4/5/19, was not superseded by *Rule 2001--Applicability*, amended **10/5/18**, *Table 1—Rules Not Applicable To RECLAIM Facilities For Requirements Pertaining To NO<sub>x</sub> Emissions If Rule Was Adopted Or Amended Prior To October 5, 2018*. For **A/N 618933-618934, 618936**, the following analysis remains applicable.

This amended rule will not be applicable to the AEC because subdivision (b) was amended on 4/5/19 as follows:

(b) **Applicability**

The provisions of this rule shall apply to all ~~existing~~ stationary gas turbines, 0.3 megawatt (MW) and larger, ~~as of August 4, 1989~~. The rule does not apply to stationary gas turbines subject to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities, located at petroleum refineries, landfills, or publicly owned treatment works or fueled by landfill gas.

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As the turbines are subject to Rule 1135, they will not be subject to Rule 1134.

~~**Rule 1135—Emissions of NOx from Electric Power Generating Systems, as amended 7/19/91**~~

~~**Rule 1135—Emissions of Oxides of Nitrogen from Electricity Generating Facilities, as amended 11/2/18**~~

For the **FDOC**, *Rule 1135*, amended 7/19/91, was superseded by NOx RECLAIM pursuant to *Rule 2001*, amended 12/4/15, *Table 1*.

For the **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*), *Rule 1135*, amended 11/2/18, was not superseded by *Rule 2001--Applicability*, amended 10/5/18, *Table 1—Rules Not Applicable To RECLAIM Facilities For Requirements Pertaining To NOx Emissions If Rule Was Adopted Or Amended Prior To October 5, 2018*.

For **A/N 618933-618934, 618936**, the analysis for the combined-cycle turbines is the same as for the **Prior Application**, except as noted below.

(b) Applicability

This rule shall apply to electric generating units at electricity generating facilities.

(c) Definitions

(7) ELECTRIC GENERATING UNIT means a boiler that generates electric power, gas turbine that generates electric power with the exception of cogeneration turbines, or diesel internal combustion engine that generates electric power and is located on Santa Catalina Island with the exception of emergency internal combustion engines.

(8) ELECTRICITY GENERATING FACILITY means a facility that is owned or operated by an investor-owned electric utility; is owned or operated by a publicly owned electric utility; or has electric generating units with a combined generation capacity of 50 megawatts or more of electrical power for distribution in the state or local electrical grid system. Electricity generating facility does not include landfills, petroleum refineries, or publicly owned treatment works.

**Analysis:** The combined-cycle gas turbines are electric generating units at an electricity generating facility and are subject to this rule.

(d) Emissions Limitations Limits

(1) Emissions Limits for Boilers and Gas Turbines

Notwithstanding the exemptions contained in Rule 2001 – Applicability, subdivision (j) – Rule Applicability and its accompanying Table 1: Existing Rules Not Applicable to RECLAIM Facilities for Requirements Pertaining to NOx

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Emissions, **on and after January 1, 2024**, or when required by a permit to operate issued to effectuate the requirements in this rule, whichever occurs first, the owner or operator of an electricity generating facility shall not operate, a boiler or gas turbine in a manner that exceeds the NOx and ammonia emissions limits listed in Table 1: Emissions Limits for Boilers and Gas Turbines, where:

- (B) Boilers and gas turbines installed or for which the owner or operator has applied for permits to construct prior to November 2, 2018 shall:
- (i) Average the NOx and ammonia emissions limits in Table 1 over a 60 minute rolling average; or
  - (ii) Retain the averaging time requirements specified on the SCAQMD permit as of November 2, 2018.

Table 1: Emissions Limits for Boilers and Gas Turbines

Equipment Type	NOx (ppmv) <sup>1</sup>	Ammonia (ppmv)	Oxygen Correction (%, dry)
Combined Cycle Gas Turbine and Associated Duct Burner	2	5	15
Simple Cycle Gas Turbine	2.5	5	15

<sup>1</sup> – The NOx emission limits in Table 1 shall not apply during start-up, shutdown, and tuning.

**Analysis:** Subparagraph (d)(1)(B) is applicable because the initial applications for P/Cs for the combined-cycle turbines were submitted on 10/23/15.

**Combined-Cycle Turbines:** As condition A195.8 limits NOx to 2.0 ppmv and condition A195.15 limits ammonia to 5 ppmv, both averaged over 1 hour at 15% O<sub>2</sub>, the turbines will be in compliance with (d)(1)(B).

- (3) Start-up, Shutdown, and Tuning Requirements  
The owner or operator of an electricity generating facility shall meet start-up, shutdown, and tuning requirements in the SCAQMD permit for each electric generating unit. On and after **January 1, 2024**, the SCAQMD permit shall include limitations for duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings.

**Analysis:** The turbine permits are in compliance with (d)(3) for startups and shutdowns. In AES Response Letter, dated 12/11/15, the applicant clarified that the turbine combustors are not expected to require tuning after commissioning.

**Combined-Cycle Turbines:** Condition C1.3 provides startup limits, including: (1) number of starts per calendar month and year; (2) number of starts per day; (3) duration

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of starts, and (4) NO<sub>x</sub>, CO, and VOC emissions per start. Condition C1.4 provides shutdown limits, including (1) number of shutdowns per calendar month and year; (2) duration of shutdowns; and (3) NO<sub>x</sub>, CO, and VOC emissions per shutdown. For A/N 618933-618934, 618936, condition C1.3 will be revised to increase the non-cold start emissions limit for NO<sub>x</sub> from 17 lb to 32 lb.

(e) Monitoring, Recordkeeping, and Reporting

(1) RECLAIM NO<sub>x</sub> Source

The owner or operator of each RECLAIM NO<sub>x</sub> source subject to Rule 1135 shall comply with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions to demonstrate compliance with the NO<sub>x</sub> emissions limits of this rule.

**Analysis:** The facility is currently in RECLAIM and required to comply with Rule 2012.

(6) Ammonia Emissions Limits

(A) The owner or operator of each electric generating unit with catalytic control devices shall conduct quarterly source tests to demonstrate compliance with the ammonia emission limit according to SCAQMD Method 207.1 – Determination of Ammonia Emissions from Stationary Sources during the first twelve months of operation of the catalytic control device and annually thereafter when four consecutive quarterly source tests demonstrate compliance with the ammonia emission limit. If an annual test is failed, four consecutive quarterly source tests must demonstrate compliance with the ammonia emissions limits prior to resuming annual source tests.

**Analysis:** For the **Prior Application**, condition D29.4 was revised to incorporate the more stringent Rule 1135(e)(6)(A) quarterly source testing requirements.

**REGULATION XIII—NEW SOURCE REVIEW (NSR)**

The South Coast AQMD new source review rules are based on both the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). The primary NAAQS are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

- **Rule 1303(a)(1)—BACT/LAER (PM<sub>10</sub>, SO<sub>x</sub>, VOC, CO)**
- **Rule 2005(c)(1)(A)—BACT/LAER (NO<sub>x</sub>)**

Rule 1303(a)(1) requires Best Available Control Technology (BACT) for a new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, with the South Coast AQMD interpreting the emission increase to be 1 lb/day or greater of uncontrolled emissions.

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The South Coast AQMD is not in attainment for PM<sub>10</sub> (California 24-hr and annual standards) and ozone, but is in attainment for PM<sub>10</sub> (national 24-hr standard), CO, NO<sub>x</sub>, and SO<sub>x</sub>. Since NO<sub>x</sub>, SO<sub>x</sub>, and VOC (no attainment standards for VOC) are precursors to non-attainment pollutants, they are treated as non-attainment pollutants as well. Specifically, NO<sub>x</sub> and VOC are precursors to ozone. NO<sub>x</sub> and SO<sub>x</sub> are precursors to PM<sub>10</sub> and PM<sub>2.5</sub>.

*Rule 1303(a)(1)* requires BACT/LAER for NO<sub>x</sub> (non-RECLAIM), PM<sub>10</sub>, SO<sub>x</sub>, VOC, and ammonia. *Rules 1701(b)(1)* and *1703(a)(2)* require BACT/LAER for CO. *Rule 2005(c)(1)(A)* requires BACT/LAER for NO<sub>x</sub> for new RECLAIM facilities and *Rule 2005(c)(2)(A)* for existing RECLAIM facilities. For PSD pollutants at AEC, *Rule 1703(a)(2)* requires top-down PSD BACT analyses for NO<sub>x</sub> and PM<sub>10</sub> (with CO included for completeness).

*Rule 1303(a)(2)* provides that BACT for sources located at major polluting facilities shall be at least as stringent as Lowest Achievable Emissions Rate (LAER) as defined in the federal Clean Air Act Section 171(3). *Rule 1302(s)* (as amended 11/4/16) defines a “major polluting facility” (same as major stationary source) located in the South Coast Air Basin as any facility which emits, or has the potential to emit, a criteria air pollutant at a level that equals or exceeds the following emission thresholds: (1) VOC, 10 tpy; (2) NO<sub>x</sub>, 10 tpy; (3) SO<sub>x</sub>, 70 tpy; (4) CO, 50 tpy; and (5) PM<sub>10</sub>, 70 tpy. **Note:** The Rule 1302(s) major source thresholds for SO<sub>x</sub>, CO, and PM<sub>10</sub> are required to be updated. As these pollutants that are in federal attainment, the thresholds are 100 tpy. If a threshold for any one criteria pollutant is equaled or exceeded, the facility is a major polluting facility, and will be subject to LAER for all pollutants subject to NSR. The existing Alamitos Generating Station is a major polluting facility because *Table 13* indicates the PTEs for VOC (453.72 tpy), NO<sub>x</sub> (635.60 tpy), CO (21,871.86 tpy), and PM<sub>10</sub> (627 tpy) exceed the applicable thresholds.

*Rule 1302(h)* defines BACT as “the most stringent emission limitation or control technique which:

- (1) has been achieved in practice [AIP] for such category or class of source; or
- (2) is contained in any state implementation plan (SIP) approved by the US EPA approved by the United States Environmental Protection Agency (EPA) for such category or class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the Executive Officer or designee that such limitation or control technique is not presently achievable; or
- (3) is any other emission limitation or control technique, found by the Executive Officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures as listed in the Air Quality Management Plan (AQMP) or rules adopted by the District Governing Board.”

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The first two requirements in the BACT definition above are required by federal law as LAER for major sources. The third part of the definition is unique to South Coast AQMD and some other areas in California, and allows for more stringent controls than LAER. For major polluting facilities, LAER is determined on a permit-by-permit basis.

The FDOC provided a New Source Review BACT/LAER analyses for VOC, SO<sub>2</sub>, and NH<sub>3</sub> which are not PSD pollutants for the proposed facility. As required by PSD, top-down BACT analyses were performed under *Rule 1703(a)(2)* for NO<sub>x</sub> and PM<sub>10</sub> (with CO included for completeness) below.

➤ **FDOC Summary**

**BACT/LAER for VOC Emissions**

VOCs are formed during the combustion process as a result of incomplete combustion of the carbon present in the fuel. Effective combustor design and post-combustion control using an oxidation catalyst are two technologies for controlling VOC emissions from a combustion turbine. The FDOC concluded that BACT/LAER is the installation of dry low NO<sub>x</sub> combustors and an oxidation catalyst to meet 2.0 ppm at 15% O<sub>2</sub> (1-hr averaging) based on modified South Coast AQMD Method 25.3.

**BACT/LAER for SO<sub>2</sub> Emissions**

Emissions of SO<sub>x</sub> are dependent on the sulfur content in the fuel rather than any combustion variables. During the combustion process, almost all of the sulfur in the fuel is oxidized to SO<sub>2</sub>. The AEC will be supplied with natural gas from the Southern California Gas pipeline, which is limited by Tariff Rule No. 30 to a maximum total fuel sulfur content of less than 0.75 grain of sulfur per 100 scf. The FDOC concluded the use of pipeline-quality natural gas with low sulfur content is BACT/LAER for SO<sub>2</sub>.

**BACT/LAER for Ammonia Emissions**

A very small amount of ammonia used in the SCR systems to control NO<sub>x</sub> from the turbine exhaust stream is not consumed by the reaction in the SCR systems. The FDOC concluded that BACT/LAER for the ammonia slip is 5.0 ppm at 15% O<sub>2</sub> (1-hr averaging).

**Alternative BACT/LAER for Commissioning, Startups and Shutdowns**

Condition nos. A195.8, A195.9, and A195.10 provide that the BACT limits of 2.0 ppmvd NO<sub>x</sub>, 1.5 ppmvd CO, and 2.0 ppmvd ROG, respectively, shall not apply during commissioning, startup, and shutdown periods. In lieu of requiring steady state BACT at all times, EPA accepted an alternative BACT which limits and minimizes emissions during periods when steady state BACT is not achievable, such as during commissioning, startups and shutdowns.

During commissioning, it is not technically feasible for the CTGs to meet BACT limits during the entire period because the dry low-NO<sub>x</sub> combustors may not be optimally tuned



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The Executive Officer or designee shall, except as Rule 1304 applies, deny the Permit to Construct for any new or modified source which results in a net emission increase of any nonattainment air contaminant at a facility, unless the applicant substantiates with air dispersion modeling that the new facility or modification will not cause a violation, or make significantly worse an existing violation according to Appendix A of the rule, or other analysis approved by the Executive Officer or designee, of any state or national ambient air quality standards at any receptor location in the South Coast AQMD. As discussed for the BACT/LAER requirements above, the South Coast AQMD is not in attainment for PM<sub>10</sub> (California 24-hr and annual standards) and ozone, but is in attainment for PM<sub>10</sub> (national 24-hr standard), CO, NO<sub>x</sub>, and SO<sub>x</sub>. Since NO<sub>x</sub>, SO<sub>x</sub>, and VOC (no attainment standards for VOC) are precursors to non-attainment pollutants, they are treated as non-attainment pollutants as well.

Rule 1303(b)(1) requires modeling for NO<sub>2</sub> (non-RECLAIM), CO, PM<sub>10</sub>, and SO<sub>2</sub>. Rule 2005(c)(1)(B) requires modeling for NO<sub>2</sub> for existing RECLAIM facilities. (The standards in Appendix A are outdated. The modeling analyses below are based on current ambient air quality standards.)

Compliance determination is different for attainment and nonattainment pollutants. For attainment pollutants, NO<sub>2</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub> (federal standard), the modeled peak impacts plus the worst-case background concentrations shall not exceed the most stringent air quality standard. For non-attainment pollutants where the background concentrations exceed the ambient air quality standards, the modeled peak impacts shall not cause an exceedance of the Rule 1303 significant change thresholds. The South Coast Air Basin is designated non-attainment for the state PM<sub>10</sub> standard, and state and federal PM<sub>2.5</sub> standards.

Rule 1304(a) provides an exemption from the modeling requirements of Rule 1303(b)(1) and the offset requirement of Rule 1303(b)(2) for:

- (2) **Electric Utility Steam Boiler Replacement**  
The source is replacement of electric utility steam boiler(s) with combined cycle gas turbine(s), intercooled, chemically-recuperated gas turbines, other advanced gas turbine(s); solar, geothermal, or wind energy or other equipment, to the extent that such equipment will allow compliance with Rule 1135 or Regulation XX rules. The new equipment must have a maximum electrical power rating (in megawatts) that does not allow basin wide electricity generating capacity on a per-utility basis to increase. If there is an increase in basin-wide capacity, only the increased capacity must be offset.

Page 11 of the Final Staff Report for Proposed Rule 1304.1—Electrical Generating Facility Fee for Use of Offset Exemption, dated 9/6/13, clarifies: “Currently, pursuant to Rule 1304(a)(2), replacement of an electrical steam boiler at an EGF [Electric Generating Facility] that does not increase basin wide MW capacity at that utility (now interpreted as owner) is exempt from the modeling and offset requirements of Rule 1303(b)(2).” Rule 1304(a)(2) provides an exemption for



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get evaluated.” Subsequently, Ms. Baker verbally clarified to Engineer Vicky Lee that the new standard of concern is the federal 1-hr NO<sub>2</sub> standard, not any new PM<sub>10</sub> or SO<sub>x</sub> standards. For the **Prior Application**, revised air dispersion modeling was only required for the annual averaging period for NO<sub>2</sub> and PM<sub>10</sub>/PM<sub>2.5</sub>, because modeling for the federal 1-hr NO<sub>2</sub> standard had been performed for the **FDOC**. For **A/N 618933-618934, 618936**, PRDAS performed revised modeling for NO<sub>2</sub>.

On 12/6/18, Sr. Meteorologist Melissa Sheffer requested and received clarification from Manager Jillian Wong regarding modeling requirements for a modification project. Both air dispersion modeling and HRA are required to be performed based on the emissions increases per permit unit, provided the stack parameters (height, diameter, location, flow rates, temperature) remain the same and the monitors for the background concentrations are located sufficiently close to the facility to capture the existing emissions from the facility. For the **Prior Application**, both the air dispersion modeling and HRA were required to be based on total emissions, not on the emissions increases, because the equipment was under construction and had not contributed to the measured background concentrations and because the stack height had increased from 140 ft to 150 ft. For **A/N 618933-618934, 618936**, any modeling required would be based on the emissions increases because the combined-cycle turbines have only been in operations since 1/1/20.

- **South Coast AQMD Comments, 12/20/18, on Yorke Protocol, 11/7/18**

Prior to the submittal of A/N 610354-610360 for the annual schedule changes for the combined-cycle and simple-cycle turbines, Yorke Engineering submitted a letter protocol, dated 11/7/18, detailing its proposed revisions to the modeling and HRA performed for the **FDOC**. Engineering staff and Sr. Meteorologist Melissa Sheffer reviewed the protocol. On 12/20/18, the South Coast AQMD provided comments on the proposed letter protocol.

- a. **South Coast AQMD** required re-modeling for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> based on the total emissions from each turbine and the auxiliary boiler for the annual averaging period to update *FDOC Table 57--Modeled Results - Normal Operation for Total Project*. For the **FDOC**, the combined- and simple-cycle turbines were exempt from the modeling requirements of Rule 1303(b)(1) pursuant to the Rule 1304(a)(2) exemption for utility boiler repower projects. However, the **FDOC** applications provided a Rule 1303 modeling analysis of impacts for the entire project in support of the CEC’s analysis of the *Supplemental Application for Certification*. The South Coast AQMD’s understanding is that AES will submit a *Petition for Post-Certification Amendment* to the CEC for the requested changes in the annual emissions for the combined-cycle and simple-cycle turbines. The **Protocol’s** qualitative reasoning that the changes in annual emissions for NO<sub>x</sub> and PM<sub>10</sub> will not result in total predicted concentrations that will exceed the CAAQS, NAAQS, or Rule 1303 thresholds is not sufficient reason to avoid remodeling.

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- b. **South Coast AQMD** required the air dispersion modeling and health risk assessment analysis to be updated to the most recent background concentrations, MET data, AERMOD version (air quality modeling), and AERMOD with HARP version (HRA). The **Protocol** proposal to incorporate proposed operating hour revisions for the combined-cycle and simple-cycle turbines into the FDOC dispersion modeling was not adequate.
  - c. **South Coast AQMD** clarified that, at the time the FDOC was approved on 1/3/17, the ARM method was still a regulatory option for NO<sub>2</sub> modeling. However, as this option has not been allowed by the EPA since October 2017, this is no longer an approved method. Therefore, the revised modeling is required to use the ARM2 method within the AERMOD model for all annual NO<sub>2</sub> modeling. The **Protocol** proposal that the maximum modeled annual NO<sub>2</sub> concentrations continue to include the NO<sub>2</sub> to NO<sub>x</sub> conversion ratio of 0.75 (ARM method), as approved for the FDOC, was no longer in compliance.
- **Planning, Rule Development & Area Sources (PRDAS) Staff Modeling Review for Application**  
Pursuant to South Coast AQMD procedure, Planning, Rule Development & Area Sources (PRDAS) staff was requested in a Modeling Review Request Memo, dated 5/30/19, to review the dispersion modeling analysis, including the health risk assessment results, provided by the applicant for the **Prior Application**. PRDAS staff reviewed the applicant's dispersion modeling analysis, by independently reproducing the modeling analysis, to verify compliance with South Coast AQMD rules and in support of the CEC's analysis of the *Petition for Post-Certification Amendment*.  
  
The Modeling Review Memo, dated 7/30/19, from the Health Effects Officer Jo Kay Ghosh, to Sr. Engineering Manager Bhaskar Chandan provided comments on the applicant's modeling analyses and presented PRDAS's independent modeling results. The maximum modeled concentrations and updated background levels provided by PRDAS staff were incorporated in the modeling results tables for Rules 1303, 1703, 1401, and 2005 in the **Prior Application** evaluation.
  - **NORMAL OPERATION IMPACTS**  
Turbine emissions and stack parameters, such as flow rate and exit temperature, exhibit some variation with ambient temperature and operating load. Therefore, to evaluate the worst-case impacts, the applicant performed a dispersion modeling analysis at three different load scenarios at three temperature conditions for each turbine type (combined- and simple-cycle) for the **FDOC**.

For combined-cycle turbines, the three loads (45%, 75%, 100%) and three temperatures (28 °F, 65.3 °F, and 107 °F) were from FDOC *Table 15 - Combined-Cycle Turbine*

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*Operating Scenarios.* For simple-cycle turbines, the loads (50%, 75%, 100%) and temperatures (28 °F, 65.3 °F, and 107 °F) were from FDOC *Table 31 - Simple-Cycle Turbine Operating Scenarios*. The applicant's load analysis also included the operation of the auxiliary boiler. The applicant's load analysis results were used to select the worst-case impacts for each criteria pollutant and averaging period for the **FDOC**.

**1. Combined-Cycle Gas Turbines Modeled Rates and Stack Parameters**

*Rule 1304(a)(2)* provides an exemption from the modeling requirements of *Rule 1303(b)(1)* for PM<sub>10</sub> (and CO and SO<sub>2</sub>) for each combined-cycle turbine. However, the emissions rates from *Table 51 - Modeled Emission Rates - Normal Operation for AEC CCGT* and the stack parameters from *Table 52 - Modeled Stack Parameters - Normal Operation for AEC CCGT* for NO<sub>x</sub> and PM<sub>10</sub> were incorporated into the modeling for *Table 57 - Modeled Results - Normal Operation for Total Project* below in support of the CEC analysis. The emission rates and stack parameters for NO<sub>x</sub> were incorporated into the modeling results for each combined-cycle turbine in *Table 88 – Rule 2005 Modeled Results – Normal Operation for Combined-Cycle Turbines* below.

For the **Prior Application**, as shown in *Table 51 - Modeled Emission - Rates - Normal Operation for AEC CCGT* below, the modeling was required to be revised for only the annual averaging period. The proposed revision to the annual number of normal operating hours from 4100 to 6005 hours for each combined-cycle turbine affected the annual emission rates (NO<sub>2</sub>, PM<sub>10</sub>/PM<sub>2.5</sub>) but not the Worst-Case Emission Scenario for the annual averaging period.

Modeling was not required to be revised for the 1-hour, 3-hour, 8-hour, and 24-hour averaging periods. The emission rates and the worst-case emission scenarios for these short-term averaging periods did not change because the proposed change to the annual number of operating hours did not affect these other averaging periods.

The NO<sub>x</sub> and PM<sub>10</sub>/PM<sub>2.5</sub> emission rates for modeling for the annual averaging period were calculated as follows:

For the Emissions Calculations section above, the normal operating rates for the maximum monthly emissions are based on Case 1 in *Table 15 - Combined-Cycle Turbine Operating Scenarios*. Case 1, based on 100% load, 28 °F ambient temperature, and without inlet cooling, is the worst case operating scenario that yields the highest controlled emissions. The normal operating rates for the maximum annual emissions are based on Case 4. Case 4, based on 100% load, 65.3 °F ambient temperature, and with inlet cooling, is the worst case operating scenario that yields the highest emission rates for the average annual temperature.

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For Modeling, the normal operating rates for the worst-case emission scenario for the annual averaging period are based on Case 7 in *Table 15*. The maximum annual turbine impacts were predicted using the exhaust parameters for the 65.3 °F, minimum load case, which represents the turbine exhaust parameters associated with the maximum predicted annual ground-level impact in the dispersion modeling.

NO<sub>x</sub>: [(6005 hr/yr)(9.47 lb/hr, Case 7) + (80 cold starts)(61 lb/cold start) + (420 non-cold starts)(17 lb/non-cold start) + (500 shutdowns)(10 lb/shutdown)] / 8760-hr averaging = 8.43 lb/hr → 1.06 g/sec

**Change:** The increase in normal operating hours from 4100 hr/turbine to 6005 hr/turbine increased the annual NO<sub>x</sub> emission rate from 6.24 lb/hr to 8.43 lb/hr.

PM<sub>10</sub>/PM<sub>2.5</sub>: [(6005 hr/yr)(8.5 lb/hr, Case 7) + (80 cold starts)(8.5 lb/cold start) + (420 non-cold starts)(4.25 lb/non-cold start) + (500 shutdowns)(4.25 lb/shutdown)] / 8760-hr averaging = 6.35 lb/hr → 0.800 g/sec

**Change:** The increase in normal operating hours from 4100 hr/turbine to 6005 hr/turbine increased the annual PM<sub>10</sub>/PM<sub>2.5</sub> emission rate from 4.50 lb/hr to 6.30 lb/hr.

For the Prior Application, the changes to FDOC Table 51 are shown below.

**Table 51 - Modeled Emission Rates - Normal Operation for AEC CCGT**

Averaging Time	Worst-Case Emission Scenario	Pollutant	Emissions Per Turbine, lbs/hr
1-hour	NO <sub>2</sub> : Both turbines in cold start-up mode, 28 °F ambient temperature. CO: Both turbines in cold start-up mode, 28 °F ambient temperature. SO <sub>2</sub> : Both turbines in cold start-up mode, 28 °F ambient temperature.	<b>Modeling is not required to be revised for the 1-hour, 3-hour, 8-hour, and 24-hour averaging periods, but was required for the annual averaging period.</b>	
1-hour (federal)	NO <sub>2</sub> : Both turbines in cold start-up mode, 28 °F ambient temperature. SO <sub>2</sub> : Both turbines in cold start-up mode, 65.3 °F ambient temperature.		
3-hour	SO <sub>2</sub> : Both turbines continuous average (75%) load operation, 65.3 °F ambient temperature.		

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Averaging Time	Worst-Case Emission Scenario	Pollutant	Emissions Per Turbine, lbs/hr
8-hour	CO: Both turbines complete two cold starts, 2 shutdowns, and balance of period at minimum (45%) load, 28 °F ambient temperature.		
24-hour	PM <sub>10</sub> , PM <sub>2.5</sub> : Both turbines continuous minimum (44%) load operation, 65.3 °F ambient temperature.  SO <sub>2</sub> : Both turbines continuous average (75%) load operation, 65.3 °F ambient temperature.		
Annual	NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> : Both turbines operate at minimum (44%) load for <del>4100</del> <b>6005</b> normal operating hours, 80 cold starts, 420 non-cold starts, and 500 shutdowns, for total of <del>4640</del> <b>6545</b> hours, 65.3 °F ambient temperature. (Condition A63.2 limits annual CO, VOC, PM <sub>10</sub> / <b>PM<sub>2.5</sub></b> , and SO <sub>x</sub> emissions, which also indirectly limits annual NO <sub>x</sub> emissions.)	NO <sub>x</sub>	<del>6.24</del> <b>8.43</b>
		PM <sub>10</sub> , PM <sub>2.5</sub>	<del>4.50</del> <b>6.35</b>

For the **Prior Application**, FDOC *Table 52* was revised below to remove the 1-hour, 3-hour, 8-hour, and 24-hour averaging period data because revised modeling is required only for the annual averaging period. Also, A/N 604015 & A/N 604018 requested to increase the height of the combined-cycle turbine exhaust stacks from 140 ft. to 150 ft. During detailed design, AES determined that the height is required to be raised from 140 ft. to 150 ft. to accommodate stack dampers for noise attenuation to satisfy the noise limits of CEC Condition of Certification NOISE-4.

**Table 52 - Modeled Stack Parameters - Normal Operation for AEC CCGT**

	Averaging Period	Stack Diameter (m)	Stack Height (m)	Exhaust Temp (°F (°K))	Exhaust velocity (ft/s (m/s))	Scenario
NO <sub>2</sub>	Annual	6.10	45.7 (was 42.7 for FDOC)	170 (350)	38.8 (11.8)	CC07
PM <sub>10</sub> , PM <sub>2.5</sub>	Annual	6.10	45.7 (was 42.7)	170 (350)	38.8 (11.8)	CC07

## 2. **Simple Cycle Gas Turbines Modeled Rates and Stack Parameters**

See **Prior Application** (A/N 604015, 604018, 604020, 608431-608433, 610354-610360) evaluation. The emissions rates from *Table 53 - Modeled Emission Rates - Normal Operation for AEC SCGT* and the stack parameters from *Table 54 - Modeled Stack Parameters - Normal Operation for AEC SCGT* were incorporated into the modeling for *Table 57 - Modeled Results - Normal Operation for Total Project* below in support of the CEC analysis.

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### 3. **Auxiliary Boiler Modeled Rates and Stack Parameters**

See **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation. The emissions rates from *Table 55 - Modeled Emission Rates - Normal Operation for Auxiliary Boiler* and the stack parameters from *Table 56 - Modeled Stack Parameters - Normal Operation for Auxiliary Boiler* were incorporated into the modeling for *Table 57 - Modeled Results - Normal Operation for Total Project* below in support of the CEC analysis.

### 4. **Modeled Results –Normal Operation for AEC**

The combined- and simple-cycle turbines, although not the auxiliary boiler, are exempt from the modeling requirements of Rule 1303(b)(1) pursuant to the Rule 1304(a)(2) exemption. Therefore the state and federal ambient air quality standards and Rule 1303 thresholds in the table below do not apply and are shown for informational purposes only. Because the South Coast Air Basin is designated non-attainment for the state PM<sub>10</sub> standard, and state and federal PM<sub>2.5</sub> standards, project increments are compared to the significant change thresholds in Rule 1303.

For the **FDOC**, the applicant provided a modeling analysis of impacts for the entire project in support of the CEC's analysis of the *Supplemental Application for Certification* for the amended AEC. The dispersion modeling analysis for the maximum AEC operational impacts included the operation of the two combined-cycle turbines, four simple-cycle turbines, and the auxiliary boiler. The maximum AEC operational impacts, including changes and updates provided by PRDAS staff, were presented in *Table 57 - Modeled Results - Normal Operation for Total Project* in the FDOC.

For the **Prior Application**, the applicant provided facility-wide modeling for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> for the annual averaging period to update FDOC *Table 57 - Modeled Results - Normal Operation for Total Project*. The update is required to support the CEC's analysis of the *Petition for Post-Certification Amendment*.

PRDAS staff independently reproduced the applicant's analysis and summarized the results in the *PRDAS Memo*. FDOC *Table 57* was updated below to incorporate PRDAS' modeling results. The modeled impacts were below all thresholds in Rule 1303 for NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>.

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**Table 57 - Modeled Results - Normal Operation for Total Project**

Pollutant	Averaging Period	Maximum Predicted Impact (µg/m³)	Background Concentration (µg/m³) <sup>2</sup>	Total Predicted Concentration (µg/m³)	State Standard CAAQS (µg/m³)	Federal Standard, Primary NAAQS (µg/m³)	Rule 1303 Thresholds (µg/m³)	Exceeds Any Threshold?
NO <sub>2</sub> <sup>1</sup>	Annual	<del>0.2</del> <b>0.4</b>	<del>47.6</del> <b>39.6</b>	<del>47.8</del> <b>40.0</b>	57	100		No
PM <sub>10</sub>	Annual	<del>0.2</del> <b>0.3</b>			20		1	No
PM <sub>2.5</sub>	Annual	<del>0.2</del> <b>0.3</b>			12	12	1	No

<sup>1</sup> The NO<sub>2</sub> concentration included conversion of NO<sub>x</sub> to NO<sub>2</sub> using ARM2.

<sup>2</sup> Maximum value for NO<sub>2</sub> from SRA 4, South Coastal LA County 3 (No. 033) monitoring station for the last three years available prior to application submittal (2014-2016) was used.

## **5. Modeled Results - Rule 2005**

See *Rule 2005* analysis below.

➤ **APPLICATION NOS. 618933-618934, 618936**

The dispersion modeling analysis for the applications under evaluation is discussed below.

## 1. Combined-Cycle Gas Turbines Modeled Rates and Stack Parameters

The modeling is required to be revised for only the annual averaging period. The proposed revision to the NOx emission rate for the non-cold start from 17 lb to 32 lb affected the annual emission rate for NO<sub>2</sub>, but not PM<sub>10</sub>/PM<sub>2.5</sub>. The Worst-Case Emission Scenario for the annual averaging period is not affected.

Modeling is not required to be revised for the 1-hour, 3-hour, 8-hour, and 24-hour averaging periods. The emission rates and the worst-case emission scenarios for these short-term averaging periods did not change because the proposed change to the annual number of operating hours did not affect these other averaging periods.

The NO<sub>x</sub> emission rate for modeling for the annual averaging period is revised as follows:

$$\text{NO}_x: [(6005 \text{ hr/yr})(9.47 \text{ lb/hr, Case 7}) + (80 \text{ cold starts})(61 \text{ lb/cold start}) + (420 \text{ non-cold starts})(17.32 \text{ lb/non-cold start}) + (500 \text{ shutdowns})(10 \text{ lb/shutdown})] / 8760\text{-hr averaging} = 8.43 \text{ lb/hr} \rightarrow 1.06 \text{ g/sec}$$

Accordingly, *Table 51* is revised as follows:

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**Table 51 - Modeled Emission Rates - Normal Operation for AEC CCGT**

Averaging Time	Worst-Case Emission Scenario	Pollutant	Emissions Per Turbine, lbs/hr
1-hour	NO <sub>2</sub> : Both turbines in cold start-up mode, 28 °F ambient temperature.  CO: Both turbines in cold start-up mode, 28 °F ambient temperature.  SO <sub>2</sub> : Both turbines in cold start-up mode, 28 °F ambient temperature.	Modeling is not required to be revised for the 1-hour, 3-hour, 8-hour, and 24-hour averaging periods, but was required for the annual averaging period.	
1-hour (federal)	NO <sub>2</sub> : Both turbines in cold start-up mode, 28 °F ambient temperature.  SO <sub>2</sub> : Both turbines in cold start-up mode, 65.3 °F ambient temperature.		
3-hour	SO <sub>2</sub> : Both turbines continuous average (75%) load operation, 65.3 °F ambient temperature.		
8-hour	CO: Both turbines complete two cold starts, 2 shutdowns, and balance of period at minimum (45%) load, 28 °F ambient temperature.		
24-hour	PM <sub>10</sub> , PM <sub>2.5</sub> : Both turbines continuous minimum (44%) load operation, 65.3 °F ambient temperature.  SO <sub>2</sub> : Both turbines continuous average (75%) load operation, 65.3 °F ambient temperature.		
Annual	NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> : Both turbines operate at minimum (44%) load for 6005 normal operating hours, 80 cold starts, 420 non-cold starts, and 500 shutdowns, for total of 6545 hours, 65.3 °F ambient temperature. (Condition A63.2 limits annual CO, VOC, PM <sub>10</sub> /PM <sub>2.5</sub> , and SO <sub>x</sub> emissions, which also indirectly limits annual NO <sub>x</sub> emissions.)	NO <sub>x</sub>	<b>8.43- (Prior Application) 9.15</b>
		PM <sub>10</sub> , PM <sub>2.5</sub>	6.35 (no change)

The stack parameters in *Table 52 - Modeled Stack Parameters - Normal Operation for AEC CCGT* remain the same.

**2. Simple-Cycle Gas Turbines Modeled Rates and Stack Parameters**

As this project does not affect the simple-cycle turbines, the discussion is the same as for the **Prior Application**.

**3. Auxiliary Boiler Modeled Rates and Stack Parameters**

As this project does not affect the auxiliary boiler, the discussion is the same as for the **Prior Application**.



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Rule 1303(b)(2) requires a net emission increase in emissions of any nonattainment air contaminant (PM<sub>10</sub>, ROG, and SO<sub>x</sub>) from a new or modified source to be offset unless exempt from offset requirements pursuant to Rule 1304. Since CO is an attainment pollutant and not a precursor to any nonattainment pollutant, offset requirements are not applicable.

“Source” is defined by Rule 1302(ao) to mean “any permitted individual unit, piece of equipment, article, machine, process, contrivance, or combination thereof, which may emit or control an air contaminant. This includes any permit unit at any non-RECLAIM facility and any device at a RECLAIM facility.”

Unless exempt, the amount of offsets required for each pollutant is determined using the 30-day average. The 30-day average is based on the highest emissions for any month, including a month where commissioning takes place. The offset ratio for emission reduction credits (ERCs) is 1.2-to-1.

- **Combined-Cycle Turbines**

- VOC, SO<sub>x</sub>, and PM<sub>10</sub>

For A/N 618933-618934, 618936, the analysis is the same as for the **Prior Application**, because the 30-day averages for VOC, SO<sub>x</sub>, and PM<sub>10</sub> will continue to remain the same as for the **FDOC**.

South Coast AQMD Rule 1304(a)(2) provides a modeling and offset exemption for utility boiler repower projects. The exemption applies to: “The source is replacement of electric utility steam boiler(s) with combined cycle gas turbine(s), intercooled, chemically-recuperated gas turbines, other advanced gas turbine(s); solar, geothermal, or wind energy or other equipment, to the extent that such equipment will allow compliance with Rule 1135 or Regulation XX rules. The new equipment must have a maximum electrical power rating (in megawatts) that does not allow basinwide electricity generating capacity on a per-utility basis to increase. If there is an increase in basin-wide capacity, only the increased capacity must be offset.” This exemption applies to the combined-cycle turbines and simple-cycle turbines equipped with intercoolers. Offsets for VOC, SO<sub>x</sub>, and PM<sub>10</sub> are provided from the South Coast AQMD internal offset accounts, as discussed in the *Rule 1304.1* analysis below.

- NO<sub>x</sub>

For A/N 618933-618934, 618936, Table 63 for the **Prior Application** is revised below to show only the combined-cycle turbines and the revised NO<sub>x</sub> RTCs required that resulted from the increase in NO<sub>x</sub> emissions for the non-cold starts.

See *Rule 2005(c)(2)* analysis below for the NO<sub>x</sub> RTC requirements.

### **Table 63 - Post-Modification RTCs Required**

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A/N	Equipment	NOx RTCs, lb/yr (first year)
618934	Combined-Cycle Turbine	<del>108,377 (Prior Application)</del> <b>112607 (A/N 618934)</b>
618936	Combined-Cycle Turbine	<del>108,377 (Prior Application)</del> <b>112607 (A/N 618936)</b>

- **Rule 1303(b)(3)-Sensitive Zone Requirements**
- **Rule 2005(e)-Trading Zone Restrictions**

Both rules provide that credits shall be obtained from the appropriate trading zone. A facility located in zone 1, such as AES Alamitos, may obtain ERCs originated in zone 1 only, and RTCs originated in zone 1 only.

- **Rule 1303(b)(4)-Facility Compliance**

AEC is expected to comply with all applicable rules and regulations of the South Coast AQMD, as required by this rule.

- **Rule 1303(b)(5)-Major Polluting Facilities**
- **Rule 2005(g)—Additional Federal Requirements for Major Stationary Sources**

**Rule 1303(b)(5)**--In addition to the above requirements, any new major polluting facility or major modification at an existing major polluting facility shall comply with the following requirements, Rule 1303(A) – (D) (see below).

**Rule 2005(g)**—The Executive Officer shall not approve the application for a Facility Permit or an Amendment to a Facility Permit for a new, relocated or modified major stationary source, unless the applicant complies with Rule 2005(g)(1) – (g)(4).

- **Rule 1302(s)** defines “major polluting facility” to mean any facility located in the South Coast Air Basin (SOCAB) which emits or has the potential to emit the following amounts or more: VOC, 10 tpy; NOx, 10 tpy; SOx, 70 tpy; PM10, 70 tpy, CO 50 tpy. **Note: The Rule 1302(s) major source thresholds for SOx, CO, and PM10 are required to be updated. As these pollutants are in federal attainment, the thresholds are 100 tpy.**
- **Rule 1302(r)** and **Rule 2005(c)(44)** define “major modification” to mean any modification at an existing major polluting facility that will cause the facility’s potentials to emit to increase: (1) 1 lb/day or more of NOx or VOC for a facility located in the South Coast Air Basin; (2) 40 tpy or more of SOx; (3) 15 tpy or more of PM10; or (4) 50 tpy or more of CO.

The AGS is a major polluting facility because *Table 13* indicates the PTEs for VOC (453.72 tpy), NOx (635.60 tpy), CO (21,871.86 tpy), and PM<sub>10</sub> (627 tpy) exceed the applicable thresholds.

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For **A/N 618933-618934, 618936**, the proposed increase in the NO<sub>x</sub> emission limit for the non-cold starts for the combined-cycle turbines will constitute a major modification. *Table 45* indicates the facility's potentials to emit will increase for NO<sub>x</sub> by 6.30 tpy, which will exceed the 1 lb/day threshold. As the existing AGS facility is a major polluting facility undergoing a major modification, the following provisions are applicable.

- **Rule 1303(b)(5)(A) – Alternative Analysis**
- **Rule 2005(g)(2)—Alternative Analysis**
- **Rule 1303(b)(5)(D) – Compliance through CEQA**
- **Rule 2005(g)(3)—Compliance through CEQA**

Rule 1303(b)(5)(A) requires an analysis of alternative sites, sizes, production processes and environmental control techniques, and a demonstration that the benefits of the proposed project outweigh the environmental and social costs associated with that project. Rule 2005(g)(2) requires an analysis of alternative sites, sizes, production processes and environmental control techniques for the proposed source which demonstrates that the benefits of the proposed source significantly outweigh the environmental and social cost imposed as a result of its location, construction, and modification.

Rule 1303(b)(5)(D) specifies the requirements of subparagraph (b)(5)(A) may be met through compliance with CEQA. Rule 2005(g)(3) specifies the requirements of paragraph (g)(2) may be met through CEQA analysis.

Since the AEC is a permitted project undergoing construction and since AES is applying for an increase to the NO<sub>x</sub> emission limit for non-cold starts for the combined-cycle turbines, an analysis of alternative sites, sizes, production processes, and environmental controls is not applicable.

- **Rule 1303(b)(5)(B) – Statewide Compliance**
- **Rule 2005(g)(1) – Statewide Compliance**

Rule 1303(b)(5)(B) requires a demonstration that all major stationary sources are owned or operated by such person in the state are subject to emission limitations and are in compliance or on a schedule for compliance with all applicable emission limitations and standards under the Clean Air Act. Rule 2005(g)(1) requires the applicant to certify that all other major stationary sources in the state which are controlled by the applicant are in compliance or on a schedule for compliance with all applicable federal emission limitations or standards.

For the **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**, in a letter dated 8/14/19, Weikko Wirta, Director Plant Operations, AES Alamitos, LLC, certified that he, as a corporate officer and Director of Plant Operations of AES Alamitos, LLC, AES Redondo Beach, LLC, and AES Huntington Beach, LLC, certify that all major stationary

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sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by AES in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance for all applicable emission limitations and standards under the Clean Air Act.

The South Coast AQMD website provides up-to-date compliance status, including for Notices of Violation and Notices to Comply, on the Facility Information Detail (FIND) web page (<http://www3.aqmd.gov/webappl/fim/prog/search.aspx>). By entering the South Coast AQMD facility ID and selecting the Compliance tab, the status of the Notices of Violation (NOVs) and of Notices to Comply (NCs) are provided for the selected facility.

For AES Alamitos (ID 115394), the status shown for all Notices to Comply for violation dates occurring in the last five years is “In Compliance.” The disposition shown for all Notices of Violation issued in the last five years is “Closed Case,” except for P67929 and P67928. These NOVs were issued during the uncontrolled first fire phase of the commissioning of the two new combined-cycle turbines) and are summarized below.

NOV No.	Issued Date	Violation Date	Summary	Final Action
P67929	10/8/19	10/6/19	Opacity greater than R1 (20%) for greater than 3 minutes in an hour. Opacity greater than R2 (40%) for greater than 3 minutes in an hour. Failure to operate permitted equipment in compliance with all terms specified in Title V permit at all times. Discharge of air contaminants causing detriment, nuisance, or annoyance to a considerable amount of person or to the public.	Variance
P67928	10/3/19	10/3/19	Opacity greater than R1 (20%) for greater than 3 minutes in an hour. Opacity greater than R2 (40%) for greater than 3 minutes in an hour. Failure to operate permitted equipment in compliance with all terms specified in Title V permit at all times.	In compliance.

For AES Huntington Beach (ID 115389), the status shown for all Notices to Comply for violation dates occurring in the last five years is “In Compliance.” The disposition shown for all Notices of Violation issued in the last five years is “Closed Case,” except for P69259 and P67930. These NOVs were issued during the uncontrolled first fire phase of the commissioning of the two new combined-cycle turbines) and are summarized below.

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NOV No.	Issued Date	Violation Date	Summary	Final Action
P67930	10/8/19	10/6/19	Opacity greater than R1 (20%) for greater than 3 minutes in an hour. Failure to operate permitted equipment in compliance with all terms specified in Title V permit at all times. Discharge of air contaminants causing detriment, nuisance, or annoyance to a considerable amount of person or to the public.	Variance
P69259	10/4/19	10/4/19	Opacity greater than R1 (20%) and R2 (40%) for greater than 3 minutes in an hour. Failure to operate permitted equipment in compliance with all terms, requirements, and conditions specified in Title V permit at all times.	In compliance

In response to the above NOVs, the facility filed Variance petitions to allow them to complete the uncontrolled phase of the startup operation of the CCGTs. The Variance petitions were granted by the South Coast AQMD Hearing Board. The uncontrolled startup phase for both the Alamitos and Huntington Beach facilities has now concluded, and the facilities are no longer operating under a Variance; both facilities are currently in compliance with the opacity requirements of the permit.

For AES Redondo Beach (ID 115536), the status shown for all Notices to Comply for violation dates occurring in the last five years is “In Compliance.” The disposition shown for all Notices of Violation issued in the last five years is “Closed Case.”

Prior to issuance of the revised Permits to Construct, the South Coast AQMD will confirm that the compliance status of AES has not changed.

- **Rule 1303(b)(5)(C) –Protection of Visibility**
- **Rule 2005(g)(4)—Protection of Visibility**

Rule 1303(b)(5)(C) requires a modeling analysis for plume visibility if the net emission increases from a new or modified sources exceed 15 tpy of PM<sub>10</sub> or 40 tpy of NO<sub>x</sub>; and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within the distance specified in Table C-1 of the rule. Rule 2005(g)(4) imposes the same requirements for NO<sub>x</sub>, with the Federal Class I areas and distances listed in Table 4-1 of the rule (same as Table C-1).

For the **FDOC**, *Table 71 – Prevention of Significant Deterioration Applicability* showed that the net emissions increases (AEC PTE – AGS actual) exceeded 15 tpy PM<sub>10</sub> and 40 tpy NO<sub>x</sub>.



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provides offsets. This fee may be paid on an annual basis or as a single payment or a combination of both at the election of the applicant.

- (2) The Offset Fee ( $F_i$ ), for a specific pollutant (i), shall be calculated by multiplying the applicable pollutant specific Annual Offset Fee Rate ( $R_i$ ) or Single Payment Offset Fee Rate ( $L_i$ ) and Offset Factor in Table A1 or A2, as applicable, by the fraction of the potential to emit level(s) of the new replacement unit(s). This fraction is calculated as the product of the potential to emit of the new replacement unit ( $PT_{Erep_i}$ ) multiplied by the new replacement to existing unit generation annual capacity ratio. This annual capacity ratio which is defined as the maximum permitted annual megawatt hour (MWh) generation of the new replacement unit(s) ( $C_{rep}$ ) minus the most recent twenty-four (24) months average of the megawatt hour (MWh) generation (megawatt utilization) of the unit(s) to be replaced ( $C_{2YRAvgExisting}$ ) divided by the maximum permitted annual megawatt hour (MWh) generation of the new replacement unit(s) ( $C_{rep}$ ).

The offset fee calculation described above is governed by equations in subparagraphs A and B:

(A) Annual Payment Option

- (ii) Repowering more than 100MW cumulatively at a facility subsequent to September 6, 2013 with offsets debited from the SCAQMD internal offset accounts:

$$\text{Annual Offset Fee } (F_i) = \left( \left[ R_{iA1} \times \left( \frac{100}{MW} \right) \right] + \left[ R_{iA2} \times \left( \frac{MW - 100}{MW} \right) \right] \right) \times OF_i \times PT_{Erep_i} \times \left( \frac{C_{rep} - C_{2YRAvgExisting}}{C_{rep}} \right)$$

Where;

$F_i$	=	Offset Fee for pollutant (i).
$R_{iA1}$	=	Table A1, Annual Offset Fee Rate for pollutant (i), in terms of dollars per pound per day, annually.
$R_{iA2}$	=	Table A2, Annual Offset Fee Rate for pollutant (i), in terms of dollars per pound per day, annually.
MW	=	MW rating of new replacement unit(s).
$OF_i$	=	offset factor pursuant to Rule 1315(c)(2) for extreme non-attainment pollutants and their precursors, (see Table A1 or A2, as applicable, for factors).

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$PT_{rep_i}$  = permitted potential to emit of new replacement unit(s) for pollutant i, in pounds per day. (Maximum permitted monthly emissions  $\div$  30 days).  
 $C_{rep}$  = maximum permitted annual megawatt hour (MWh) generation of the new replacement unit(s). (Maximum rated capacity (MW) x Maximum permitted annual operating hours (h)).  
 $C_{2YRAvgExisting}$  = the average annual megawatt-hour (MWh) generation of the existing unit(s) to be replaced using the last twenty-four (24) month period immediately prior to issuance of the permit to construct.

- (3) The owner/operator of an EGF electing to use the offset fee exemption of Rule 1304(a)(2) shall remit the offset fees as follows:
- (A) For the annual payment option:
- (i) The owner/operator must remit the first year annual offset fee payment prior to the issuance of the permit to construct and such fees shall be based on the total amount of the repowered MW capacity for which a permit to construct is being issued by SCAQMD for the facility. Subsequent payments shall be remitted annually based on the cumulative total of MW capacity that commenced operation, on or before the anniversary date of the original commencement of operation of such MW capacity at the fee rates in effect at the time the fee is due.
  - (ii) If the owner/operator of an EGF fails to pay the applicable Annual Offset Fee ( $F_i$ ) amount, for each applicable pollutant (i), within thirty (30) days after the due date, the associated permit(s) will expire and no longer be valid. Such permit(s) may be reinstated within sixty (60) days with an additional penalty of 50%.
  - (iii) The owner/operator of an EGF that has elected the annual fee payment option may switch to the single payment option upon submittal of a written request to the Executive Officer for such a change in payment method. The amount of the single payment offset fee due shall be based on offset fee rates applicable at the time the written request for the change in payment method is submitted to the Executive Officer. The sum of the annual offset fees remitted prior to the submittal of a request for change to a single payment option shall be credited towards the single payment offset fee due.



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The Board Package for the adoption of Rule 1304.1 at the 9/6/13 board meeting includes the Final Staff Report (Attachment F). P. 4 of Final Staff Report states: “Furthermore, an additional ~~50~~ 75% discount is proposed to be applied to the first 100 MW repowered cumulatively at the EGF [Electrical Generating Facility], applicable to all sources including smaller sources, to address concerns regarding reliability and the ability to obtain financing for projects, and to encourage smaller distributed generation.”

Although not stated in the Rule 1304.1 language, the calculator provides a 75% discount for the first 100 MW repowered cumulatively. As the Rule 1304.1 calculator was erroneously used separately for the combined-cycle turbines and the simple-cycle turbines for the PDOC/FDOC, the result was a 75% discount for the first 100 MW for the combined-cycle turbines and an additional 75% discount for the first 100 MW for the simple-cycle turbines, thereby resulting in an erroneously low first year annual offset fee for the project.

For the final fee calculation set forth in a memo “Rule 1304.1 Annual Fees For Alamitos Energy Center (AEC),” dated 4/11/17, the first year annual offset fee was correctly calculated using the Rule 1304.1(c)(2)(A)(ii) equation to provide a 75% discount for the first 100 MW for all turbines at the AEC.

- 2) In Rule 1304.1,  $C_{2YRAvgExisting}$  is defined as “the average annual megawatt-hour (MWh) generation of the existing unit(s) to be replaced using the last twenty-four (24) month period immediately prior to issuance of the permit to construct.” For the PDOC, the preliminary fees were based on the 2013 and 2014 generation for Boilers Nos. 1, 2, 5, and 3. On 10/26/16, AES proposed that Unit 6 be retired instead of Unit 5. Since both units are identical, SCAQMD accepted this change for the FDOC. For the FDOC, the preliminary fees were based on the 2013 and 2014 generation for Boilers Nos. 1, 2, 6, and 3.

On 4/3/17, Stephen O’Kane provided the monthly gross generation for Boilers Nos. 1, 2, 6, and 3 for the period from January 2015 through March 2017 for the calculation of the first year annual offset fee, as the Permits to Construct for the AEC were scheduled to be issued in April 2017.

- 3) For the PDOC/FDOC, the  $C_{2YRAvgExisting}$  was based on the net average annual megawatt-hour (MWh) generation of the existing unit(s) to be replaced. The first year annual offset fee was corrected to be based on the gross average annual megawatt-hour (MWh) generation. The Planning, Rule Development & Area Sources (PRDAS) staff responsible for the development of Rule 1304.1 clarified that the  $C_{2YRAvgExisting}$  is to be based on the gross generation because the MW rating of the new replacement units ( $MW$  in the Rule 1304.1(c)(2)(A)(ii) equation) is based on gross MW.

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- 4) For the PDOC/FDOC, the South Coast AQMD made assumptions regarding the allocation of existing generation unit retirements to provide a preliminary estimate of the Rule 1304.1 fees. To offset the 1094.7 MW-gross for the installation of the combined- and simple-cycle turbines, the fee calculations assumed 175 MW was to be provided by the retirement of Unit 1, 175 MW from the retirement of Unit 2, 480 MW from the retirement of Unit 6, and 265 MW of 320 MW from the retirement of Unit 3. AES has not finalized plans for the surplus 55 megawatts from the retirement of Unit 3. AES had not provided any comments on the assumed allocation of existing generation unit retirements during its review of the PDOC and FDOC.

In a letter dated April 6, 2017, the South Coast AQMD issued a letter to Stephen O’Kane indicating the first year annual offset fee due for this project. The fee was based on the assumed allocation of existing generation unit retirements from the PDOC/FDOC. Mr. O’Kane responded that AES has sole discretion over which units to retire and apply against the Rule 1304.1. Pursuant to AES, the allocation was revised as follows. To offset the 1094.7 MW-gross for the installation of the combined- and simple-cycle turbines, 120 MW of 175 MW was provided by the retirement of Unit 1, 175 MW from the retirement of Unit 2, 480 MW from the retirement of Unit 6, and 320 MW from the retirement of Unit 3. The first year annual offset fee was corrected to be based on the allocation of existing generation unit retirements provided by Mr. O’Kane.

- 5) For the PDOC/FDOC, the use of the Rule 1304.1 Excel calculator separately for the combined-cycle turbines and the simple-cycle turbines required the  $C_{2YRAvgExisting}$  and  $C_{rep}$  to be divided between the combined-cycle and simple-cycle turbines, thereby resulting in an erroneous fee. The first year annual offset fee was correctly calculated using the Rule 1304.1(c)(2)(A)(ii) equation which is based on the total  $C_{2YRAvgExisting}$  and total  $C_{rep}$ .
- 6) As shown in the (c)(2)(A)(ii) equation, the Annual Offset Fee ( $F_i$ ), for a specific pollutant (i), is calculated by multiplying the applicable pollutant specific Annual Offset Fee Rate ( $R_i$ ) and Offset Factor in Table A2, by the fraction of the potential to emit level(s) of the new replacement unit(s).

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*Table A2: Pollutant Specific Offset Fee Rates & Offset Factors applicable to the cumulative MW capacity in excess of 100 MW repowered at an EGF after September 6, 2013 with offsets debited from the SCAQMD internal offset accounts, footnote \** states: “Offset Fees paid annually and adjusted annually by the CPI.” Since Rule 1304.1 was adopted on 9/6/13, the Annual Offset Fee Rates in *Table A2* are effective for the fiscal year ending 6/30/14. For each successive fiscal year, the offset fee rates are required to be adjusted by the Governing Board-approved annual percent fee increase, effective each July 1, for the Regulation III fee rules.

For the PDOC/FDOC, the first year annual offset fee, calculated based on the Annual Offset Fee Rates ( $R_{iA1}$  and  $R_{iA2}$ ) from *Table A2* for PM, SO<sub>x</sub>, and VOC, was adjusted by being multiplied by the Governing Board-approved annual percent fee increases for the three successive years (FY 2014 – 2015, FY 2015 – 2016, FY 2016 – 2017). Subsequently, PRDAS staff clarified that the Annual Offset Fee Rates,  $R_{iA1}$  and  $R_{iA2}$ , are required to be rounded off after every annual adjustment. The first year annual offset fee was corrected accordingly.

### **Fee Calculations**

The First Year Annual Offset Fee was calculated as shown below. The values for the variables are discussed following the calculations.

$$\text{Annual Offset Fee (F}_i\text{)} = [R_{iA1} \times (100/\text{MW}) + R_{iA2} \times (\text{MW}-100)/\text{MW}] \times \text{OF}_i \times \text{PTE}_{\text{repi}} \times [(\text{C}_{\text{rep}} - \text{C}_{2\text{YRAvgExisting}})/\text{C}_{\text{rep}}]$$

#### **PM<sub>10</sub>**

$$[\$1052 \times (100/1094.7 \text{ MW}) + \$4206 \times (1094.7-100)/1094.7] \times 1.0 \times 1040.0 \text{ lb/day} \\ \times [4,162,619 \text{ MWh/yr} - 650,693 \text{ MWh/yr}]/4,162,619 \text{ MWh/hr}] \\ = [3917.89] \times 1.0 \times 1040 \times [0.844] = \mathbf{\$3,438,967.13}$$

#### **SO<sub>x</sub>**

$$[\$837 \times (100/1094.7 \text{ MW}) + \$3344 \times (1094.7-100)/1094.7] \times 1.0 \times 401.9 \text{ lb/day} \\ \times [4,162,619 \text{ MWh/yr} - 650,693 \text{ MWh/yr}]/4,162,619 \text{ MWh/hr}] \\ = [3114.99] \times 1.0 \times 401.9 \times [0.844] = \mathbf{\$1,056,615.82}$$

#### **VOC**

$$[\$50 \times (100/1094.7 \text{ MW}) + \$196 \times (1094.7-100)/1094.7] \times 1.2 \times 1150.7 \text{ lb/day} \\ \times [4,162,619 \text{ MWh/yr} - 650,693 \text{ MWh/yr}]/4,162,619 \text{ MWh/hr}] \\ = [182.67] \times 1.2 \times 1150.7 \times [0.844] = \mathbf{\$212,888.91}$$

#### **TOTAL**

$$\$3,438,967.13 + \$1,056,615.82 + \$212,888.91 = \mathbf{\$4,708,472}$$

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**AES paid the \$4,708,472 prior to the issuance of the Permits to Construct for the AEC on 4/18/17.**

### **Variables**

$R_{iA1}$  = Table A1, Annual Offset Fee Rate for Pollutant (i), in terms of dollars per pound per day, annually.

$R_{iA2}$  = Table A2, Annual Offset Fee Rate for Pollutant (i), in terms of dollars per pound per day, annually.

### **Annual Offset Fee Rates ( $R_{iA1}$ and $R_{iA2}$ ) Adjusted Annually by the CPI**

Since Rule 1304.1 was adopted on 9/6/13, the offset fee rates in the rule are effective for the fiscal year ending 6/30/14. For each successive fiscal year, the offset fee rates are required to be adjusted by the CPI. The fee increases to date were: (1) 1.6% effective 7/1/14 for FY 2014 - 2015, (2) 1.4% effective 7/1/15 for FY 2015 - 2016, and (3) 2.4% effective 7/1/16 for FY 2016 - 2017.  **$R_{iA1}$  and  $R_{iA2}$  were adjusted annually by the CPI through FY 2016 - 2017.**

Table A1

RPM10 A1: \$997 x 1.016 → \$1013 x 1.014 → \$1027 x 1.024 → \$1052  
 RSOx A1: \$793 x 1.016 → \$806 x 1.014 → \$817 x 1.024 → \$837  
 RVOC A1: \$47 x 1.016 → \$48 x 1.014 → \$49 x 1.024 → \$50

Table A2

RPM10 A2: \$3986 x 1.016 → \$4050 x 1.014 → \$4107 x 1.024 → \$4206  
 RSOx A2: \$3170 x 1.016 → \$3221 x 1.014 → \$3266 x 1.024 → \$3344  
 RVOC A2: \$185 x 1.016 → \$188 x 1.014 → \$191 x 1.024 → \$196

$MW$  =  $MW$  rating of new replacement unit(s).

**Discussion:** 1094.7 MW

$$\begin{aligned}
 & [(231.197 \text{ MW-gross/ CTG}) * (2 \text{ CTGs}) + 230.557 \text{ MW-gross/steam turbine}]_{\text{combined-cycle}} \\
 & + [(100.438 \text{ MW-gross/ CTG}) * (4 \text{ CTGs})]_{\text{simple-cycle}} \\
 & = 692.951 \text{ MW}_{\text{combined-cycle}} + 401.75 \text{ MW}_{\text{simple-cycle}} \\
 & = 1094.7 \text{ MW-gross (case 12)}
 \end{aligned}$$

$OF_i$  = offset factor pursuant to Rule 1315(c)(2) for extreme non-attainment pollutants and their precursors, (see Table A1 or A2, as applicable, for factors).

**Discussion:** The offset factor is 1.0 for PM<sub>10</sub> and SO<sub>x</sub>, and 1.2 for VOC.

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*PT<sub>Erepi</sub> = permitted potential to emit of new replacement unit(s) for pollutant i, in pounds per day. (Maximum permitted monthly emissions ÷ 30 days).*

Discussion:

PT<sub>ErPM10</sub>: 1040.0 lb/day

Rule 1304(c)(2) defines PT<sub>Erepi</sub> as “the permitted potential to emit of new replacement unit(s) for pollutant I, in pounds per day. (Maximum permitted monthly emissions ÷ 30 days).” In the PDOC/FDOC, *Table 23* provides the 30-day averages per combined-cycle turbine, and *Table 39* provides the 30-day averages per simple-cycle turbine.

$$\begin{aligned}
 &[210.8 \text{ lb/day-turbine} * 2 \text{ turbines}]_{\text{combined-cycle}} + \\
 &[154.60 \text{ lb/day-turbine} * 4 \text{ turbines}]_{\text{simple-cycle}} \\
 &= 421.6 \text{ lb/day} + 618.4 \text{ lb/day} = 1040.0 \text{ lb/day}
 \end{aligned}$$

PT<sub>ErSOx</sub>: 401.9 lb/day

$$\begin{aligned}
 &[120.53 \text{ lb/day-turbine} * 2 \text{ turbines}]_{\text{combined-cycle}} + \\
 &[40.22 \text{ lb/day-turbine} * 4 \text{ turbines}]_{\text{simple-cycle}} \\
 &= 241.06 \text{ lb/day} + 160.88 \text{ lb/day} = 401.94 \text{ lb/day}
 \end{aligned}$$

PT<sub>ErVOC</sub>: 1150.7 lb/day

$$\begin{aligned}
 &[443.8 \text{ lb/day-turbine} * 2 \text{ turbines}]_{\text{combined-cycle}} + \\
 &[65.78 \text{ lb/day-turbine} * 4 \text{ turbines}]_{\text{simple-cycle}} \\
 &= 887.60 \text{ lb/day} + 263.12 \text{ lb/day} = 1150.72 \text{ lb/day}
 \end{aligned}$$

PT<sub>ErNOx</sub>: Not applicable to RECLAIM facility.

*C<sub>rep</sub> = maximum permitted annual megawatt hour (MWh) generation of the new replacement unit(s). (Maximum rated capacity (MW) x Maximum permitted annual operating hours (h)).*

Discussion: 4,162,619.1 MWhr/yr

$$\begin{aligned}
 &[(692.951 \text{ MW})(4640 \text{ hr/yr})]_{\text{combined-cycle}} + [(401.75 \text{ MW})(2358 \text{ hr/yr})]_{\text{simple-cycle}} \\
 &= 4,162,619.1 \text{ MWhr/yr}
 \end{aligned}$$

*Note: Startup and shutdown hours are included.*



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**First Year Annual Offset Fee Payment Discussion (Actual Payment Required)**

As required by Rule 1304.1(c)(3)(A)(i), AES remitted the first year annual offset fee payment of \$4,708,472 prior to the issuance of the Permits to Construct for the AEC on 4/18/17. This was an estimated payment required for the South Coast AQMD to hold credits for the facility.

The **Prior Application** evaluation provided an analysis of the first year annual offset fee that will actually be required. This evaluation incorporated the following changes to the estimated payment required to hold credits for the combined-cycle and simple-cycle turbines: (1) only the combined-cycle turbines have been constructed and are in operation; (2) the annual operating hours for each combined-cycle turbine will be increased by 1905 hours/turbine, from the permitted 4640 hr/turbine (FDOC) to 6545 hr/turbine; and (3) offset fee rates are required to be adjusted annually by the CPI.

Rule 1304.1(c)(3)(A)(i) indicates that subsequent payments shall be remitted annually based on the cumulative total of MW capacity that commenced operation, on or before the anniversary date of the original commencement of operation of such MW capacity at the fee rates in effect at the time the fee is due. As discussed below, the first fire of the first combined-cycle turbine will occur on October 3, 2019. **Therefore, the next annual payment for the two combined-cycle turbines will be due prior to October 3, 2020.** This annual fee is calculated below and will be deducted from the \$4,708,472 previously paid to hold the credits.

The Planning, Rule Development & Area Sources (PRDAS) staff responsible for the development of Rule 1304.1 was consulted regarding the correct implementation of Rule 1304.1 for subsequent payments. The following summarizes PRDAS staff's clarification.

- 1) Question: For the next payment, does Rule 1304.1 allow AES to convert to a single payment for the combined-cycle turbines but continue with annual payments for the simple-cycle turbines?

For the FDOC, AES selected the annual payment option for the first payment due prior to the issuance of the permits to construct, thereafter switching to the single payment option prior to the end of the first year of operation. However, the Yorke *Applications for Modification*, submitted on 2/8/19, provided an update: "AES will continue to pay the fees as annual payments for the emissions of VOC, PM, and SO<sub>x</sub>." In an e-mail dated 8/14/19, Stephen O'Kane clarified: "AES plans to pay the Single Fee for the CCGT portion of the project in the first operating year (2020). Please let us know the fee broken out by CCGT phase and SCGT phase."

PRDAS staff indicated that the language of paragraph (c)(1) provides for flexibility, contingent on Engineering & Permitting (E&P) organizational (permitting)

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constraints. E&P's determination is that since the combined-cycle and simple-cycle turbines were permitted as one project and since the first year annual offset fee payment of \$4,708,472 was based on one project, both the simple-cycle and combined-cycle turbines should both be single payment or annual payment.

On 9/19/19, E&P Staff met with Stephen O'Kane, AES Manager for Sustainability and Regulatory Compliance, and Charlene He, AES Environmental Manager, for a project update including for Rule 1304.1 fees. E&P suggested that both the combined-cycle and simple-cycle turbines remain on annual payments until AES makes a decision regarding whether to proceed with the construction of the simple-cycle turbines (Phase 2). As Rule 1304.1(c)(3)(A)(i) provides that subsequent payments shall be remitted annually based on the cumulative total of MW capacity that commenced operation, on or before the anniversary date of the original commencement of operation of such MW capacity at the fee rates in effect at the time the fee is due, the annual payments for the simple-cycle turbines will be \$0.00 until the first annual payment due on or before the anniversary date of the original commencement of operation. Pursuant to *Table 2--AES Rule 1304(a)(2) Offset Plan* above, first fire for the simple-cycle turbines is scheduled for 11/1/2023. Further, Rule 1304.1(c)(3)(A)(iii) provides that the sum of the annual offset fees remitted for the combined-cycle turbines prior to the submittal of a request for change to a single payment option shall be credited towards the single payment offset fee due.

Mr. O'Kane agreed to remain on annual payments until AES decides whether to proceed with Phase 2. He indicated that the first fire of the first combined-cycle turbine will occur on October 3, 2019. Therefore, the next annual payment or a single payment for the combined-cycle turbines will be due prior to October 3, 2020. Mr. O'Kane indicated that AES will know by then whether they will proceed with Phase 2 for the simple-cycle turbines.

- 2) Question: If AES makes a decision to convert from annual payments to a single payment for the combined-cycle and simple-cycle turbines in the future, Rule 1304.1(c)(3)(A)(iii) provides that the sum of the annual offset fees remitted prior to the submittal of a request for change to a single payment option shall be credited towards the single payment offset fee due. Rule 1304.1(c)(3)(A)(iii) clearly specifies that the amount of the single payment offset fee due shall be based on offset fee rates applicable at the time the written request for the change in payment method is submitted to the Executive Officer. The question is whether the sum of the annual offset fees remitted prior to the submittal of a request for change to a single payment option is required to be adjusted annually by the CPI to the time the written request for change is submitted.

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PRDAS staff indicated that **the fees are those in effect at the time an event occurs**. Therefore, there is no adjustment to the sum of the annual offset fees remitted. What was paid will be refunded or credited.

- 3) Question: Rule 1304.1(c)(5) provides for refunds. The issue is whether the initial payment for the First Year Annual Offset Fee Payment is required to be adjusted annually by the CPI to the time of the request for refund.

PRDAS staff indicated the fee rates are set forth in Tables A1 and A2 (Table A2 for this project). The fee rates on which all payments are based are date dependent. **Fees are those in effect at the time an event occurs**. Thus the initial payment for the First Year Annual Offset Fee Payment should not be recalculated or adjusted by the CPI, and remains \$4,708,472 for all purposes.

- 4) Question: For the next annual payment, Rule 1304.1(c)(3)(A)(i) indicates that subsequent payments shall be remitted annually based on the cumulative total of MW capacity that commenced operation, on or before the anniversary date of the original commencement of operation of such MW capacity at the fee rates in effect at the time the fee is due.

The next annual payment will be due prior to October 3, 2020 for the operation of the two combined-cycle turbines only. PRDAS staff provided the following clarifications regarding the methodology to calculate the annual fee for the operation of the combined-cycle turbines, without including any simple-cycle turbines.

- a)  $C_{2YrAvgExisting}$  – The amount of offsets required for a project is calculated at the time of the issuance of permits to construct. The  $C_{2YrAvgExisting}$  was used to calculate the amount of offsets required and was based on the last twenty-four month period immediately prior to the issuance of the Permits to Construct for the AEC. Thus, the  $C_{2YrAvgExisting}$  remains a constant, even if the simple-cycle turbines are constructed years after the initial permits to construct are issued.
- b) Crep—The increase in annual operating hours for the combined-cycle turbines and the decrease in the annual operating hours for the simple-cycle turbines are required to be included in the Crep.
- c) Annual payment for combined-cycle turbines =

(Annual payment for simple-cycle and combined-cycle turbines) x

$$\left( \frac{\text{Installed MW for combined-cycle turbines}}{\text{Total MW for simple-cycle \& combined-cycle turbines}} \right)$$

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### Fee Calculations

The actual payment for the first year annual offset fee for the operation of the combined-cycle turbines will be due prior to October 3, 2020. This payment will be deducted from the initial payment of \$4,708,472, required for the South Coast AQMD to hold the credits for the facility, paid prior to the issuance of the Permits to Construct for the AEC on 4/18/17.

For the *First Year Annual Offset Fee Payment (Actual Payment Required for the Project)*, the only changes to the *First Year Annual Offset Fee Payment (Initial Payment Prior to Issuance of Permits to Construct)* shown above are the **R<sub>iA1</sub> & R<sub>iA2</sub>, C<sub>rep</sub>, and installed MW**.

$$\text{Actual Annual Offset Fee (F}_i\text{)} = [\text{R}_{iA1} \times (100/\text{MW}) + \text{R}_{iA2} \times (\text{MW}-100)/\text{MW}] \times \text{OF}_i \times \text{PTE}_{\text{repi}} \times [(\text{C}_{\text{rep}} - \text{C}_{2\text{YRAvgExisting}})/\text{C}_{\text{rep}}] \times \underline{\underline{692.95 \text{ MW combined-cycle turbines}}} \\ \underline{\underline{1094.7 \text{ MW total turbines}}}$$

#### PM<sub>10</sub>

$$[\$1052 \underline{\underline{\$1154}} \times (100/1094.7 \text{ MW}) + \$4206 \underline{\underline{\$4614}} \times (1094.7-100)/1094.7] \times 1.0 \\ \times 1040.0 \text{ lb/day} \times \\ [4,162,619 \underline{\underline{4,960,415.8}} \text{ MWh/yr} - 650,693 \text{ MWh/yr}] / 4,162,619 \underline{\underline{4,960,415.8}} \text{ MWh/hr} \\ \times \underline{\underline{692.95 \text{ MW combined-cycle turbines}}} \\ \underline{\underline{1094.7 \text{ MW total turbines}}}$$

$$= [3917.89 \underline{\underline{4297.93}}] \times 1.0 \times 1040 \times [0.844 \underline{\underline{0.869}}] \times \underline{\underline{[0.633]}} = \$3,438,967.13 \\ = \underline{\underline{\$2,458,760.14}}$$

#### SO<sub>x</sub>

$$[\$837 \underline{\underline{\$918}} \times (100/1094.7 \text{ MW}) + \$3344 \underline{\underline{\$3669}} \times (1094.7-100)/1094.7] \times 1.0 \\ \times 401.9 \text{ lb/day} \times \\ [4,162,619 \underline{\underline{4,960,415.8}} \text{ MWh/yr} - 650,693 \text{ MWh/yr}] / 4,162,619 \underline{\underline{4,960,415.8}} \text{ MWh/hr} \\ \times \underline{\underline{692.95 \text{ MW combined-cycle turbines}}} \\ \underline{\underline{1094.7 \text{ MW total turbines}}}$$

$$= [3114.99 \underline{\underline{3417.70}}] \times 1.0 \times 401.9 \times [0.844 \underline{\underline{0.869}}] \times \underline{\underline{[0.633]}} = \$1,056,615.82 \\ = \underline{\underline{\$755,571.26}}$$

#### VOC

$$[\$50 \underline{\underline{\$55}} \times (100/1094.7 \text{ MW}) + \$196 \underline{\underline{\$215}} \times (1094.7-100)/1094.7] \times 1.2 \\ \times 1150.7 \text{ lb/day} \times \\ [4,162,619 \underline{\underline{4,960,415.8}} \text{ MWh/yr} - 650,693 \text{ MWh/yr}] / 4,162,619 \underline{\underline{4,960,415.8}} \text{ MWh/hr} \\ \times \underline{\underline{692.95 \text{ MW combined-cycle turbines}}} \\ \underline{\underline{1094.7 \text{ MW total turbines}}}$$

$$= [182.67 \underline{\underline{200.38}}] \times 1.2 \times 1150.7 \times [0.844 \underline{\underline{0.869}}] \times \underline{\underline{[0.633]}} = \$212,888.91$$

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= **\$152,202.30**

#### **NEXT ANNUAL OFFSET FEE**

**\$2,458,760.14 + \$755,571.26 + \$152,202.30 = \$3,366,533.70**

The \$3,366,533.70 fee is adjusted annually by the CPI through FY 2019 – 2020. Since the next annual payment will be due after June 30, 2020, the \$3,366,533.70 is required to be adjusted by CPI for FY 2020 – 2021.

#### **CREDIT**

\$4,708,472 (*First Year Annual Offset Fee Payment Prior to Issuance of Permits to Construct*) - \$3,366,533.70 (*Next Annual Offset Fee, but needs to be further adjusted by CPI for 2020 – 2021*) is \$1,341,938.30 credit that can be applied to the next annual or single payment, as selected by AES. The estimated \$1,341,938.30 will be less after the \$3,366,355.70 is adjusted by CPI for 2020 – 2021.

#### **Variables**

The values for the revised variables are discussed below.

$R_{iA1}$  = Table A1, Annual Offset Fee Rate for Pollutant (i), in terms of dollars per pound per day, annually.

$R_{iA2}$  = Table A2, Annual Offset Fee Rate for Pollutant (i), in terms of dollars per pound per day, annually.

#### **Annual Offset Fee Rates ( $R_{iA1}$ and $R_{iA2}$ ) Adjusted for CPI**

Since Rule 1304.1 was adopted on 9/6/13, the offset fee rates in the rule are effective for the fiscal year ending 6/30/14. For each successive fiscal year, the offset fee rates are required to be adjusted. The fee increases to calculate the *First Year Annual Offset Fee Paid* are: (1) 1.6% effective 7/1/14, (2) 1.4% effective 7/1/15, and (3) 2.4% effective 7/1/16. **The subsequent fee increases are: (4) 2.5% effective 7/1/17, (5) 3.4% effective 7/1/18, and (6) 3.5% effective 7/1/19, and (7) TBD % effective 7/1/20.**

Table A1

$R_{PM10 A1}$ : \$997 x 1.016 → \$1013 x 1.014 → \$1027 x 1.024 → \$1052 **x 1.025 → \$1078 x 1.034 → \$1115 x 1.035 → \$1154**

$R_{SOx A1}$ : \$793 x 1.016 → \$806 x 1.014 → \$817 x 1.024 → \$837 **x 1.025 → \$858 x 1.034 → \$887 x 1.035 → \$918**

$R_{VOC A1}$ : \$47 x 1.016 → \$48 x 1.014 → \$49 x 1.024 → \$50 **x 1.025 → \$51 x 1.034 → \$53 x 1.035 → \$55**





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- (1) Identified BACT conditions
- (2) Monthly maximum emissions from the permitted source

**Analysis:**

**Combined-Cycle Turbines**

BACT--Condition nos. A195.8, A195.9, and A195.10 set forth the BACT limits for NO<sub>x</sub>, CO, and VOC, respectively.

Monthly Emissions--Condition no. A63.2 sets forth the monthly limits for CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub>. These limits indirectly limit NO<sub>x</sub>.

**Rule 1325—Federal PM<sub>2.5</sub> New Source Review Program, adopted 6/3/2011, amended 12/5/14, 11/4/16, 1/4/19**

• **Revision History of Rule 1325**

*The revision history of Rule 1325 is summarized below to provide background for the Rule 1325 analysis for the AEC project.*

Rule 1325 was adopted on June 3, 2011 to incorporate U.S. EPA requirements for PM<sub>2.5</sub> into Regulation XIII – New Source Review (NSR). The rule mirrors federal requirements, including offset ratios, Lowest Achievable Emission Rate (LAER) compliance, and control of PM<sub>2.5</sub> precursors.

Rule 1325 was amended on 12/5/14 to incorporate administrative changes to definitions, provisions and exclusions, based on comments received from the U.S. EPA regarding SIP approvability of Rule 1325. The amended rule was approved into the California State Implementation Plan on 5/1/15. The applicable requirements of 40 CFR Part 51, Appendix S, were necessary for permitting actions until Rule 1325 became SIP-approved.

Rule 1325 was amended on 11/4/16 to establish appropriate major stationary source thresholds for direct PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors, including VOC and ammonia, in order to align with the recent reclassification of the South Coast Basin from a “moderate” PM<sub>2.5</sub> nonattainment area to a “serious” nonattainment area and with U.S. EPA’s Fine Particulate Matter National Ambient Air Quality Standards implementation rule. The amendments were intended to facilitate SIP approval of the regulations. The amendment added ammonia and VOC as precursors to PM<sub>2.5</sub>, per Clean Air Act Subpart 4 requirements. The major polluting facility thresholds were lowered from 100 tons per year per pollutant to 70 tons per year per pollutant. **These amendments were to be effective after August 14, 2017 or upon the effective date of EPA’s approval of these amendments to this rule, whichever is later.** US EPA’s Fine Particulate Matter National Ambient Air Quality



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- (1) BASELINE ACTUAL EMISSIONS means the rate of emissions, in tons per year, of a regulated NSR pollutant, as determined in accordance with the following:
  - (A) For any existing electric utility steam generating unit, baseline actual emissions means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding when the owner or operator begins actual construction of the project. The Executive Officer shall allow the use of a different time period upon a determination that it is more representative of normal source operation.
- (3) MAJOR MODIFICATION means:
  - (A) Any physical change in or change in the method of operation of a major polluting facility that would result in: a significant emissions increase of a regulated NSR pollutant; and a significant net emissions increase of that pollutant from the major polluting facility.
- (4) MAJOR POLLUTING FACILITY means, on a pollutant specific basis, any emissions source located in areas federally designated pursuant to 40 CFR 81.305 as non-attainment for the South Coast Air Basin (SOCAB) which has actual emissions of, or the potential to emit PM<sub>2.5</sub>, or its precursors at or above the following levels:
  - (A) 100 tons per year per pollutant until August 14, 2017 or until the effective date of U.S. EPA's approval of the November 4, 2016 amendments to this rule, whichever is later; and,
  - (B) 70 tons per year per pollutant after August 14, 2017 or upon the effective date of U.S. EPA's approval of the November 4, 2016 amendments to this rule, whichever is later.

A facility is considered to be a major polluting facility only for the specific pollutant(s) with a potential to emit at or above the levels specified.
- (8) PRECURSORS means, for the purposes of this rule, nitrogen oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>), and, effective August 14, 2017 or the effective date of U.S. EPA's approval of the November 4, 2016 amendments to this rule, whichever is later, Volatile Organic Compounds (VOC), and Ammonia.
- (12) SIGNIFICANT means, in reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates:

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Nitrogen oxides: 40 tons per year  
 Sulfur dioxide: 40 tons per year  
 Volatile Organic Compounds: 40 tons per year  
 Ammonia: 40 tons per year  
 PM<sub>2.5</sub>: 10 tons per year

(c) Requirements

- (1) The Executive Officer shall deny the Permit for a new major polluting facility; or major modification to a major polluting facility; or any modification to an existing facility that would constitute a major polluting facility in and of itself, unless each of the following requirements is met:
  - (A) Lowest Achievable Emission Rate (LAER) is employed for the new or relocated source or for the actual modification to an existing source; and
  - (B) Emission increases shall be offset at an offset ratio of 1.1:1 for PM<sub>2.5</sub> and the ratio required in Regulation XIII or Rule 2005 for NO<sub>x</sub> and SO<sub>2</sub> as applicable; and
  - (C) Certification is provided by the owner/operator that all major sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance with all applicable emission limitations and standards under the Clean Air Act; and
  - (D) An analysis is conducted of alternative sites, sizes, production processes, and environmental control techniques for such proposed source and demonstration made that the benefits of the proposed project outweigh the environmental and social costs associated with that project.

(d) Emission Calculations

- (1) Except as provided in subdivision (e) of this rule, and consistent with the definition of a major modification, a project is a major modification for a regulated NSR pollutant if it causes two types of emission increases—a significant emissions increase and a significant net emissions increase. The procedure for calculating whether a significant emissions increase will occur at the major polluting facility depends on the type of emissions units being modified, according to paragraphs (d)(2) through (d)(5). The procedure for calculating whether a significant net emissions increase will occur at the major polluting facility is contained in the definition of the term Net Emission Increase.
- (2) Actual-to-projected-actual applicability tests for projects that only involve existing emissions units. A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions and the baseline actual emissions [as defined in subparagraph (b)(1)(A)

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and (b)(1)(B), as applicable] for each existing emissions unit, equals or exceeds the significant amount for that pollutant.

(h) Test Methods

For the purpose of this rule only, testing for point sources of PM<sub>2.5</sub> shall be in accordance with U.S. EPA Test Methods 201A and 202.

**Analysis:**

The **Prior Application** provided an analysis for Phase I (combined-cycle turbines) and Phase II (simple-cycle turbines).

**Phase I (Combined-Cycle Turbines)**

Pursuant to paragraph (b)(4) for the definition of MAJOR POLLUTING FACILITY, the lower threshold of 70 tons per year per pollutant is applicable if construction does not commence until “after August 14, 2017 or upon the effective date of U.S. EPA’s approval of the 11/4/16 amendments to this rule, whichever is later.” Subdivision (b) states: “For the purposes of this rule, the definitions in Title 40 CFR 51.165(a)(1), as it exists on November 4, 2016, shall apply, unless the same term is defined below, then the defined term below shall apply: ....” Since “commence construction” is not defined in Rule 1325(b), we turn to 40 CFR 51.165(a)(1).

40 CFR 51.165 states:

(a) State Implementation Plan and Tribal Implementation Plan provisions satisfying sections 172(c)(5) and 173 of the Act shall meet the following conditions:

- (1) All such plans shall use the specific definitions. Deviations from the following wording will be approved only if the State specifically demonstrates that the submitted definition is more stringent, or at least as stringent, in all respects as the corresponding definition below:
  - (xv) *Begin actual construction* means in general, initiation of physical on-site construction activities on an emissions unit which are of a permanent nature. Such activities include, but are not limited to, installation of building supports and foundations, laying of underground pipework, and construction of permanent storage structures. With respect to a change in method of operating this term refers to those on-site activities other than preparatory activities which mark the initiation of the change.
  - (xvi) *Commence* as applied to construction of a major stationary source or major modification means that the owner or operator has all necessary preconstruction approvals or permits and either has:

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- (A) Begun, or caused to begin, a continuous program of actual on-site construction of the source, to be completed within a reasonable time;  
or
  - (B) Entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of actual construction of the source to be completed within a reasonable time.
- (xvii) *Necessary preconstruction approvals or permits* means those Federal air quality control laws and regulations and those air quality control laws and regulations which are part of the applicable State Implementation Plan.
- (xviii) *Construction* means any physical change or change in the method of operation (including fabrication, erection, installation, demolition, or modification of an emissions unit) that would result in a change in emissions.

In an letter, dated 8/7/17, Stephen O’Kane, AES, provided confirmation that “actual construction” was commenced on 8/7/17. The letter states:

“On August 7, 2017 AES Alamitos, LLC began construction, as defined in 40CFR 51.165(a)(1)(xv), with the start of construction of the permanent foundation for gas turbine, Unit No. CCGT-1 (ID No. D165), heat recovery steam generator (HRSG), CO oxidation catalyst (ID No. C169), selective catalytic reduction control (ID No. C170) and the stack serving gas turbine Unit No. CCGT-1 (ID No. S172) at the AES Alamitos generating station, facility ID 115394. Auger in place, concrete and steel rebar support piles for the foundation of the gas turbine, HRSG, and stack have been installed in the area highlighted on the attached general arrangement drawing. A photograph of the subject permanent construction work, including completed concrete and steel rebar piles has also been provided.”

For the **Prior Application**, because the actual construction of Phase I (combined-cycle turbines and associated equipment) was commenced on or prior to 8/14/17 (earliest date that the 70 tpy threshold would become applicable), the analysis will continue to be based on a threshold of 100 tpy for major source. “Actual Emissions (2013 & 2014 Avg)” remains applicable as the “baseline actual emissions” because these years are within the 5-year period immediately preceding the commencement of actual construction of Phase I on 8/7/17.

Update: The PM2.5 emission limit was updated from 100 tpy (FDOC) to 70 tpy pursuant to the evaluation for Auxiliary Boiler (A/N 604014) and Auxiliary Boiler SCR (A/N 613323). See P/Cs issued on 7/10/19. Pursuant to the Rule 1325 analysis in the Prior Application evaluation, the PM2.5 emission limit in condition F2.1 was corrected to 100 tpy. The reason is that the actual construction of Phase I

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(combined-cycle turbines and associated equipment) was commenced on or prior to 8/14/17 (earliest date that the 70 tpy threshold would become applicable).

FDOC Table 67 was revised below to incorporate the revised AEC potential to emit resulting from the revised annual operating schedule for the turbines.

**Table 67 – Rule 1325 Applicability**

	<b>NO<sub>x</sub></b>	<b>SO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>
Alamitos Generating Station Potential to Emit, TPY (Table 13)	635.60	49.56	97.86
Major Source for Particular Pollutant?	Yes, PTE is greater than 100 tpy.	No, PTE is less than 100 tpy.	No, PTE is less than 100 tpy.
Alamitos Generating Station (AGS) Actual Emissions (2013 & 2014 Avg) TPY (Table 14)	47.47	4.68	10.91
Alamitos Energy Center (AEC) Potential to Emit, TPY (Table 45)	<del>137.06</del> <b>146.78</b>	<del>40.19</del> <b>11.83</b>	69.52
Net Emissions Increase (AEC PTE – AGS actual)	<del>89.59</del> <b>99.31</b>	<del>5.51</del> <b>7.15</b>	58.61
If AGS is a major facility for particular pollutant, does the AEC result in a net significant emissions increase?	Yes, net increase is greater than 40 tpy.		
If AGS is not a major facility for particular pollutant, does the AEC constitute a modification that would constitute a major polluting facility in and of itself?		No, net increase is less than 100 tpy.	No, net increase is less than 100 tpy.

As with the **FDOC**, the **Prior Application** concluded that Rule 1325 is applicable to NO<sub>x</sub>, but not to SO<sub>2</sub> and PM<sub>2.5</sub>. Rule 1325 is applicable to NO<sub>x</sub>, because the AGS is a major polluting facility for NO<sub>x</sub> because the PTE is greater than 100 tpy, and the AEC constitutes a major modification because the net NO<sub>x</sub> increase is greater than 40 tpy. NO<sub>x</sub> meets the requirements of Rule 1325(c)(1)(A) – (D). For (c)(1)(A), the turbines meet LAER for NO<sub>x</sub> as discussed under the *Rule 1703(a)(2)—Top-Down BACT* analysis, below. For (c)(1)(B), the NO<sub>x</sub> emissions will be offset as discussed under the analysis for Rule 2005(c)(2)—Offsets, below. For (c)(1)(C), certification of statewide compliance is provided as discussed under Rule 2005(g)(1) for Statewide Compliance, below. For (c)(1)(D), the alternatives discussion is provided as discussed under the Rule 2005(g)(2) for Alternative Analysis, below.

Rule 1325 is not applicable to SO<sub>2</sub> and PM<sub>2.5</sub>. The AGS is not a major polluting facility for SO<sub>2</sub> and PM<sub>2.5</sub> because the PTEs for both are less than 100 tpy. The AEC does not constitute a modification to an existing facility that would constitute a major polluting facility in and of itself, because the net increase for SO<sub>2</sub> and PM<sub>2.5</sub> are less than 100 tpy as enforced by the annual emissions limits for SO<sub>x</sub> and PM<sub>10</sub> in conditions A63.2, A63.3, and A63.4.

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The commencement of construction for Phase II (simple-cycle turbines) did not occur on or prior to 8/14/17. Pursuant to updated *Table 3 - AEC Schedule Major Milestones*, the actual construction of Phase II has been revised to Third Quarter 2022.

Existing condition E74.1 requires a BACT/LAER determination for Phase II prior to the commencement of construction, pursuant to 40 CFR 52.2 – PSD. New analogous condition E74.2 was added to require Rule 1325 evaluation and compliance prior to the commence of construction of Phase II.



For the applications under evaluation, the revisions to *Table 67* for the **Prior Application** are shown below. The increase in NOx emissions for the non-cold starts will increase the “Alamitos Energy Center (AEC) Potential to Emit, TPY (*Table 45*)” from 146.78 tpy (**Prior Application**) to 153.08 tpy (**A/N 618934 & 618936**) and the “Net Emissions Increase (AEC PTE – AGS actual)” from 99.31 tpy (**Prior Application**) to 105.61 tpy (**A/N 618934 & 618936**). Otherwise, the analysis is the same as for the **Prior Application**.

	NOx	SO <sub>2</sub>	PM <sub>2.5</sub>
Alamitos Generating Station Potential to Emit, TPY ( <i>Table 13</i> )	635.60	49.56	97.86
Major Source for Particular Pollutant?	Yes, PTE is greater than 100 tpy.	No, PTE is less than 100 tpy.	No, PTE is less than 100 tpy.
Alamitos Generating Station (AGS) Actual Emissions (2013 & 2014 Avg) TPY ( <i>Table 14</i> )	47.47	4.68	10.91
Alamitos Energy Center (AEC) Potential to Emit, TPY ( <i>Table 45</i> )	<del>137.06 (FDOC)</del> <del>146.78 (Prior Application)</del> <b><u>153.08 (A/N 618934 &amp; 618936)</u></b>	<del>10.19 (FDOC)</del> <b><u>11.83 (Prior Application, Same for A/N 618934 &amp; 618936)</u></b>	69.52 (FDOC, <b><u>Prior Application, Same for A/N 618934 &amp; 618936</u></b> )
Net Emissions Increase (AEC PTE – AGS actual)	<del>89.59 (FDOC)</del> <del>99.31 (Prior Application)</del>	<del>5.51 (FDOC)</del>	58.61 (FDOC,

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	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>2.5</sub>
	<b><u>105.61 (A/N 618934 &amp; 618936)</u></b>	<b><u>7.15 (Prior Application, Same for A/N 618934 &amp; 618936)</u></b>	<b><u>Prior Application, Same for A/N 618934 &amp; 618936)</u></b>
If AGS is a major facility for particular pollutant, does the AEC result in a net significant emissions increase?	Yes, net increase is greater than 40 tpy.		
If AGS is not a major facility for particular pollutant, does the AEC constitute a modification that would constitute a major polluting facility in and of itself?		No, net increase is less than 100 tpy.	No, net increase is less than 100 tpy.

**Rule 1401—New Source Review of Toxic Air Contaminants, as amended 9/1/17**

**Rule 2005(i) – RECLAIM Rule 1401 Compliance, as amended 12/4/15**

Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) from new permit units, relocations or modifications to existing permit units that emit toxic air contaminants listed in Table I of this rule. The rule establishes allowable risks for permit units requiring new permits pursuant to Rules 201 or 203. Rule 2005(i) requires compliance with Rule 1401 for NO<sub>x</sub> emissions at RECLAIM facilities.

Because the allowable risks are for each permit unit, the limits are for each turbine and the auxiliary boiler. The relevant requirements are presented below.

(d) Requirements

The Executive Officer shall deny the permit to construct a new, relocated or modified permit unit if emissions of any toxic air contaminant listed in Table I may occur, unless the applicant has substantiated to the satisfaction of the Executive Officer all of the following:

(1) MICR and Cancer Burden

The cumulative increase in MICR which is the sum of the calculated MICR values for all toxic air contaminants emitted from the new, relocated or modified permit unit will not result in any of the following:

- (A) an increased MICR greater than one in one million ( $1.0 \times 10^{-6}$ ) at any receptor location, if the permit unit is constructed without T-BACT;
- (B) an increased MICR greater than ten in one million ( $10 \times 10^{-6}$ ) at any receptor location, if the permit unit is constructed with T-BACT;
- (C) a cancer burden greater than 0.5.

(2) Chronic Hazard Index

The cumulative increase in total chronic HI for any target organ system due to total emissions from the new, relocated or modified permit unit owned or operated by the

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applicant for which applications were deemed complete on or after the date when the risk value for the compound is finalized by the state Office of Environmental Health Hazard Assessment (OEHHA) will not exceed 1.0 at any receptor location.

(3) Acute Hazard Index

The cumulative increase in total acute HI for any target organ system due to total emissions from the new, relocated or modified permit unit owned or operated by the applicant for which applications were deemed complete on or after the date when the risk value for the compound is finalized by OEHHA will not exceed 1.0 at any receptor location.

(e) Risk Assessment Procedures

- (1) The Executive Officer shall periodically publish procedures for determining health risk assessments under this rule. To the extent possible, the procedures will be consistent with the most recently adopted policies and procedures of the state OEHHA.

(f) Emissions Calculations

- (3) For the purpose of determining MICR, cancer burden and chronic HI due to a modified permit unit pursuant to this rule, the increase in emissions from the modified permit unit shall be calculated based on the difference between the total permitted emissions after the modification, calculated pursuant to the criteria established in subparagraphs (f)(1)(A), (B), (C), and (D), and: ....

On March 6, 2015, the California Office of Environmental Health Hazard Assessment (OEHHA) approved the Air Toxics Hot Spots Program Guidance Manual for Preparation of Risk Assessments (2015 OEHHA Guidelines). On June 5, 2015, the South Coast AQMD approved amendments to Rule 1401 to revise definitions and risk assessment procedures to be consistent with the 2015 OEHHA Guidelines. These updated guidelines take into account recent scientific advances which have found greater risk to children when they are exposed to cancer causing compounds.

➤ **PRIOR APPLICATION (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

• **Prior PRDAS Guidance regarding Modeling Requirements**

On 8/14/18, Sr. Meteorologist Melissa Sheffer provided guidance for another project for which only the annual emissions would change. The consultant had concluded since the HIA is based on hourly emissions rates that would not change, the HIA would not be required to be evaluated in the revised HRA. Ms. Sheffer indicated that, as Rule 1401 provides limits for MICR, HIC, and HIA for a modified permit unit, the HRA analysis is required to provide the MICR, HIC, and HIA for each permit unit.

As discussed above for the *Rule 1303(b)(1)* and *Rule 2005(c)(1)(B)* air dispersion modeling analysis, on 12/6/18, Sr. Meteorologist Melissa Sheffer requested and received clarification

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from Manager Jillian Wong regarding modeling requirements for a modification project. Both the air dispersion modeling and HRA are required to be performed based on the emissions increases per permit unit, provided the stack parameters (height, diameter, location, flow rates, temperature) remain the same and the monitors for the background concentrations are located sufficiently close to the facility to capture the existing emissions from the facility. For the **Prior Application**, both the air dispersion modeling and HRA were required to be based on total emissions, not on the emissions increases, because the equipment was under construction and had not contributed to the measured background concentrations and because the stack height had increased from 140 ft to 150 ft. For **A/N 618933-618934, 618936**, any modeling required would be based on the emissions increases because the combined-cycle turbines have only been in operations since 1/1/20.

- **South Coast AQMD Comments, 12/20/18, on Yorke Protocol, 11/7/18**

- a. **South Coast AQMD** required the air dispersion modeling and health risk assessment analysis to be updated to the most recent background concentrations, MET data, AERMOD version (air quality modeling), and AERMOD with HARP version (HRA). The **Protocol** proposal to incorporate operating hour revisions into the FDOC dispersion modeling was not adequate.
- b. **South Coast AQMD** required revised health risk assessments to update FDOC *Table 68--Model Results for HRA for Combined-Cycle Turbine*, FDOC *Table 70--Model Results for HRA for Simple-Cycle Turbine*, and FDOC *Table 70A--Model Results for HRA for Facility* for the MICR, HIC, HIA, and cancer risk, based on the most recent risk values. The **Protocol** proposal to provide a scaled estimation based on incorporating the operating hour revisions for each unit (CCGT, SCGT, auxiliary boiler) and the total facility into the FDOC dispersion modeling was not adequate.

- **Combined-Cycle Turbines**

For the **Prior Application**, the toxic air contaminants emissions calculations for determination of the maximum hourly and annual emissions rates were shown in revised *Table 26 - Combined-Cycle Turbine Toxic Air Contaminants/Hazardous Air Pollutants*, above. The revised increased maximum annual emission rates in *Table 26* incorporate the increase in average annual heat input resulting from the proposed increase in total annual hours from 4640 hr/yr to 6545 hr/yr per turbine. The maximum hourly emission rates were the same as for the **FDOC**, except for the refinement to the ammonia emissions.

The modeled stack parameters for the hourly impacts and annual impacts were the same as for the **FDOC**, except the stack height had increased from 140 ft. to 150 ft., as set forth in new *Table 67A* below. The maximum hourly turbine impacts for the combined-cycle turbines continued to be predicted using the exhaust parameters for the 65.3 °F, minimum load case, which represented the turbine exhaust parameters associated with the maximum predicted 1-

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hour ground-level impact in the dispersion modeling (Case 7 in *Table 15*). The annual turbine impacts continued to be predicted for the 65.3 °F, minimum load case, which represented the average annual temperature and load scenario resulting in the maximum predicted annual ground-level impact in the dispersion modeling (Case 7 in *Table 15*).

**Table 67A--Modeled Stack Parameters for HRA for Combined-Cycle Turbines**

Parameter	Hourly Impacts (Scenario CC07—65.3 °F, Minimum Load)	Annual Impacts (Scenario CC07—65.3 °F, Minimum Load)
Stack Diameter (m)	6.10	6.10
Stack Height (m)	45.7 (was 42.7)	45.7 (was 42.7)
Stack Temp (°K)	350	350
Stack Velocity (m/s)	11.8	11.8

The MICR limit is ten in one million for each combined- and simple-cycle turbine because Best Available Control Technology For Toxics (T-BACT) for combustion turbines is determined to be an oxidation catalyst.

The Modeling Review Memo, dated 7/30/19, from the Health Effects Officer Jo Kay Ghosh, to Sr. Engineering Manager Bhaskar Chandan (*PRDAS Memo*) provided comments on Yorke's modeling analyses. PRDAS staff independently reproduced the applicant's analysis and summarized the results in the *PRDAS Memo*.

FDOC *Table 68* was updated, as shown below, to incorporate PRDAS' modeling results for the **Prior Application**. The health risks for each combined-cycle turbine were less than the Rule 1401 cancer and non-cancer limits of 10 in one million (for permit units with T-BACT), and hazard indices (chronic and acute) of 1, respectively.

**Table 68--Model Results for HRA for Combined-Cycle Turbines**

Health Risk Index	Residential Receptor Risk	Sensitive (School) Receptor Risk <sup>1</sup>	Worker Receptor Risk <sup>2</sup>	Rule 1401 Thresholds (T-BACT)	Exceeds Any Threshold?
<b>CCGT-1</b>					
<b>MICR</b>	0.78 x 10 <sup>-6</sup>	0.48 x 10 <sup>-6</sup>	0.04 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	No
<b>HIC</b>	0.0020	0.001	0.003	1	No
<b>HIA</b>	0.005	0.006	0.006	1	No
<b>CCGT-2</b>					
<b>MICR</b>	0.73 x 10 <sup>-6</sup>	0.53 x 10 <sup>-6</sup>	0.04 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	No
<b>HIC</b>	0.002	0.001	0.003	1	No
<b>HIA</b>	0.005	0.006	0.006	1	No

<sup>1</sup> Health risk impacts were reported for the closest school, Rosie the Riveter Charter High School, located on the AES Alamitos site (971 ft. to CCGT-1). The school was evaluated with residential exposure assumptions.

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Update: The school is no longer on site, and the building has been repurposed for AES use. The distance from the next closest school, Kettering Elementary School, 550 Silvera Avenue, Long Beach, CA 90803, to CCGT-1 is 2021 feet. Therefore, the health risk impacts provided for the school receptor type, based on the location of the Rosie the Riveter school, are very conservative.

- <sup>2</sup> Work health risk impacts were evaluated at the maximum impacted receptor at or beyond the facility fenceline.

➤ **Auxiliary Boiler**

See **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation. The maximum hourly and annual emissions rates in *Table 30 - Toxic Air Contaminants/Hazardous Air Pollutants for Auxiliary Boiler* and the modeled stack parameters for the hourly impacts and annual impacts in *Table 68A--Modeled Stack Parameters for HRA for Auxiliary Boiler* are incorporated into the modeling results for *Table 70A--Model Results for HRA for Facility* below.

➤ **Simple-Cycle Turbines**

See **Prior Application** (*A/N 604015, 604018, 604020, 608431-608433, 610354-610360*) evaluation. The maximum hourly and annual emissions rates shown in *Table 42 - Simple-Cycle Turbine Toxic Air Contaminants/Hazardous Air Pollutants* and the modeled stack parameters for the hourly impacts and annual impacts in *Table 69A - Modeled Stack Parameters for HRA for Simple-Cycle Turbines* are incorporated into the modeling results for *Table 70A--Model Results for HRA for Facility* below.

➤ **Facility-wide**

For the **FDOC**, the applicant provided a facility-wide health risk assessment in support of CEC's analysis of the *Supplemental Application for Certification*. For the **Prior Application**, the applicant provided an updated facility-wide health risk assessment in support of CEC's analysis of the *Petition for Post-Certification Amendment*. The facility-wide health risk assessment included the operation of the two combined-cycle turbines, the four simple-cycle turbines and the auxiliary boiler.

PRDAS staff independently reproduced the applicant's analysis and summarized the results in the *PRDAS Memo*. FDOC *Table 70A* was updated below to incorporate PRDAS' modeling results for the **Prior Application**. The health risks from the facility were less than the Rule 1401 cancer and non-cancer limits of 10 in one million (for permit units with T-BACT), and hazard indices (chronic and acute) of 1, respectively. Also, the cancer burden was less than the 0.5 limit.

**Table 70A--Model Results for HRA for Facility**

Health Risk Index	Residential Receptor Risk	Sensitive (School) Receptor Risk <sup>1</sup>	Worker Receptor Risk <sup>2</sup>	Rule 1401 Thresholds (T-BACT)	Exceeds Any Threshold?
<b>MICR</b>	1.61 x 10 <sup>-6</sup>	1.05 x 10 <sup>-6</sup>	0.09 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	No

V. Lee

No

Update: The school is no longer on site, and the building has been repurposed for AES use. The distance from the next closest school, Kettering Elementary School, 550 Silvera Avenue, Long Beach, CA 90803, to CCGT-1 is 2021 feet. Therefore, the health risk impacts provided for the school receptor type, based on the location of the Rosie the Riveter school, are very conservative.

Work health risk impacts were evaluated at the maximum impacted receptor at or beyond the facility fenceline.

Cancer burden is based on a Zone of Impact (ZOI) radius of 1,135 meters, a ZOI area of 4.045 km<sup>2</sup>, a default population density of 7,000 persons per km<sup>2</sup>, and a facility-wide 70-year residential cancer risk of 2.0 in one million.



➤ **APPLICATION NOS. 618933-618934, 618936**

The Rule 1401 health risk assessment for the applications under evaluation is discussed below.

- **Combined-Cycle Turbines**

As the maximum hourly and annual emissions rates remain the same as for revised *Table 26 - Combined-Cycle Turbine Toxic Air Contaminants/Hazardous Air Pollutants* for the **Prior Application**, the health risks also remain the same as for *Table 68--Model Results for HRA for Combined-Cycle Turbines* for the **Prior Application** above. The health risks for each combined-cycle turbine continue to remain less than the Rule 1401 cancer and non-cancer limits of 10 in one million (for permit units with T-BACT), and hazard indices (chronic and acute) of 1, respectively.

- **Auxiliary Boiler**

As this project does not affect the auxiliary boiler, the discussion is the same as for the **Prior Application**.

- **Simple-Cycle Turbines**

As this project does not affect the simple-cycle turbines, the discussion is the same as for the **Prior Application**.

- **Facility-wide**

The health risks remain the same as for *Table 70A--Model Results for HRA for Facility* for the **Prior Application**. The health risks from the facility remain less than the Rule 1401 cancer



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Since this is a partial delegation the facilities in the South Coast Air Basin (SCAB) may either apply directly to EPA for the PSD permit in accordance with the current requirements of 40 CFR Part 52 Subpart 21, or apply to the South Coast AQMD in accordance with the current requirements of Regulation XVII. AES has opted to apply to the South Coast AQMD.

The SCAB has been in attainment for NO<sub>2</sub>, SO<sub>2</sub>, and CO emissions. In addition, effective 7/26/13, the SCAB has been redesignated to attainment for the 24-hour PM<sub>10</sub> national ambient air quality standard. Therefore, this regulation applies to these emissions.

- **RULES 1701, 1702, 1706--PSD APPLICABILITY**

The relevant PSD applicability rule sections are presented below, followed by the applicability analysis.

**Rule 1701(b) Applicability**

Effective upon delegation by EPA, this regulation shall apply to preconstruction review of stationary sources that emit attainment air contaminants.

- **Rule 1701(b)(1)** provides: The BACT requirement applies to a net emission increase of a criteria air contaminant from a permit unit at any stationary source.
- **Rule 1701(b)(2)** provides:  
All of the requirements of this regulation apply, except as exempted in Rule 1704, to the following stationary sources:
  - (A) A new source or modification at an existing source where the increase in potential to emit is at least 100 or 250 tons of attainment air contaminants per year, depending on the source category; or
  - (B) A significant emission increase at an existing major stationary source; or
  - (C) Any net emission increase at a major stationary source located within 10 km of a Class I area, if the emission increase would impact the Class I area by 1.0 µg/m<sup>3</sup>, (24-hours average).
- **Rule 1702** provides definitions.
  - (e) Best Available Control Technology (BACT) means the most stringent emission limitation or control technique which:
    - (1) has been achieved in practice for such permit unit category or class of source. For permit units not located at a major stationary source, a specific limitation or control technique shall not apply if the owner or operator of the proposed sources demonstrates to the satisfaction of the Executive Officer

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that such limitation or control technique is not attainable for that permit unit;  
or

- (2) is contained in any State Implementation Plan (SIP) approved by the Environmental Protection Agency (EPA) for such permit unit category or class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the Executive Officer that such limitation or control technique is not presently achievable; or
  - (3) is any other emission control technique, including process and equipment changes of basic and control equipment, found by the Executive Officer to be technologically feasible and cost-effective for such class or category of sources or for a specific source....
- (m) “Major Stationary Source” means: “one of the following source categories: (1) Fossil fuel-fired steam electric plants of more than 250 million BTU/hr input...; which emits or has the potential to emit 100 tons per year or more of any contaminant regulated by the Act; or (2) an unlisted stationary source that emits or has the potential to emit 250 tons per year or more of any pollutant regulated by the Act; or (3) a physical change in a stationary source not otherwise qualifying under paragraph (1) or (2) if a modification would constitute a major stationary source by itself.
- (s) Significant Emission Increase means any attainment air contaminant for which the net cumulative emission increase of that air contaminant from a major stationary source is greater than the amount specified as follows:

<u>Contaminant</u>	<u>Emissions Rate (tpy)</u>
Carbon Monoxide	100
Sulfur Dioxide	40
Nitrogen Oxides	40
PM <sub>10</sub>	15

- **Rule 1706** shall be used as the basis for calculating applicability for Regulation XVII as delineated in Rule 1703(a). **Rule 1706(c)** provides the emissions calculation methodology for determining a net emission increase.
- (1)(A) The emissions for new permit units shall be calculated as the potentials to emit.
  - (1)(B) The emissions for removal from service shall be calculated from:
    - (i) the sum of actual emissions, as determined from company records, which have occurred during the two-year period immediately preceding date of

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permit application, or a different two year time period within the past five (5) years upon a determination by the Executive Officer that it is more representative of normal source operation, except annual emission declarations pursuant to Rule 301 may be used if less than the actual emissions as determined above; and

- (ii) the total emissions in those two years shall be calculated on an annual basis.

**PSD Applicability Analysis:**

The South Coast AQMD is presently in attainment for the primary NAAQS for NO<sub>x</sub>, CO, SO<sub>x</sub>, and PM<sub>10</sub>. For proposed modifications at existing major sources, PSD applies to each regulated pollutant for which the proposed emissions increase resulting from the modification both is significant and results in a significant net emissions increase.

For the **FDOC**, the following table summarizes the Rule 1701(b)(2)(A) and (B) analysis to determine which pollutants are subject to PSD review for requirements other than BACT, such as modeling. The new AEC's potentials to emit are found to result in a "significant emission increase" for NO<sub>x</sub> and PM<sub>10</sub> (with CO included for completeness) at the AGS, an existing major stationary source. Rules 1701(b)(1) and 1703(a)(2) require BACT for all permit units with a net emission increase of a criteria air contaminant. Rule 1701(b)(2)(C) is not applicable because the AEC is not located within 10 km of a Class I area. The nearest Class I area, San Gabriel Wilderness, is located 53 km away.

For the **Prior Application** analysis, the **FDOC** analysis was revised to incorporate the revised potentials to emit for the AEC (then in construction), into the assessment for "significant emission increases" at the AGS. FDOC Table 71 was revised below to incorporate the revised AEC potentials to emit resulting from the revised annual operating schedule for the turbines. "Actual Emissions (2013 & 2014 Avg)" remained applicable as the "emissions for removal from service" because the initial applications for the AEC were submitted in 10/13/15.

For **A/N 618933-618934, 618936** (A/N 618933 is the RECLAIM/TV application), FDOC Table 71 that was revised for the **Prior Application** is revised again below to incorporate the revised NO<sub>x</sub> potential to emit for the AEC (combined-cycle turbines in operation, but the simple-cycle turbines have not been constructed) resulting from the increased NO<sub>x</sub> emissions for the non-cold starts for the combined-cycle turbines, into the assessment for "significant emission increases" at the AGS.

**Table 71 – Prevention of Significant Deterioration Applicability**

	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>
Alamitos Generating Station Potential to Emit, TPY ( <i>Table 13</i> )	21,871.86	635.6	49.56	627.0

Combined-Cycle Turbines-Increase Non-Cold Start Emissions

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Major Source?	Yes, PTE is 100 tpy or more for CO, NO <sub>x</sub> , and PM <sub>10</sub> . If a source is a major source for any one regulated pollutant, it is considered to be a major source for all regulated pollutants.			
Alamitos Generating Station (AGS) Actual Emissions (2013 & 2014 Avg), TPY (Table 14)	287.90	47.47	4.68	10.91
Alamitos Energy Center (AEC) Potential to Emit, TPY = Emissions Increase (Table 45)	<del>243.62 (FDOC)</del> 247.40 (Prior Application, Same for A/N 618934 & 618936)	<del>137.06 (FDOC)</del> <del>146.78 (Prior Application)</del> 153.08 (A/N 618934 & 618936)	<del>10.19 (FDOC)</del> 11.83 (Prior Application, Same for A/N 618934 & 618936)	69.52 (FDOC, Prior Application, Same for A/N 618934 & 618936)
Does the AEC result in a significant emissions increase?	Yes, increase is greater than 100 tpy.	Yes, increase is greater than 40 tpy.	No, increase is less than 40 tpy.	Yes, increase is greater than 15 tpy.
Net Emissions Increase (AEC PTE – AGS actual)	<del>- 44.28 (FDOC)</del> - 40.5 (Prior Application, Same for A/N 618934 & 618936)	<del>89.59 (FDOC)</del> <del>99.31 (Prior Application)</del> 105.61 (A/N 618934 & 618936)	<del>5.51 (FDOC)</del> 7.15 (Prior Application, Same for A/N 618934 & 618936)	58.61
Does the AEC result in a net significant emissions increase?	No, there is a net decrease.	Yes, net increase is greater than 40 tpy.	No, net increase is less than 40 tpy.	Yes, net increase is greater than 15 tpy.
PSD Applicable?	No	Yes	No	Yes

As revised Table 71 shows, the PSD applicability for the **Prior Application** and **A/N 618933-618934, 618936** are the same as for the **FDOC**.

Because the AGS is a fossil fuel-fired steam electric plant of more than 250 million BTU/hr input, the major source threshold for the facility is 100 tons per year. The AGS is an existing major stationary source as defined by Rule 1702(m)(1) because the potentials to emit for CO, NO<sub>x</sub>, and PM<sub>10</sub> emissions all are 100 tpy or more. If a source is a major source for any one regulated pollutant, it is considered to be a major source for all regulated pollutants. The AEC will result in significant emissions increases for CO, NO<sub>x</sub>, and PM<sub>10</sub>, but not SO<sub>2</sub>. The AEC will result in net significant increases for NO<sub>x</sub> and PM<sub>10</sub>, but not CO and SO<sub>2</sub>. Therefore, CO is not subject to PSD requirements other than BACT, because the increase is significant but the net increase is a net decrease. SO<sub>2</sub> is not subject to PSD requirements other than BACT, because both the increase and net increase are less than the significant emissions threshold. **NO<sub>x</sub> and PM<sub>10</sub> are subject to PSD review** for all PSD requirements because the emissions

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increases and net emissions increases for both constitute significant increases. For completeness, the following PSD review will include CO.

○ **RULE 1703—PSD REQUIREMENTS**

The relevant PSD requirement sections are presented below, followed by the requirements analysis for each section. As determined above, the pollutants subject to PSD review for all PSD requirements are NO<sub>x</sub> and PM<sub>10</sub>. For completeness, CO is only subject to BACT, but will be included in the following PSD review for all PSD requirements.

- (a)(2) Each permit unit is constructed using BACT for each criteria air contaminant for which there is a net emission increase;
- (a)(3) For each significant emission increase of an attainment air contaminant at a major stationary source:
  - (A) The applicant certifies in writing, prior to the issuance of the permit, that the subject stationary source shall meet all applicable limitations and standards under the Clean Air Act (42 U.S.C. 7401, et seq.) and all applicable emission limitations and standards which are part of the State Implementation Plan approved by the Environmental Protection Agency or is on a compliance schedule approved by appropriate federal, state, or District officials.
  - (B) The new source or modification will be constructed using BACT.
  - (C) The applicant has substantiated by modeling that the proposed source or modification, in conjunction with all other applicable emission increases or reductions (including secondary emissions) affecting the impact area, will not cause or contribute to a violation of:
    - (i) Any National or State Ambient Air Quality Standard in any air quality control region; or
    - (ii) Any applicable maximum allowable increase over the baseline concentration in any area.
  - (D) The applicant conducts an analysis of the ambient air quality in the impact area the new or modified stationary source would affect.... The applicant may rely on existing continuous monitoring data collected by the District if approved by the Executive Office...;
  - (E) The applicant provides an analysis of the impairment to visibility, soil, and vegetation that would occur as a result of the new or modified stationary source and the air quality impact projected for the baseline area as a result of

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general commercial, residential, industrial, and other growth associated with the source;

- (F) The Executive Officer provides a copy of the complete application (within 10 days after being deemed complete by the District) to the EPA, the Federal Land Manager for any Class I area located within 100 km of the source, and to the federal official charged with direct responsibility for management of any lands within the Class I area....

**PSD REQUIREMENTS ANALYSES:**

**1. Rule 1703(a)(2) & Rule 1703(a)(3)(B) Analysis—Top-Down BACT**

Each permit unit is required to be constructed using BACT for each criteria air contaminant for which there is a net emission increase.

BACT is defined in 40 CFR 52.21(b)(12) as: "an emissions limitation...based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 [New Source Performance Standards (NSPS)] and 61 [NESHAPS]...."

EPA outlines the process used to perform the case-by-case analysis, called a Top-Down BACT analysis, in a June 13, 1989 memorandum. The top-down analysis method was further discussed in the EPA's New Source Review Workshop Manual, October 1990.

The top-down process calls for all available control technologies for a given pollutant to be identified and ranked in descending order of control effectiveness. The permit applicant should first examine the highest-ranked ("top") option. The top-ranked options should be established as BACT unless the permit applicant demonstrates to the satisfaction of the permitting authority that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the top ranked technology is not "achievable" in that case. If the most effective control strategy is eliminated in this fashion, then the next most effective alternative should be evaluated, and so on, until an option is selected as BACT. EPA has broken down this analytical process into the following five steps.

- Step 1: Identify all available control technologies.  
Step 2: Eliminate technically infeasible options.

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Step 3: Rank remaining control technologies.

Step 4: Evaluate most effective controls and document results.

Step 5: Select the BACT.

As required by Rules 1701(b)(1) and 1703(a)(2), top-down BACT analyses are presented below for NO<sub>x</sub>, PM<sub>10</sub>, and CO.

**A. Top-Down BACT Analysis for Combined-Cycle Gas Turbines for Nitrogen Oxide (NO<sub>x</sub>) Emissions**

- **FDOC Summary**

Based on a review of the available control technologies for NO<sub>x</sub> emissions from natural gas-fired combined-cycle turbines, the conclusion is that BACT is the use of dry low-NO<sub>x</sub> combustors with SCR to control NO<sub>x</sub> emissions to 2.0 ppmvd (1-hour average) during normal operation.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

*Table 18 - Combined-Cycle Turbine Maximum Daily Emissions* shows that the maximum daily emissions will not increase for NO<sub>x</sub>. Further, there will be no changes to the commissioning duration and emissions. As daily emissions will not increase, a PSD BACT analysis is not required pursuant to the South Coast AQMD applicability threshold of 1 lb/day increase.

- **A/N 618933-618934, 618936**

*Table 18 - Combined-Cycle Turbine Maximum Daily Emissions* shows that the maximum daily emissions will not increase for NO<sub>x</sub>, because the max daily emissions are based on cold start emissions, not non-cold start emissions. The commissioning has been completed without any requested changes to the duration or emissions. As the maximum hourly emissions will not change, further BACT analysis is not required.

**B. Top-Down BACT Analysis for Combined-Cycle Gas Turbines and Simple-Cycle Gas Turbines for Particulate Matter (PM<sub>10</sub>) Emissions**

- **FDOC Summary**

Based on the top-down review, the BACT for PM<sub>10</sub> emissions is using pipeline-quality natural gas with low sulfur content, good combustion practice, and inlet air filtration for the turbines.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

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Table 18 show the maximum daily emissions will not increase for PM<sub>10</sub>. As daily emissions will not increase, a PSD BACT analysis is not required pursuant to the South Coast AQMD applicability threshold of 1 lb/day increase.

- **A/N 618933-618934, 618936**  
Same as **Prior Application**.

C. **Top-Down BACT Analysis for Combined-Cycle Gas Turbines for Carbon Monoxide (CO) Emissions**

- **FDOC Summary**  
Based on a review of the available control technologies for CO emissions from natural gas-fired combined-cycle turbines, the conclusion is that BACT is using good combustion practice and oxidation catalyst to control CO emissions to 1.5 ppm (1-hour average) during normal operation.
- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**  
*Table 18 - Combined-Cycle Turbine Maximum Daily Emissions* shows that the maximum daily emissions will not increase for CO. Further, there will be no changes to the commissioning duration and emissions. As daily emissions will not increase, a PSD BACT analysis is not required pursuant to the South Coast AQMD applicability threshold of 1 lb/day increase.
- **A/N 618933-618934, 618936**  
Same as **Prior Application**.

2. **Rule 1703(a)(3)(A) Analysis—Certification of Compliance**

For each significant emission increase of an attainment air contaminant at a major stationary source, the applicant is required to provide a certification of compliance. In a letter dated 8/14/19, Weikko Wirta, Director Plant Operations, AES Alamitos, LLC, certified that he, as a corporate officer and Director of Plant Operations of AES Alamitos, LLC, AES Redondo Beach, LLC, and AES Huntington Beach, LLC certify that all major stationary sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by AES in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance for all applicable emission limitations and standards under the Clean Air Act.

See **Rule 1303(b)(5)(B) – Statewide Compliance** and **Rule 2005(g)(1) – Statewide Compliance** analysis above.

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3. **Rule 1703(a)(3)(F) Analysis—Copy of Application to EPA, Federal Land Manager, Forest Service**

For the **FDOC**, as required for each significant emission increase of an attainment air contaminant, the South Coast AQMD mailed a copy of the original application package including the modeling CDs, submitted on 10/23/15, and subsequently a copy of the revisions to the original application package provided by AES on 3/30/16, to the National Park Service and the Forest Service. In an e-mail dated 5/6/16, Tonnie Cummings, National Park Service, indicated they agree the proposed controls represent BACT and do not anticipate the project would substantially affect any areas managed by National Park Service. Therefore, they have no need to provide further comments on the project. In an e-mail dated 8/4/16, Andrea Nick, Forest Service, indicated that after review of the project application package, she has no comments.

For the **Prior Application**, the proposed changes to the annual operating hours for the combined-cycle and simple-cycle turbines constitute minor changes to the significant emission increases evaluated in the **FDOC**, which had already been reviewed by the National Park Service and the Forest Service. The revised modeling below confirms that (1) the facility-wide maximum predicted impacts for annual NO<sub>2</sub> and PM<sub>10</sub> will remain below the respective Class II significant impact level (*Table 82*), (2) the facility-wide maximum predicted impacts for annual NO<sub>2</sub> and PM<sub>10</sub> at 50 km will remain below the respective Class I significant impact levels (*Table 84*), and (3) the maximum predicted impact for annual NO<sub>2</sub> and background concentration will remain below the federal secondary NAAQS (*Table 85*).

For **A/N 618933-618934, 618936**, same as for **Prior Application**. As discussed below, the revised modeling for *Table 82*, *Table 84*, and *Table 85* shows that the predicted impacts remain the same as for the **Prior Application**.

4. **Rule 1703(a)(3)(D), (a)(3)(C), (a)(3)(E) Analysis—Air Impacts**

The air impacts analysis, including modeling, were performed for CO, NO<sub>2</sub> and PM<sub>10</sub>, as follows.

A. **Rule 1703(a)(3)(D)--Pre-Construction Monitoring**

• **FDOC Summary**

To ensure that the impacts from AEC will not cause or contribute to a violation of an ambient air quality standard or an exceedance of a PSD increment, an analysis of the existing air quality in the project area is necessary.

Preconstruction ambient air quality monitoring data is required for the purposes of establishing background pollutant concentrations in the impact area (40 CFR 52.21(m)). However, a facility may be exempted from this requirement if the

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predicted air quality impacts are less than the significant monitoring concentrations.

**Table 81 –Significant Monitoring Concentrations  
Compared to Maximum Predicted Impacts**

Pollutant (Averaging Period)	Significant Monitoring Concentration (µg/m <sup>3</sup> )	AEC Maximum Predicted Impact (µg/m <sup>3</sup> ) (FDOC Table 57)	Exempt?
NO <sub>2</sub> (1-hour)	N/A	N/A	N/A
NO <sub>2</sub> (annual)	14	0.20	Yes
CO (1-hour)	N/A	N/A	N/A
CO (8-hour)	575	44	Yes
PM <sub>10</sub> (24-hour)	10	1.71	Yes
PM <sub>10</sub> (annual)	N/A	N/A	N/A

For the **FDOC**, since the modeled impacts for NO<sub>2</sub>, CO, and PM<sub>10</sub> are below the respective monitoring thresholds, the project is exempt from the pre-construction monitoring requirement. Consequently, AES may rely on air quality monitoring data collected at South Coast AQMD monitoring stations. AES had proposed the use of the three most recent years of background CO and annual NO<sub>2</sub> data from the North Long Beach monitoring station (South Coastal Los Angeles County 1), and the three most recent years of background PM<sub>10</sub> data from the South Long Beach monitoring station (South Coastal Los Angeles County 2) for background concentrations. PRDAS staff informed the applicant's consultant that their proposed background concentrations reflected the 2009-2013 period but were required to be updated to include the background concentrations for 2014. In its review, PRDAS staff used the monitoring data for South Coastal Los Angeles County monitoring stations (SRA No. 4) for the last three years (2012-2014) to determine the background concentrations. The modeling review memo, dated 5/20/16, incorporated these updated background concentrations.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

The *PRDAS Memo* indicated that the applicant used the monitoring data from SRA 4, South Coastal Los Angeles County No. 3 monitoring station for the last three years (2014-2016) to determine the NO<sub>2</sub> background concentration. Years 2014-2016 are acceptable because 2017 data were not posted by the South Coast AQMD until the end of January 2019, immediately prior to the submittal of the applications for the turbine annual emissions changes. Further, the 2014-2016 data are more conservative than for the years 2015-2017.

- **A/N 618933-618934, 618936**

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Sr. Meteorologist Melissa Sheffer, PRDAS, re-ran the dispersion modeling for the NO<sub>2</sub> for the annual averaging period in *Table 82*, *Table 84*, and *Table 85* using the same monitoring data as the **Prior Application**.

**B. Rule 1703(a)(3)(C)—Air Quality Impacts Analysis**

**(1) National and State Ambient Air Quality Standards**

• **FDOC Summary**

As discussed under the Rule 1303(b)(1) and Rule 2005(c)(1)(B) modeling analyses above and the Rule 1703(a)(3)(C) PSD modeling analysis below, dispersion modeling demonstrates that CO, NO<sub>2</sub> and PM<sub>10</sub> will be in compliance with the primary NAAQS and the CAAQS.

• **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

The revised dispersion modeling demonstrates that CO, NO<sub>2</sub> and PM<sub>10</sub> will continue to be in compliance with the primary NAAQS and the CAAQS.

• **A/N 618933-618934, 618936**

The revised dispersion modeling for the NO<sub>2</sub> for the annual averaging period demonstrate that NO<sub>2</sub> will continue to be in compliance with the primary NAAQS and the CAAQS.

**(2) Class II PSD Increment**

• **Significance Impact Levels (SILs)**

A SIL is the ambient concentration resulting from the facility's emissions, for a given pollutant and averaging period, below which the source is considered to have an insignificant impact. If a significance impact level (SIL) is exceeded, an analysis is required to demonstrate that the maximum allowable increment will not be exceeded.

For CO, the SIL is 2000 µg/m<sup>3</sup> (1-hr) and 500 µg/m<sup>3</sup> (8-hr). For NO<sub>2</sub>, the SIL is 1.0 µg/m<sup>3</sup> (annual). For PM<sub>10</sub>, the SIL is 5.0 µg/m<sup>3</sup> ((24-hr) and 1.0 µg/m<sup>3</sup> (annual). For NO<sub>2</sub> (1-hr), the interim/proposed SIL is 7.52 µg/m<sup>3</sup>, as recommended in "Guidance Concerning the Implementation of the 1-hour NO<sub>2</sub> NAAQS for the Prevention of Significant Deterioration Program" (EPA, 2010).

• **Class II Increment Analysis**

40 CFR 52.21(e) provides that international parks, national wilderness areas exceeding 5000 acres, national memorial parks exceeding 5000 acres, and national parks exceeding 6000 acres are designated as Class I areas. All other areas are designated as Class II areas. The AEC is located

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in a Class II area. 40 CFR 52.21(c) sets forth the increment standards for Class I, Class II, and Class III areas. The increments are the maximum increases in pollutant concentration that are allowed to occur above the baseline concentration.

- **FDOC Summary**

As shown in FDOC *Table 82 - Maximum Modeled Project Impacts Compared to Class II SILs and PSD Increment Standards*, the maximum predicted impacts for annual NO<sub>2</sub>, 1-hr and 8-hr CO, and 24-hr and annual PM<sub>10</sub> were below the respective Class II SILs. Therefore, these impacts were less than significant, and no additional PSD analysis was required. Although further analysis to demonstrate compliance with the increment standard was not required, the table included the increment standard comparison for informational purposes.

The maximum predicted 1-hour NO<sub>2</sub> impact of 31.3 µg/m<sup>3</sup>, however, exceeded the Class II SIL of 7.52 µg/m<sup>3</sup>, with a radius of impact with predicted concentrations greater than 7.52 µg/m<sup>3</sup> of 1.5 km. Thus the cumulative impacts of the AEC and competing sources were required to be assessed for all receptors where the AEC impacts alone exceeded the 1-hour NO<sub>2</sub> SIL.

Accordingly, the **FDOC** provided an analysis for the *Cumulative Impacts of the AEC and Nearby Sources*. As shown in FDOC *Table 83 - Competing Sources Results*, the 1-hour NO<sub>2</sub> impact from the project plus cumulative projects plus background is 251.3 µg/m<sup>3</sup>, which exceeded the 1-hour NO<sub>2</sub> NAAQS of 188 µg/m<sup>3</sup>. An examination of each facility's contributions to the modeled exceedances showed that Alamitos' maximum contributions to the modeled exceedances was 6.9 µg/m<sup>3</sup>, which was less than the 1-hour NO<sub>2</sub> SIL of 7.52 µg/m<sup>3</sup>. Therefore, Alamitos' impacts were less than significant and did not cause or contribute to the modeled exceedance.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

For the **Prior Application**, the applicant provided facility-wide modeling (two combined-cycle turbines, four simple-cycle turbines, and the auxiliary boiler) for NO<sub>2</sub> and PM<sub>10</sub> for the annual averaging period for comparison to the Class II Significant Impact Levels (SILs) to update *Table 82 - Maximum Modeled Project Impacts Compared to Class II SILs and PSD Increment Standards*.

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PRDAS staff independently reproduced the applicant's analysis and summarized the results in the *PRDAS Memo*. FDOC *Table 82* was updated below to incorporate PRDAS' modeling results. the maximum predicted impacts for annual NO<sub>2</sub> and annual PM<sub>10</sub> were less than the respective Class II SILs. Therefore, these impacts were less than significant, and no additional PSD analysis was required. Although further analysis to demonstrate compliance with the increment standard was not required, the table included the increment standard comparison for informational purposes.

**Table 82 – Maximum Modeled Project Impacts Compared to Class II SILs and PSD Increment Standards**

Pollutant	Averaging Time	AEC Maximum Predicted Impact <sup>2</sup> (µg/m <sup>3</sup> ) ( <i>Table 57</i> )	Class II Significant Impact Level (µg/m <sup>3</sup> )	Significant?	PSD Class II Increment Standard (µg/m <sup>3</sup> )	Exceeds Class II SIL?
NO <sub>2</sub> <sup>1</sup>	Annual	0.2 (FDOC) <b>0.4 (Prior Application)</b>	1.0	No	25	No
PM <sub>10</sub>	Annual	0.2 (FDOC) <b>0.3 (Prior Application)</b>	1.0	No	17	No

<sup>1</sup> The NO<sub>2</sub> concentration included conversion of NO<sub>x</sub> to NO<sub>2</sub> using ARM2.

<sup>2</sup> Maximum modeled concentrations are predicted at the maximum receptor at or beyond the facility fenceline.

- **A/N 618933-618934, 618936**

As discussed under **Rule 1303(b)(1)—Modeling** above, the proposed revision to the NO<sub>x</sub> emission rate for the non-cold start from 17 lb to 32 lb affected the annual emission rate for NO<sub>2</sub>, but not PM<sub>10</sub>/PM<sub>2.5</sub> for the combined-cycle turbines. The NO<sub>x</sub> emission rate will increase from 8.43 lb/hr to 9.15 lb/hr for each turbine for the annual averaging period as shown in *Table 51 - Modeled Emission Rates - Normal Operation for AEC CCGT* above.

*Table 82* for the **Prior Application** is updated below to incorporate PRDAS' revised modeling results for *Table 57 - Modeled Results - Normal Operation for Total Project* above. The modeled impact for NO<sub>2</sub> remains 0.4 µg/m<sup>3</sup> **and** continue to be less than the significant impact level.

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**Table 82 – Maximum Modeled Project Impacts Compared to  
Class II SILs and PSD Increment Standards**

Pollutant	Averaging Time	AEC Maximum Predicted Impact <sup>2</sup> (µg/m <sup>3</sup> ) (Table 57)	Class II Significant Impact Level (µg/m <sup>3</sup> )	Significant?	PSD Class II Increment Standard (µg/m <sup>3</sup> )	Exceeds Class II SIL?
NO <sub>2</sub> <sup>1</sup>	Annual	0.4 (Prior Application)  <u>0.39186, or ~ 0.4</u> <u>(A/N 618934, 618936)</u>	1.0	No	25	No

**(3) Class I Area Impact Analysis**

A Class I impact analysis is required to demonstrate that the AEC will not adversely affect air quality-related values (AQRVs) and will not cause or contribute to an exceedance of the Class I Significant Impact Level (SIL) or PSD Class I Increment Standards.

- **Air Quality Related Values**

To evaluate the potential impacts on visibility and deposition at the nearest Class I area, the guidance provided in the Federal Land Manager's Air Quality Related Values Workgroup (FLAG) Phase I Report (revised 2010) allows an emissions/distance (Q/D) factor of 10 to be used as a screening criteria for sources located more than 50 km from a Class I area. This screening criterion includes all AQRVs. AQRVs are defined by the Federal Land Manager (FLM), and typically limit visibility degradation and the deposition of sulfuric acid and nitrogen. Emissions are calculated as the total SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, and sulfuric acid annual emissions (in tpy, based on 24-hour maximum allowable emissions multiplied by 365 days) unless an emission source is limited to time periods shorter than 1 year.

- **FDOC Summary**

Condition nos. A63.2, A63.3, and A63.4 provide annual emissions limits for PM<sub>10</sub> and SO<sub>2</sub> for combined-cycle turbines, simple-cycle turbines, and the auxiliary boiler, respectively. These limits also indirectly limit the NO<sub>x</sub> emissions from the respective equipment.

On an annual equivalent basis, the combined AEC annual emissions of NO<sub>x</sub> (354.11 tpy), PM (184.36 tpy), SO<sub>2</sub> (23.74 tpy), and sulfuric acid (0 tpy) will be approximately 562.21 tpy. Therefore, the maximum Q/D for the project will be approximately 10.60 ton/km-year, where Q

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is 562.21 tpy and D is 53 km, the distance to the nearest Class I area, San Gabriel Wilderness.

Because the factor is greater than the federal Class I area air quality screening criteria of 10, visibility and deposition modeling is required for all Class I areas which exceed the screening criteria and any additional Class I areas requested by the FLM.

AES' consultant, CH<sub>2</sub>M Hill, submitted the protocol and modeling for the AQRV directly to the appropriate FLM for review and approval. The FLM did not include the South Coast AQMD in its review.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

Yorke Engineering did not indicate a need for an updated AQRV analysis.

- **Class I Increment Analysis**

EPA requires an analysis addressing Class I increment impacts for the applicable pollutants regardless of the results of the Class I AQRV analysis.

- **FDOC Summary**

To evaluate the potential impacts on Class I areas near the AEC site, all Class I areas within 300 km of AEC were identified. Based on this survey, the San Gabriel Wilderness, which is approximately 53 km from the AEC site, was identified as the nearest Class I area.

For FDOC Table 84 – *Maximum Modeled Impacts Compared to Class I SILs*, the applicant performed an analysis by placing a radial receptor ring at a distance of 50 km from the project because 50 km is the maximum receptor distance of the AERMOD model. The predicted impacts from the operation of the AEC were below the SIL, therefore comparison with the increment standard was not required. Since the impact at 50 km is below the SIL, the project would have a negligible impact at the more distant Class I areas and actual ambient air quality impacts at Class I areas are not required to be determined.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

For the **Prior Application**, the applicant provided modeling results for the entire facility (two combined-cycle turbines, four simple-cycle

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turbines, and the auxiliary boiler) for comparison to the Class I Significant Impact Levels (SILs) to update *Table 84 – Maximum Modeled Impacts Compared to Class I SILs*.

PRDAS staff independently reproduced the applicant's analysis and summarized the results in the *PRDAS Memo*. FDOC *Table 84* was updated below to incorporate PRDAS' modeling results. the maximum predicted impacts for annual NO<sub>2</sub> and annual PM<sub>10</sub> were less than the respective Class I SILs. Therefore, these impacts were less than significant, and no additional PSD analysis was required.

**Table 84 – Maximum Modeled Impacts Compared to Class I SILs**

Pollutant	Averaging Period	Maximum Predicted Impact (µg/m <sup>3</sup> ) <sup>2</sup>	Class I Significance Impact Level (µg/m <sup>3</sup> )	Exceeds Class I SIL?
NO <sub>2</sub> <sup>1</sup>	Annual	0.0047 (FDOC)  <b><u>0.007 (Prior Application)</u></b>	0.1	No
PM <sub>10</sub>	Annual	0.0046 (FDOC)  <b><u>0.005 (Prior Application)</u></b>	0.2	No

<sup>1</sup> The NO<sub>2</sub> concentration included conversion of NO<sub>x</sub> to NO<sub>2</sub> using ARM2.

<sup>2</sup> Maximum modeled concentrations are predicted at 50 km from the facility.

- **A/N 618933-618934, 618936**

As discussed under **Rule 1303(b)(1)—Modeling** above, the proposed revision to the NO<sub>x</sub> emission rate for the non-cold start from 17 lb to 32 lb affected the annual emission rate for NO<sub>2</sub>, but not PM<sub>10</sub>/PM<sub>2.5</sub> for the combined-cycle turbines. The NO<sub>x</sub> emission rate will increase from 8.43 lb/hr to 9.15 lb/hr for each turbine for the annual averaging period as shown in *Table 51 - Modeled Emission Rates - Normal Operation for AEC CCGT* above.

Sr. Meteorologist Melissa Sheffer, PRDAS, was consulted regarding how the increase in the NO<sub>x</sub> emission rate for the two combined-cycle turbines will affect the maximum predicted impact for the annual averaging period in *Table 84 – Maximum Modeled Impacts Compared to Class I SILs*. Since the total project impacts are comprised of impacts from the two combined-cycle turbines, four simple-cycle turbines and the auxiliary boiler, Ms. Sheffer indicated that multiplying

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the prior maximum predicted impact by the ratio of the post-modification emission rate to the pre-modification emission rate for NO<sub>x</sub> may not yield a reliable maximum predicted impact. Accordingly, Ms. Sheffer revised the AERMOD modeling performed for the **Prior Application** to incorporate the increase in the NO<sub>x</sub> emission rate for each combined-cycle turbine for the annual averaging period.

Table 84 for the **Prior Application** is updated below to incorporate PRDAS' modeling results. The modeled impact for NO<sub>2</sub> remains 0.007 µg/m<sup>3</sup> **and** continue to be less than the significant impact level.

**Table 84 – Maximum Modeled Impacts Compared to Class I SILs**

Pollutant	Averaging Period	Maximum Predicted Impact (µg/m <sup>3</sup> ) <sup>2</sup>	Class I Significance Impact Level (µg/m <sup>3</sup> )	Exceeds Class I SIL?
NO <sub>2</sub> <sup>1</sup>	Annual	0.007 (Prior Application)  <b><u>0.00731, or ~ 0.007</u></b> <b>(A/N 618934, 618936)</b>	0.1	No

**C. Rule 1703(a)(3)(E)—Additional Impacts: Visibility, Soil and Vegetation Impacts as Result of Growth**

In addition to assessing the ambient air quality impacts expected for a proposed new source, the PSD regulations require the evaluation of other potential impacts on (1) growth, (2) soils and vegetation, and (3) visibility impairment. The depth of the analysis generally depends on existing air quality, the quantity of emissions, and the sensitivity of local soils, vegetation, and visibility in the source's impact area.

**(1) Growth**

For the **Prior Application**, the changes in annual operating hours for the turbines are not expected to affect the analysis in the FDOC. For **A/N 618933-618934, 618936**, the increase in NO<sub>x</sub> for the non-cold starts is not expected to affect the analysis in the FDOC.

**(2) Soil and Vegetation Impacts**

The additional impact analysis includes consideration of potential impacts to soils and vegetation associated with AEC.

- **Nitrogen Deposition Impacts**

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For the **Prior Application**, the changes in annual operating hours for the turbines are not expected to affect the analysis in the FDOC. For **A/N 618933-618934, 618936**, the increase in NO<sub>x</sub> for the non-cold starts is not expected to affect the analysis in the FDOC.

- **Secondary NAAQS**

For most types of soils and vegetation, ambient concentrations of criteria pollutants below the secondary NAAQS will not result in harmful effects, because the secondary NAAQS levels are set to protect public welfare, including animals, plants, soils, and materials.

- **FDOC Summary**

The dispersion modeling performed to demonstrate compliance with the primary NAAQS shown in *Table 57* also demonstrated that NO<sub>2</sub> will be in compliance with the secondary NAAQS, as shown in FDOC *Table 85 - Model Results – Normal Operation for AEC - Compliance with Secondary NAAQS*.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

FDOC *Table 85* was updated below to incorporate the modeling results from *Table 57* which was updated to incorporate PRDAS' modeling results for the **Prior Application**. Annual NO<sub>2</sub> will continue to be in compliance with the secondary NAAQS.

**Table 85 - Model Results – Normal Operation for AEC - Compliance with Secondary NAAQS**

Pollutant	Averaging Period	Maximum Predicted Impact (µg/m <sup>3</sup> ) ( <i>Table 57</i> )	Background Concentration (µg/m <sup>3</sup> ) <sup>2</sup>	Total Predicted Concentration (µg/m <sup>3</sup> )	Federal Secondary NAAQS (µg/m <sup>3</sup> ) <sup>1</sup>	Exceeds Any Threshold?
NO <sub>2</sub>	Annual	0.20 (FDOC)  <b><u>0.4 (Prior Application)</u></b>  <b><u>0.39186, or ~ 0.4 (A/N 618934, 618936)</u></b>	47.6 (FDOC)  <b><u>39.6 (Prior Application)</u></b>	47.8 (FDOC)  <b><u>40.0 (Prior Application)</u></b>	100	No

<sup>1</sup> Federal and secondary NAAQS for NO<sub>2</sub> are the same.

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- **A/N 618933-618934, 618936**

*Table 85 for the **Prior Application** is updated above to incorporate PRDAS' revised modeling results for *Table 57 - Modeled Results - Normal Operation for Total Project* above. The modeled impact for NO<sub>2</sub> remains 0.4 µg/m<sup>3</sup> **and** continue to be less than the significant impact level.*

(3) **Visibility Impairment--Class II Area Analysis**

For the **Prior Application**, the changes in annual operating hours for the turbines are not expected to affect the analysis in the FDOC. For **A/N 618933-618934, 618936**, the increase in NO<sub>x</sub> for the non-cold starts is not expected to affect the analysis in the FDOC.

- **Rule 1710—Analysis, Notice, and Reporting, amended 1/6/89, 3/1/19**

*40 CFR §52.21* provides comprehensive applicability procedures for PSD public noticing, as analyzed below.

*40 CFR §52.21—Prevention of significant deterioration of air quality*

(a)(2) Applicability procedures.

- (i) The requirements of this section apply to the construction of any new major stationary source (as defined in paragraph (b)(1) of this section) or any project at an existing major stationary source in an area designated as attainment or unclassifiable under sections 107(d)(1)(A)(ii) or (iii) of the Act.
- (ii) The requirements of paragraphs (j) through (r) of this section apply to the construction of any new major stationary source or the major modification of any existing major stationary source, except as this section otherwise provides.

**Analysis:** As shown below, paragraph (q) requires public participation pursuant to the applicable procedures of 40 CFR part 124 in processing applications for the construction of any new major stationary source or the major modification of any existing major stationary source. *§124.10 Public notice of permit actions and public comment period* provides the most recent noticing requirements, amended on 2/12/19.

(b) *Definitions.* For the purposes of this section:

(1)(i) *Major stationary source* means:

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**Analysis:** Pursuant to the “*PSD Applicability Analysis*” above, the existing AGS is a major stationary source.

- (2)(i) Major modification means any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase (as defined in paragraph (b)(40) of this section) of a regulated NSR pollutant (as defined in paragraph (b)(50) of this section); and a significant net emissions increase of that pollutant from the major stationary source.
- (23)(i) Significant means, in reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates:

Pollutant and Emissions Rate

Carbon monoxide: 100 tons per year (tpy)

Nitrogen oxides: 40 tpy

Sulfur dioxide: 40 tpy

Particulate matter: 25 tpy of particulate matter emissions

PM10: 15 tpy

PM2.5: 10 tpy of direct PM2.5 emissions; 40 tpy of sulfur dioxide emissions; 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM2.5 precursor under paragraph (b)(50) of this section

- (40) Significant emissions increase means, for a regulated NSR pollutant, an increase in emissions that is significant (as defined in paragraph (b)(23) of this section) for that pollutant.

**Analysis:** From *Table 71—Prevention of Significant Deterioration Applicability* above, the increases in CO, NO<sub>x</sub>, SO<sub>2</sub>, and PM10 emissions resulting from the **Prior Application** are shown below.

CO: 247.40 tpy (Prior Application) – 243.62 tpy (FDOC) = 3.78 tpy < 100 tpy major modification threshold

NO<sub>x</sub>: 146.78 tpy (Prior Application) – 137.06 tpy (FDOC) = 9.72 tpy < 40 tpy major modification threshold

SO<sub>2</sub>: 11.83 tpy (Prior Application) – 10.19 tpy (FDOC) = 1.64 tpy < 40 tpy major modification threshold

PM10: 69.52 tpy (Prior Application) – 69.52 tpy (FDOC) = 0 tpy < 15 tpy major modification threshold.

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Therefore, the **Prior Application** emissions increases did not constitute a major modification of an existing major stationary source.

- (q) *Public participation.* The administrator shall follow the applicable procedures of 40 CFR part 124 in processing applications under this section.

**FDOC—PSD Noticing Summary**

Public notice requirements were completed for South Coast AQMD Rules 212 (Standards for Approving Permits), 1710 (PSD Analysis, Notice, And Reporting), 1714 (PSD Greenhouse Gases) And 3006 (Title V).

**Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

The PSD noticing requirements for a major modification of an existing major stationary source had been completed for the FDOC. The FDOC was noticed based on the potentials to emit for the new combined-cycle and simple-cycle turbines for the AEC, as evaluated in the FDOC. As the **Prior Application** emission increases for CO, NO<sub>x</sub>, and SO<sub>2</sub> were below their respective major modification thresholds as shown above, PSD noticing was not required.

**A/N 618933-618934, 618936**

From *Table 45 - Facility Maximum Annual Emissions, Normal Operations*, the annual NO<sub>x</sub> emissions will increase by 6.30 tpy, from 146.78 tpy (**Prior Application**) to 153.08 tpy for this project. The total NO<sub>x</sub> increase over the 137.06 tpy (FDOC) that was PSD noticed will be 9.72 tpy (**Prior Application**) plus 6.30 tpy (**A/N 618934, 618936**) for a total of 17.17 tpy, which will be less than the major modification threshold of 40 tpy. Therefore, PSD noticing will not be required for this project.

**Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases, amended 3/1/19**

Rule 1714 was adopted into the SIP on 12/10/12, and became effective on 1/9/13. Upon the effective date, the South Coast AQMD became the Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) permitting authority for sources located within the South Coast AQMD. The rule was subsequently amended on 3/1/19 to update the public participation requirements to ensure federal permitting rules are followed for permitting actions.

The relevant rule sections are as follows.

- (a) This rule sets forth preconstruction review requirements for greenhouse gases (GHG). The provisions of this rule apply only to GHGs as defined by the U.S. EPA to mean the air pollutant as an aggregate group of six GHGs: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. All other attainment air

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contaminants, as defined in Rule 1702 subdivision (a), shall be regulated for the purpose of Prevention of Significant Deterioration (PSD) requirements pursuant to Regulation XVII, excluding Rule 1714.

- (b) **Applicability**  
The provisions of this rule shall apply to any source and the owner or operator of any source subject to any GHG requirements under 40 Code of Federal Regulations Section 52.21 as incorporated into this rule.
- (c) **Incorporation by Reference**  
Except as provided below, the provisions of Title 40 of the Code of Federal Regulations (CFR) Part 52.21, are incorporated herein by reference and made part of the Rules and Regulations of the South Coast Air Quality Management District...
- (d) **Requirements**
  - (1) An owner or operator must obtain a PSD permit pursuant to this rule before beginning actual construction, as defined in 40 CFR 52.21(b)(11), of a new major stationary source or major modification to an existing major source as defined in 40 CFR 52.21(b)(1) and (b)(2), respectively.
- (e) **Public Participation**  
For major stationary sources subject to Rule 1714, after receipt of a complete application, the Executive officer shall: ...

In May 2010, EPA issued the GHG permitting rule officially known as the “Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule” (GHG Tailoring Rule), in which EPA defined six GHG pollutants (collectively combined and measured as carbon dioxide equivalent [CO<sub>2</sub>e]) as NSR-regulated pollutants and therefore subject to PSD permitting, including the preparation of a BACT analysis for GHG emissions.

The EPA’s PSD and Title V Permitting Guidance for Greenhouse Gases, March 2011, provide applicability criteria. Under Tailoring Rule Step 2, the PSD Applicability Test for GHGs in PSD Permits Issued on or after July 1, 2011 indicates that PSD applies to the GHG emissions from a proposed modification to an existing source if any of three sets of applicability criteria are met. The set of applicability criteria applicable to the AEC is as follows:

- Modification is otherwise subject to PSD (for another regulated NSR pollutant), and has a GHG emissions increase and net emissions increase:
  - Equal to or greater than 75,000 TPY CO<sub>2</sub>e, and
  - Greater than -0- TPY mass basis

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In *Utility Air Regulatory Group v. EPA* (No. 12-1146), issued 6/23/14, the Supreme Court issued a decision addressing the application of stationary source permitting requirements to greenhouse gases (GHG). The Court said that EPA may not treat greenhouse gases as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also said that the EPA could continue to require that PSD permits, otherwise required based on emissions of conventional pollutants, to contain limitations on GHG emissions based on the application of BACT.

The EPA issued a proposed rule to revise provisions in the PSD and Title V permitting regulations applicable to greenhouse gases (40 CFR Parts 51, 52, 60, 70, and 71) to fully conform with recent court decisions, as well as implementing other provisions, in “Revisions to the Prevention of Significant Deterioration (PSD) and Title V Greenhouse Gas (GHG) Permitting Regulations and Establishment of a Significant Emissions Rate (SER) for GHG Emissions Under the PSD Program,” 81 Federal Register 68110 (October 3, 2016). This proposed rule has not been finalized.

**PSD APPLICABILITY ANALYSIS FOR GHGs:**

*The PDOC analysis is updated below for the **Prior Application**.*

As discussed under the Rule 1703 analysis above, the modification is otherwise subject to PSD for other regulated NSR pollutants, NO<sub>x</sub> and PM<sub>10</sub>. The following table summarizes the analysis to determine whether GHG emissions are subject to PSD review.

**Table 87 – Prevention of Significant Deterioration Applicability for Greenhouse Gases**

	<b>CO<sub>2</sub>e</b>
GHG Emissions Increase = Alamitos Energy Center Potential to Emit ( <i>Table 45</i> )	<del>1,716,925.57</del> <b>1,952,128.55</b> TPY ( <b>Prior Application</b> ) > 75,000 TPY and > 0 TPY mass basis
Alamitos Generating Station Actual Emissions (2013 & 2014 Avg) ( <i>Table 14</i> )	927,761 TPY
GHG Net Emissions Increase = AEC PTE – AGS actual	<del>789,164.57</del> <b>1,024,367.55</b> TPY ( <b>Prior Application</b> ) > 75,000 TPY and > 0 TPY mass basis
PSD for Greenhouse Gases Applicable?	Yes

**The greenhouse gases are subject to PSD review** because the emissions increase and net emissions increase constitute significant increases.

**PSD REQUIREMENTS ANALYSES:**

The “PSD and Title V Permitting Guidance for Greenhouse Gases” explains that under the Clean Air Act and applicable regulations, a PSD permit must contain emissions limitations based on application of BACT for each PSD regulated NSR pollutant. A determination of BACT for GHGs should be conducted in the same manner as it is done for any other PSD regulated pollutant. EPA

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recommends that permitting authorities continue to use the Agency’s five-step “top down” BACT process to determine BACT for GHGs. No other PSD requirements were enumerated.

For criteria pollutants, PSD requirements include pre-construction ambient monitoring, air impacts analyses, and other impacts analysis, as discussed under Rule 1703. As there are currently no NAAQS, CAAQS, SILs or PSD increments standards established for GHGs, the air impacts analysis requirement is not applicable. Further, EPA does not require pre-construction monitoring for GHGs in accordance with 40 CFR 52.21(i)(5)(iii) and 51.166(i)(5)(iii), or Class I areas impact analysis.

### **Top-Down BACT Analysis**

#### **I. Top-Down BACT Analysis for Combined-Cycle Gas Turbine Power Block and Simple-Cycle Gas Turbine Block for Carbon Dioxide (CO<sub>2</sub>) Emissions**

The primary sources of GHG emissions will be the natural-gas-fired combined-cycle and simple-cycle combustion turbines. The primary combustion emission is CO<sub>2</sub>, because the CH<sub>4</sub> and N<sub>2</sub>O emissions are insignificant.

- **FDOC Summary**

The FDOC concluded that thermal efficiency is the only technically and economically feasible alternative for CO<sub>2</sub>/GHG emissions control for the AEC project. The current design of the facility meets the BACT requirement for GHG emission reductions.

BACT also requires applicable GHG emission limits, implemented by permit conditions, as follows.

#### **Combined-Cycle Turbines**

Condition E193.14 limits the CO<sub>2</sub> emissions to 610,480 tpy per turbine on a 12-month rolling average basis from the GHG emissions calculations above. In addition, the calendar annual average CO<sub>2</sub> emissions is limited to 937.88 pounds per gross MW-hour (inclusive of degradation) from the thermal efficiency calculations below.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

Thermal efficiency continues to be the only technically and economically feasible alternative for CO<sub>2</sub>/GHG emissions control for the AEC project.

BACT also requires applicable GHG emission limits, implemented by permit conditions. For the **Prior Application**, the revised limits are shown below.

#### **Combined-Cycle Turbines**

Condition E193.14 limits the CO<sub>2</sub> emissions to ~~610,480~~ **861,119** tpy per turbine on a 12-month rolling average basis from the GHG emissions calculations above. In addition, the calendar annual average CO<sub>2</sub> emissions is limited to ~~937.88~~ **916.01**

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pounds per gross MW-hour (inclusive of degradation) from the thermal efficiency calculations for 40 CFR Subpart TTTT below.

- **A/N 618933-618934, 618936**

Same as for **Prior Application**, because the annual operating hours per combined-cycle turbine will not change. Therefore, the annual gas usage and CO<sub>2</sub> emissions will not change.

2. **Top-Down BACT Analysis for Combined-Cycle Gas Turbine Power Block for Sulfur Hexafluoride (SF<sub>6</sub>) Emissions**

The only GHG emitted from circuit breakers is sulfur hexafluoride (SF<sub>6</sub>). SF<sub>6</sub> is used as a gaseous dielectric medium in electrical circuit breakers, switching equipment, and other high voltage electrical components. The circuit breakers for the combined-cycle gas turbine power block will have a potential for fugitive emissions of SF<sub>6</sub> through leaks.

- **FDOC Summary**

The **FDOC** concluded that BACT for the circuit breakers is the use of enclosed-pressure SF<sub>6</sub> circuit breakers with a maximum annual leakage rate of 0.5% by weight and a 10% by weight leak detection system, and an annual emission cap. The BACT determination was in agreement with the EPA's determination for the Pio Pico Energy Center. The Pio Pico PSD permit included conditions requiring the installation of enclosed-pressure SF<sub>6</sub> circuit breakers with a maximum annual leakage rate of 0.5% by weight. The circuit breakers were required to be equipped with a 10% by weight leak detection system, which was required to be calibrated in accordance with manufacturer's specifications. The manufacturer's specifications and records of all calibrations were required to be maintained on site. The CO<sub>2</sub>e emissions from the circuit breakers were subject to an annual emissions limit. The SF<sub>6</sub> emissions due to leakage from the circuit breakers are required to be calculated by using the mass balance in equation DD-1 at 40 CFR Part 98, Subpart DD, on an annual basis.

Facility condition F52.2 enforces the BACT requirements for circuit breakers, using the same language as in the Pio Pico PSD permit. Annual CO<sub>2</sub>e emissions from circuit breakers are limited to 74.55 tons per calendar year. The maximum CO<sub>2</sub>e emissions from the combined-cycle turbine power block are 17.44 tpy, and from the simple-cycle turbine power block are 57.11 tpy. The CO<sub>2</sub>e emissions are from the GHG emissions calculations above.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

For the **Prior Application**, BACT for SF<sub>6</sub> emissions is the same as for the **FDOC**. The changes in annual operating hours for the combined-cycle turbines will not affect the SF<sub>6</sub> leakage rate.

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- **A/N 618933-618934, 618936**  
Same as for **Prior Application**.

### **Regulation XX—RECLAIM**

- **Rule 2002—Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>)**  
(c)(2)(C) specifies the applicable starting emission factor is found in Table 1—RECLAIM NO<sub>x</sub> Emission Factor. For Major NO<sub>x</sub> Sources, these emission factors are required to be used until the CEMS is certified, not to exceed one year after start of unit operation.
- Turbines  
From Rule 2002, Table 1:

Nitrogen Oxides Basic Equipment	Fuel	“Throughput” Units	Starting Ems Factor*	2000 (Tier I) Ending Emission Factor
Turbines	Natural Gas	mmcf	RV	61.450

\* RV = Reported Value

“Reported Value” means the emissions factors are required to be calculated. For turbines, two NO<sub>x</sub> emission factors are required for use in the interim reporting period before the CEMS is certified.

- **FDOC Summary**  
Combined-Cycle Turbines: Condition A99.1 specifies the interim emission factor for the commissioning period during which the CTGs are assumed to be operating at uncontrolled levels. From FDOC *Table 20*, the emission factor is 16.66 lb/mmcf. Condition A99.2 specifies the interim emission factor for the normal operating period after commissioning has been completed and before the CEMS is certified, during which the CTGs are assumed to be operating at BACT levels. From FDOC *Table 22*, the emission factor is 8.35 lb/mmcf.

As Rule 2012(h)(6) provides the Facility Permit holder which installs a new major source at an existing facility shall install, operate, and maintain all required or elected monitoring, reporting, and recording systems no later than 12 months after the initial startup of the major NO<sub>x</sub> source, the use of these interim emission factors shall not exceed one year after start of unit operation.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**  
Combined-Cycle Turbines: Condition A99.1 interim emission factor remains the same as the FDOC because AES has not requested any change to the commissioning duration or





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period for each combined-cycle turbine in *Table 88 – Rule 2005 Modeled Results – Normal Operation for Combined-Cycle Turbines*. In conjunction with revising the AERMOD modeling performed for the **Prior Application** for *Table 57 - Modeled Results - Normal Operation for Total Project* to incorporate the increase in the NO<sub>x</sub> emission rate, Ms. Sheffer revised the AERMOD modeling performed for the **Prior Application** for *Table 88*.

*Table 57* for the **Prior Application** is updated below to incorporate PRDAS' modeling results. The modeled impact for NO<sub>2</sub> remains 0.2 µg/m<sup>3</sup> for each combined-cycle turbine **and** below the thresholds in Rule 1303 for NO<sub>2</sub>.

**Table 88 – Rule 2005 Modeled Results – Normal Operation for Combined-Cycle Turbines**

Pollutant	Averaging Period	Maximum Predicted Impact (µg/m <sup>3</sup> )	Background Concentration (µg/m <sup>3</sup> ) <sup>2</sup>	Total Predicted Concentration (µg/m <sup>3</sup> )	State Standard CAAQS (µg/m <sup>3</sup> )	Federal Standard, Primary NAAQS (µg/m <sup>3</sup> )	Exceeds Threshold?
<b>CCGT-1</b>							
NO <sub>2</sub> <sup>1</sup>	Annual	0.2 (Prior Application)  <u><b>0.17916, or ~0.2 (A/N 618934, 618936)</b></u>	39.6	39.8	57	100	No
<b>CCGT-2</b>							
NO <sub>2</sub> <sup>1</sup>	Annual	0.2 (Prior Application)  <u><b>0.17835, or ~0.2 (A/N 618934, 618936)</b></u>	39.6	39.8	57	100	No

▪ **(c)(2)—Offsets**

Paragraph (c)(2) requires RECLAIM facilities to hold sufficient RTCs to offset the first year of operation's emissions increase from a new, relocated, or modified source before commencement of such operation. Before Rule 2005 was amended on 6/3/11, Rule 2005(f)(1) required RECLAIM facilities to hold RTCs for each subsequent compliance year prior to each compliance year for the same sources. Further, facilities subject to this NSR hold requirement were generally required to hold and not transfer out of their Allocation accounts the specified RTCs for each year until the compliance year was over.

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On 6/3/11, Rule 2005 was amended to remove existing facilities that do not have emissions greater than the level of their 1994 allocation plus non-tradable credits (NTCs) from section (f)(1). Per Rule 2000(c)(35), an existing facility is “any facility that submitted Emission Fee Reports pursuant to Rule 301 – Permit Fees, for 1992 or earlier years, or with valid District Permits to Operate issued prior to October 15, 1993, and continued to be in operation or possess valid District permits on October 15, 1993.” Per Rule 2000(c)(51), a new facility is “any facility which has received all District Permits to Construct on or after October 15, 1993.”

Existing facilities that do not have emissions greater than the level of their 1994 allocation plus NTCs are only subject to the “hold” requirement for the first year of operation of each source with an emissions increase (the period commencing at the start of operation and concluding 364 days later; 365 days later if the period includes a leap day).

- **FDOC Summary**

*The FDOC analysis is summarized and clarified below.*

A determination was made regarding whether AEC is subject to the RTC hold requirement the first year only (condition I297), or the first year and each subsequent year (condition I296). Southern California Edison (SCE) installed all six utility boilers by 1966, which is prior to 10/15/93. The AES Corporation purchased the power plant from SCE in 1998. Subsequently, the South Coast AQMD issued AES Alamitos change of operator permits for the power plant in 1999. Therefore, AES Alamitos is an existing facility.

The NO<sub>x</sub> RTCs initially allocated was 704,485 pounds.

**First Year of Operation of AEC**

AES indicated that the first-year operation for the combined-cycle turbines and auxiliary boiler (commissioning year) will have ended prior to the first-year operation for the simple-cycle turbines (commissioning year).

The RTCs for the first year is estimated to be the commissioning year emissions for the two combined-cycle turbines and auxiliary boiler. The RTCs required will be 218,105 pounds. [(2 combined-cycle turbines)(108,377 lb/yr per turbine for commissioning yr, FDOC Table 24) + (1350.8 lb/yr for auxiliary boiler for commissioning yr, FDOC Table 45) = 218,104.8 lb]

**Second Year of Operation of AEC**

The RTCs for the second year of operation is estimated to be the commissioning year emissions for the four simple-cycle turbines, and the normal operating annual emissions for the two combined-cycle turbines and auxiliary boiler.

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The RTCs required will be 443,350 pounds. [(4 simple-cycle turbines)(68,574.76 lb/yr per turbine for commissioning yr, FDOC *Table 40*) + (2 combined-cycle turbines)(83,850 lb/yr for normal operating yr, FDOC *Table 45*) + (1350.8 lb/yr for auxiliary boiler for normal operating yr, FDOC *Table 45*) = 443,349.84 lb]

#### Third Year of Operation of AEC

The RTCs for the third year of operation is estimated to be the normal operating year emissions for the turbines and auxiliary boiler. From FDOC *Table 45*, the facility-wide emissions for a normal operating year will be 274,120.0 pounds (137.06 tpy).

As shown above, the RTCs required for all years will be less than the initial allocation of 704,485 pounds. Therefore, since the AEC will be an existing facility that will not exceed the initial allocation, it will be required to hold RTCs for the first year of operation only per condition I297 for each NOx-emitting equipment. AEC is not required to hold a specific number of RTCs subsequent to the first year of operation. For subsequent years, Rule 2004(b)(1) specifies actual NOx emissions will determine the number of RTCs required to be held. Compliance with RECLAIM requirements is enforced by the Compliance & Enforcement Dept.

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Rule 2005(d) specifies the RECLAIM credit calculation shall be based on the potential to emit or on a permit condition limiting the source's emissions.

- RTCs Required to Be Held the First Year of Operation  
Combined-Cycle Turbines

Conditions I297.1 and I297.2 will require each turbine to hold 108,377 pounds of RTCs the first year (revised *Table 24*).

- Simple-Cycle Turbines

Conditions I297.3, I297.4, I297.5, and I297.6 will require each turbine to hold ~~68,575~~ **21,322** pounds of RTCs the first year (revised *Table 40*).

- RTCs Required to Be Purchased Prior to Issuance of Turbine Permits

The commercial operation of the combined-cycle turbines and auxiliary boiler is scheduled for first quarter 2020. The commercial operation of the simple-cycle turbines is scheduled for first quarter 2024.

Section B: RECLAIM Annual Emission Allocation, printed 9/11/19, indicates the NOx RTC holding for 1/2020 through 12/2020 is 430,540 lbs NOx, which is more than the 218,105 lbs required for the first year of operation for the two combined-cycle turbines and the auxiliary boiler.

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- **A/N 618933-618934, 618936**

As shown in revised *Table 24 – Combined-Cycle Turbine Maximum Annual Emissions, Commissioning Year*, conditions I297.1 and I297.2 will be revised to require each turbine to hold ~~108,377~~ **112,607** pounds of RTCs the first year.

- **(e)--Trading Zone Restrictions**

See Rule 1303(b)(3) analysis above.

- **(g)—Additional Federal Requirements for Major Stationary Sources**

For (g)(1) - (g)(4), see Rule 1303(b)(5) analysis above.

- **(h)—Public Notice**

See Rule 212 analysis above.

- **(i)—Rule 1401 Compliance**

See Rule 1401 analysis above.

### **Rule 2012-RECLAIM Monitoring Recording and Recordkeeping Requirements**

The purposes of this rule is to establish the monitoring, reporting and recordkeeping requirements for NOx emissions under the RECLAIM program.

#### **Classification as Major NOx Source**

- **Combined-Cycle Turbines:**

Rule 2012(c)(1)(C) classifies any gas turbine rated greater than or equal to 2.9 megawatts excluding any emergency standby equipment or peaking unit as a major NOx source. The combined-cycle turbines are each rated at 236.645 MW-gross at 28 °F. Therefore, these turbines are major NOx sources.

- **Simple-Cycle Turbines:**

The simple-cycle turbines are each rated at 100.438 MW-gross at 59 °F. Rule 2012(e)(1)(D) classifies a “peaking unit” as a RECLAIM process unit, however. Rule 2012 Protocol, Attachment F--Definitions defines a “peaking unit” as “a turbine used intermittently to produce energy on a demand basis and does not operate more than 1300 hours per year.” The simple-cycle turbines are not peaking units because they are permitted to operate 2358 hours per year. Therefore, under Rule 2012(c)(1)(C), they are major NOx sources.

The **Prior Application** reduced the annual operating hours from 2358 hours per year to 1058 hours per year for each simple-cycle turbine. Pursuant to *Table 3 - AEC Schedule Major Milestones*, the construction of the simple-cycle turbines is currently scheduled for third quarter 2022 – December 2023, with commercial operation starting in First Quarter 2024. As the annual operating hours and

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the RECLAIM regulations may be revised prior to third quarter 2022, the simple-cycle turbines will continued to be permitted as major NOx sources for now.

#### Compliance Schedule

Rule 2012(h)(6) provides that the Facility Permit holder which installs a new major source at an existing facility shall install, operate, and maintain all required or elected monitoring, reporting, and recording systems no later than 12 months after the initial startup of the major NOx source. During the interim period between the initial startup of the major NOx source and the provisional certification date of the CEMS, the Facility Permit holder shall comply with the monitoring, reporting, and recordkeeping requirements of paragraphs (h)(2) and (h)(3) of this rule. (Condition D82.2 and D82.3 implement this requirement.)

Paragraph (h)(2) provides that interim reports shall be submitted monthly for major and large sources. Paragraph (h)(3) provides that the Facility Permit holder shall install, maintain, and operate a totalizing fuel meter for each major source. Rule 2012, Appendix A, Chapter 2 states on pg. Rule 2012A-2-1 that major sources shall be allowed to use an interim reporting procedure to measure and record NOx emissions on a monthly basis according to the requirements specified in Chapter 3 for large sources. Chapter 3 states on pg. Rule 2012A-3-1 that the interim reporting is specified in subdivision D, paragraph 1. Paragraph 1, in turn, provides that the interim reporting shall be based on fuel usage and emission factor(s).

See *Rule 2002* above for further discussion on interim emission factors.

#### Regulation XXX—Title V Permits

##### ▪ Rule 3000—General

The proposed facility permit revision is considered as a “minor permit revision,” as analyzed below.

##### (b) Definitions

(15) *MINOR PERMIT REVISION* means any Title V permit revision that:

##### (A)

- (i) does not require or change a case-by-case evaluation of: reasonably available control technology (RACT) pursuant to Title I of the federal Clean Air Act; or maximum achievable control technology (MACT) pursuant to 40 CFR Part 63, Subpart B;
- (ii) does not violate a regulatory requirement;

**Analysis:** The proposed increase in the NOx emission limit for the non-cold starts for the combined-cycle turbines will meet the requirements of clauses (b)(15)(A)(i) – (ii).

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- (iii) does not require any significant change in monitoring terms or conditions in the permit;
- (iv) does not require relaxation of any recordkeeping, or reporting requirement, or term, or condition in the permit;

**Analysis:** The proposed increase to the NO<sub>x</sub> emission limit for the non-cold starts for the combined-cycle turbines will meet the requirements of clauses (b)(15)(A)(iii) – (iv).

- (v) does not result in an emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations, or higher Allocation amount which has previously undergone a significant permit revision process;

**Analysis:** Revised *Table 45 - Facility Maximum Annual Emissions, Normal Operations*, shows the facility-wide annual emissions for NO<sub>x</sub> will increase by 6.30 tpy from 146.78 tons/yr to 153.08 tpy (306,160 lb/yr). SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION shows the “NO<sub>x</sub> RTC Initially Allocated” is 704485 lb/yr, which is higher than the increase to 306,160 tpy. Thus the proposed revision will meet clause (b)(15)(A)(v).

- (vi) does not result in an increase in emissions of a pollutant subject to Regulation XIII - New Source Review or a hazardous air pollutant;

**Analysis:** The proposed increase to the NO<sub>x</sub> emission limit for the non-cold starts for the combined-cycle turbines will not result in an increase to CO, VOC, PM<sub>10</sub> or SO<sub>x</sub> emissions, which are subject to Regulation XIII.

The proposed increase in the NO<sub>x</sub> emission limit will not result in an increase of a hazardous air pollutant because the monthly and annual gas usages will remain the same.

Thus the proposed revision will meet clause (b)(15)(A)(vi).

- (vii) does not result in an increase in GHG emissions of >75,000 tpy CO<sub>2</sub>e;

**Analysis:** The proposed increase to the NO<sub>x</sub> emission limit for the non-cold starts for the combined-cycle turbines will not result in an

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increase of GHG emissions because the monthly and annual gas usages will remain the same.

- (viii) does not establish or change a permit condition that the facility has assumed to avoid an applicable requirement;
- (ix) is not an installation of a new permit unit subject to a New Source Performance Standard (NSPS) pursuant to 40 CFR Part 60, or a National Emission Standard for Hazardous Air Pollutants (NESHAP) pursuant to 40 CFR Part 61 or 40 CFR Part 63; and,
- (x) is not a modification or reconstruction of an existing permit unit, resulting in new or additional NSPS requirements pursuant to 40 CFR Part 60, or new or additional NESHAP requirements pursuant to 40 CFR Part 61 or 40 CFR Part 63; or ....

**Analysis:** The proposed increase to the NO<sub>x</sub> emission limit for the non-cold starts for the combined-cycle turbines will meet the requirements of clauses (b)(15)(A)(viii) – (x).

▪ **Rule 3003—Applications**

(j) EPA Review

- (1) The Executive Officer shall submit to the EPA Administrator:
  - (A) each application for initial permit, permit renewal, minor permit revision, de minimis significant permit revision and significant permit revision;
  - (B) each proposed permit for initial permit, renewal permit, or permit revision, excluding administrative permit revisions;
  - (C) any revisions to the proposed permit in response to public or affected State comments;
  - (D) a copy of any notices required by Rules 3003, 3005, or 3006; and,
  - (E) each final Title V permit, within 5 working days of permit issuance.

(k) EPA Objection

- (1) No permit or permit revision for which an application must be transmitted to EPA pursuant to subdivision (j) of this rule may be issued if the EPA objects to its issuance in writing within 45 days of receipt of the proposed permit and all necessary supporting information, or within 90 days if the EPA provides a written request to delay the permit issuance on the basis that an additional 45 days is necessary to review the public and affected State comments made to the proposed permit. The objection shall include a statement of the reasons for the objection and a description of the terms and conditions that the permit must include to respond to the objections.

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(m) Review by Affected States

- (1) Except for administrative permit revisions, the Executive Officer shall give notice of each proposed permit to any affected State on or before the notice is provided to the EPA.
- (2) Any affected State may provide recommendations in writing, based upon applicable requirements or requirements of 40 CFR Part 70, with respect to the proposed permit, within 30 days of receipt of the notice.

• **Rule 3006—Public Participation**

(a) Public Participation Requirements for Permit Actions

- (1) All permit actions for initial permit issuance, significant permit revisions, establishment of general permits and permit renewals shall include the following public participation procedures:
  - (A) The District shall give notice by publication in a newspaper of general circulation in the county where the source is located, by mail to those who request in writing to be on a list to receive all such notices, and by any other means determined by the Executive Officer to be necessary to assure adequate notice to the affected public....

(b) Exemptions

Permit revision applications eligible for processing using administrative permit revision, minor permit revision, or de minimis significant permit revision procedures shall be exempt from the public participation requirements of subdivision (a) of this rule.

**Analysis:** Pursuant to Rule 3006(b), this minor permit revision is exempt from public participation requirements under Rule 3006(b). Pursuant to Rule 3003(j), the proposed permit evaluation package will be submitted to EPA for a 45-day review period. Pursuant to Rule 3003(m), letter providing notice will be provided to the affected states. Following the conclusion of the required review and comment periods for the EPA and affected states, the revised Permits to Construct will be issued for the two combined-cycle turbines (D165, D173).

**FEDERAL REGULATIONS**

**40 CFR 60 Subpart TTTT—Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units**

The **Prior Application** evaluation revised the ***FDOC*** evaluation by incorporating the increase in annual operating hours for the combined-cycle turbines. The **A/N 618933-618934, 618936** is the same as the **Prior Application** evaluation, reproduced below.

The final rule entitled “Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Generating Units (*New Source Rule*),” 80 FR



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- (1) Has a base load rating greater than 260 GJ/h (250 MMBtu/h) of fossil fuel (either alone or in combination with any other fuel), and
- (2) Serves a generator capable of selling greater than 25 MW of electricity to a utility power distribution system.

**Analysis:** Construction for the AEC commenced after January 8, 2014. Actual construction of Phase I (combined-cycle turbines and associated equipment) was commenced on 8/7/17.

§60.5580 defines “*base load rating*” to mean “the maximum amount of heat input (fuel) that an EGU can combust on a steady state basis, as determined by the physical design and characteristics of the EGU at ISO conditions....” ISO conditions mean 15 deg C (59 °F ) ambient temperature, 60% relative humidity, and 14.70 psia.

**Combined-Cycle Turbine:**

- (1) From *Table 15*, the turbine base load rating is 2032 MMBtu/hr (LHV) at 100% load, 59 °F and 60% relative humidity (case 12). The 2032 MMBtu/hr rating is higher than the 250 MMBtu/hr threshold.
  - (2) The turbine generator rating is 230.459 MW-net plus one-half of the steam turbine generator rated at 215.402 MW-net (divided equally between the two turbines) is equal to 338.16 MW-net (case 12), which is higher than the 25 MW-net threshold.
- (b) You are not subject to the requirements of this subpart if your affected EGU meets any of the conditions specified in paragraphs (b)(1) through (b)(10) of this section.
- (1) Your EGU is a steam generating unit or IGCC that is currently and always has been subject to a federally enforceable permit condition limiting annual net-electric sales to no more than one-third of its potential electric output or 219,000 MWh, whichever is greater.
  - (2) Your EGU is capable of combusting 50 percent or more non-fossil fuel and is also subject to a federally enforceable permit condition limiting the annual capacity factor for all fossil fuels combined of 10 percent (0.10) or less.  
*[12/20/18 Fed Reg –Your EGU is capable of deriving 50 percent or more of the heat input from non-fossil fuel at the base load rating and is also subject to a federally enforceable permit condition limiting the annual capacity factor for all fossil fuels combined of 10 percent (0.10) or less.]*

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- (3) Your EGU is a combined heat and power unit that is subject to a federally enforceable permit condition limiting annual net-electric sales to no more than the product of the unit's net design efficiency and the unit's potential electric output or 219,000 MWh, whichever is greater.
- (4) Your EGU serves a generator along with other steam generating unit(s), IGCC, or stationary combustion turbine(s) where the effective generation capacity (determined based on a prorated output of the base load rating of each steam generating unit, IGCC, or stationary combustion turbine) is 25 MW or less.
- (5) Your EGU is a municipal waste combustor that is subject to subpart Eb of this part.
- (6) Your EGU is a commercial or industrial solid waste incineration unit that is subject to subpart CCCC of this part.
- (7) Your EGU is a steam generating unit or IGCC that undergoes a modification resulting in an hourly increase in CO<sub>2</sub> emissions (mass per hour) of 10 percent or less (2 significant figures). Modified units that are not subject to the requirements of this subpart pursuant to this subsection continue to be existing units under section 111 with respect to CO<sub>2</sub> emissions standards.
- (8) Your EGU is a stationary combustion turbine that is not capable of combusting natural gas (e.g., not connected to a natural gas pipeline).
- (9) The proposed Washington County EGU project....
- (10) The proposed Holcomb EGU project....

**Analysis:** The NSPS is applicable to the combined-cycle turbines, because they do not meet any of the above non-applicability criteria.

- **Applicable Emissions Standards**

The NSPS created three subcategories with different standards for each. These subcategories are base load natural-gas fired units, non-base load natural gas-fired units, and multi-fuel-fired units. The two gas-fired subcategories and associated standards are discussed below.

§60.5520 What CO<sub>2</sub> emission standard must I meet?

- (a) For each affected EGU subject to this subpart, you must not discharge from the affected EGU any gases that contain CO<sub>2</sub> in excess of the applicable CO<sub>2</sub> emission

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standard specified in Table 1 or Table 2 [12/20/18 Fed Reg – Table 1, 2, or 3 (but Table 3 is not applicable to turbines)] of this subpart, consistent with paragraphs (b), (c), and (d) of this section, as applicable.

Table 2 of Subpart TTTT of Part 60 – CO<sub>2</sub> Emission Standards for Affected Stationary Combustion Turbines That Commenced Construction after January 8, 2014 and Reconstruction after June 18, 2014

Affected EGU	CO <sub>2</sub> Emission Standard
Newly constructed or reconstructed stationary combustion turbine that supplies more than its design efficiency or 50 percent, whichever is less, times its potential electric output as net-electric sales on both a 12-operating month and a 3-year rolling average basis and combusts more than 90% natural gas on a heat input basis on a 12-operating-month rolling average basis.	450 kg of CO <sub>2</sub> per MWh of gross energy output (1,000 lb CO <sub>2</sub> /MWh); or 470 kilograms (kg) of CO <sub>2</sub> per megawatt-hour (MWh) of net energy output (1,030 lb/MWh)
Newly constructed or reconstructed stationary combustion turbine that supplies its design efficiency or 50 percent, whichever is less, times its potential electric output or less as net-electric sales on either a 12-operating month or a 3-year rolling average basis and combusts more than 90% natural gas on a heat input basis on a 12-operating month rolling average basis.	50 kg CO <sub>2</sub> per gigajoule (GJ) of heat input (120 lb CO <sub>2</sub> /MMBtu)

§60.5525 What are my general requirements for complying with this subpart?

Compliance with the applicable CO<sub>2</sub> emission standard of this subpart shall be determined on a 12-operating-month rolling average basis.

§60.5580 What definitions apply to this subpart?

*Design efficiency* means the rated overall net efficiency (e.g., electric plus useful thermal output) on a lower heating value basis at the base load rating, at ISO conditions, and at the maximum useful thermal output (e.g., CHP unit with condensing steam turbines would determine the design efficiency at the maximum level of extraction and/or bypass)....

*Potential electric output* means 33 percent or the base load rating design efficiency at the maximum electric production rate (e.g., CHP units with condensing steam turbines will operate at maximum electric production), whichever is greater, multiplied by the base load rating (expressed in MMBtu/h) of the EGU, multiplied by 10<sup>6</sup> Btu/MMBtu, divided by 3,413 Btu/KWh, divided by 1,000 kWh/MWh, and multiplied by 8,760 h/yr (e.g., a 35 percent efficient affected EGU with a 100 MW (341 MMBtu/h) fossil fuel heat input capacity would have a 306,000 MWh 12 month potential electric output capacity).

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**Analysis:** If a turbine operates above the product of the “design efficiency” or 50%, whichever is less, and “potential electric output” on a 12-operating-month and 3-year-rolling average basis, the standard is 1000 lb CO<sub>2</sub>/MWh-gross, which is the standard for base load natural gas-fired units. If the turbines operate below the product of the “design efficiency” or 50%, whichever is less, and “potential electric output” on the same basis, the standard is 120 lb CO<sub>2</sub>/MMBtu, which is the standard for non-base load natural gas-fired units with a small allowance for distillate oil. This latter standard is readily achievable because the CO<sub>2</sub> emission rate of natural gas is 117 lb CO<sub>2</sub>/MMBtu.

**Combined-Cycle Power Block:**

All turbines will operate on natural gas 100% of the time.

Page 2-6 of the original AES Application, dated 10/23/15, indicates the design efficiency is 56 percent on a LHV basis. Thus, 50 percent will be used because it is less than the provided 56% design efficiency. The potential electric output will be calculated using the net MW ratings (case 12), instead of the formula in the definition.

Design efficiency or 50%, whichever is less \* potential electric output =

$$(0.50) * [230.459 \text{ MW-net /turbine} + (1/2) * 215.402 \text{ MW-net/steam generator}] \\ * (8760 \text{ hours/yr}) = 1,481,140.8 \text{ MWh-net} \rightarrow 1,481,141 \text{ MWh-net}$$

If a combined-cycle turbine generates more electricity than 1,481,141 MWh-net, it will need to comply with the 1000 lb CO<sub>2</sub>/MWh-gross emission limit. If it generates less, it will need to comply with the 120 lb CO<sub>2</sub>/MMBtu standard.

For the **Prior Application**, the thermal efficiency calculations for the **FDOC** were revised below. The combined-cycle GHG efficiency estimate was revised to ~~937.88~~ **916.01** lb CO<sub>2</sub>/MWh-gross, assuming an 8 percent performance degradation, which is less than the 1000 lb CO<sub>2</sub>/MWh-gross emission limit.

- **Thermal Efficiency Calculations**

The second step is to perform thermal efficiency calculations to determine whether the combined- -cycle turbines will be able to comply with the emission standard of 1000 lb

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CO<sub>2</sub>/MWh-gross, in the event that the combined-cycle power block will meet the above applicability criteria, including the sales criteria.

- **Combined-Cycle Power Block**

- **FDOC Summary**

For the **FDOC**, for the combined-cycle power block, the annual operating schedule proposed by AES for the thermal efficiency calculations was 4100 hours normal operations, 80 cold starts, 420 combined hot and warm starts, and 500 shutdowns, as set forth in the revised AES Application, dated 3/30/16, submitted for the FDOC. The expected operating profile for the combined-cycle block, consisting of the two combined-cycle turbines, provided by AES for the purpose of thermal efficiency calculations was the same as the permitted annual operating schedule for each turbine of 4100 hours normal operations, 80 cold starts, 420 combined hot and warm starts, and 500 shutdowns. The permitted annual operating schedule represents the maximum operating schedule for each turbine and allows the facility the flexibility to operate as necessary to meet the emission standard. To comply with the 1000 lb CO<sub>2</sub>/MWh-gross, it will be necessary for AES to adjust the actual number of operating hours, starts, and shutdowns.

- **Prior Application (A/N 604015, 604018, 604020, 608431-608433, 610354-610360)**

For the **Prior Application**, the proposed permitted annual operating schedule was revised to (1) ~~4100~~ **6005** hours of normal operation, (2) 80 cold starts (80 hr), (3) 420 non-cold starts (210 hr), and (4) 500 shutdowns (250 hr) for a total ~~4640~~ **6545** hours for maximum annual emissions per turbine.

**Revised** Table 89 below provides the annual hours for each configuration (1-on-1, 2-on-1), net plant power electrical output, net plant heat rate, gross heat rate, net heat rate, gross power output, average net electrical output, and average net heat rate for the four load scenarios for the two configurations. As discussed above, the expected operating profile for the combined-cycle block, consisting of the two combined-cycle turbines, provided by AES for the purpose of thermal efficiency calculations was the same as the permitted annual operating schedule for each turbine. The only updates to FDOC Table 89 were the incorporation of the revised normal operating hours. One, the “Expected Annual Hours” will be revised from the current 4100 hr to 6005 hr. Two, for the “1-on-1 Configuration,” the “Hours per Configuration per Year,” will be revised from 900 hr/yr to 1318 hr/yr [calculated as 900 hr/4100 hr x 6005 hr/yr = 1318 hr/yr]. Three, for the “2-on-1 Configuration,” the annual hours will be increased from the current 3200 hr/yr to 4687 hr/yr [calculated as 3200 hr/4100 hr x 6005 hr = 4687 hr/yr]. The other “Plant Output” values in the table remain the same.

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**Table 89 - Heat Rates and Electrical Production – Expected Operating Profile for Combined-Cycle Power Block**

Plant Output	Percent	44 (Minimum Turndown)	63	81	100 (Baseload)	44 (Minimum Turndown)	63	81	100 (Baseload)	Expected Annual Hours
		1-on-1 Configuration				2-on-1 Configuration				
Hours per Configuration per Year	Hrs/Yr	<del>900</del> <b>1318</b>				<del>3200</del> <b>4687</b>				<del>4400</del> <b>6005</b>
Net Plant Electrical Output	kW	169,219	218,066	268,635	328,051	349,244	446,187	547,390	665,162	
Net Plant Heat Rate	Btu/kWh-LHV	7,061	6,327	6,275	6,155	6,842	6,184	6,159	6,071	
Gross Heat Rate, LHV	Btu/kWh-LHV	6,664	6,034	6,003	5,911	6,485	5,912	5,925	5,869	
Net Heat Rate	Btu/kWh-HHV	7,834	7,020	6,962	6,829	7,592	6,862	6,834	6,736	
Gross Power Output	kW	179,299	228,654	280,802	341,561	368,492	466,722	568,975	688,095	
Average Net Electrical Output	kW	245,993				501,996				
Average Net Heat Rate	Btu/kWh-HHV	7162				7006				

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- **Combined-Cycle Power Block**

For the **FDOC**, the expected operating profile for the combined-cycle block, consisting of the two combined-cycle turbines, provided by AES for the purpose of thermal efficiency calculations was the same as the permitted annual operating schedule for each turbine of 4100 hours normal operations, 80 cold starts, 420 combined hot and warm starts, and 500 shutdowns, as reproduced below.

For the **Prior Application**, the expected operating profile for the combined-cycle block for the purpose of thermal efficiency calculations will continue to be the same as the permitted annual operating schedule for each turbine. The thermal efficiency calculations for the **FDOC** were updated below to incorporate the proposed change in annual operating hours.

Schedule: ~~900~~ **1318** hr for 1-on-1, ~~3200~~ **4687** hr 2-on-1, for total of ~~4100~~ **6005** hr normal operations  
80 cold starts, total for both turbines  
420 ~~hot/warm~~ **non-cold** starts (332 hot starts + 88 warm starts), total for both turbines  
500 shutdowns, total for both turbines

**Startup and Shutdown Durations and Net Heat Rates**

In the revised AES Application submitted on 3/30/16 for the **FDOC**, AES provided the required heat rates for the cold, hot/warm startups for the baseload to completion period.

Cold Startup Duration, 60 min—20 min (0.33 hr) for first fire to baseload.  
40 min (0.67 hr) from baseload to completion.

Hot/Warm Startup Duration, 30 min--15 min (0.25 hr) for first fire to baseload.  
15 min (0.25 hr) from baseload to completion.

**Cold, Hot/Warm Startup Heat Rates—**

First fire to baseload—19,585 Btu/kWh-HHV-net

AES assumed rate to be 2.5 times the 44% load heat rate of 7834 Btu/kWh-HHV-net for the 1-on-1 configuration.

AES clarified the 2.5 multiplier was based on inspection of the startup heat rate for other combustion turbines. These other combustion turbines had a minimum load heat input of 11,189 btu/kWh-LHV and start up heat rate of 18,267 btu/kWh-LHV. The ratio of the startup heat rate to the minimum load heat rate is approximately 1.6, which was increased to 2.5 to be conservative for AEC.

Baseload to completion—7,162 Btu/kWh-HHV-net

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AES assumed rate to be the same as the average net heat rate for the 1-on-1 configuration for simplicity.

Shutdown, 30 min—Full 30 min (0.5 hr) for baseload to no fuel combustion

Shutdown Heat Rates—11,751 Btu/kWh-HHV-net

AES assumed rate to be 1.5 times the 44% load rate of 7834 Btu/kWh-HHV-net for the 1-on-1 configuration.

AES clarified the 1.5 multiplier was based on inspection of the shutdown heat rate for other combustion turbines. These other combustion turbines had a minimum load heat input of 11,189 btu/kWh-LHV and a shutdown heat rate 16,520 btu/kWh-LHV. The ratio of the shutdown heat rate to the minimum load heat rate is approximately 1.5.

#### Annual Hours for Startups and Shutdowns

- Startup Hours (first fire to baseload)  
(80 cold starts/yr)(0.33 hr) + (420 ~~warm or hot~~ **non-cold** starts/yr)(0.25 hr) = 131.4 hr/yr
- Startup Hours (baseload to completion)  
(80 cold starts/yr)(0.67 hr) + (420 ~~warm or hot~~ **non-cold** starts/yr)(0.25 hr) = 158.6 hr/yr
- Shutdown Hours (baseload to no fuel)  
(500 shutdown/yr)(0.5 hr) = 250 hr/yr

#### Overall Net Heat Rate (without degradation)

Overall Net Heat Rate (without degradation) =

$$[(\text{Avg net heat rate} * \text{annual hrs for 1-on-1}) + (\text{Avg net heat rate} * \text{annual hrs for 2-on-1}) +$$

$$(\text{Startup heat rate}_{\text{FIRST FIRE TO BASELOAD}} * \text{Annual hours}_{\text{FIRST FIRE TO BASELOAD}}) +$$

$$(\text{Startup heat rate}_{\text{BASELOAD TO COMPLETION}} * \text{Annual hours}_{\text{BASELOAD TO COMPLETION}}) +$$

$$(\text{Shutdown heat rate}_{\text{BASELOAD TO NO FUEL}} * \text{Annual hours}_{\text{BASELOAD TO NO FUEL}})] / \text{Total annual hrs}$$

$$[(7162 \text{ Btu/kWh-HHV} * 900 \text{ } \underline{1318} \text{ hrs for 1-on-1}) + (7006 \text{ Btu/kWh-HHV} * 3200 \text{ } \underline{4687} \text{ hrs for 2-on-1}) + (19,585 \text{ Btu/kWh-HHV} * 131.4 \text{ hr}) + (7162 \text{ Btu/kWh-HHV} * 158.6 \text{ hr})$$

$$+ (11,751 \text{ Btu/kWh-HHV} * 250 \text{ hr})] / [(900 \text{ } \underline{1318} + 3200 \text{ } \underline{4687} + 131.4 + 158.6 + 250 \text{ hr})] = 7653.47 \text{ } \underline{7474.98} \text{ Btu/kWh-HHV-net}$$

#### GHG Efficiency (without degradation)

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GHG Efficiency, net (without degradation) =  

$$\frac{[(7653.47 \text{ ~~7474.98~~ Btu/kWh-HHV-net) (1000 kWh/MWh)(MMBtu/1,000,000 Btu)]}{[(53.06 \text{ kg CO}_2\text{/MMBtu-HHV})(2.2046 \text{ lb/kg})]} = 895.27 \text{ ~~874.39~~ lb CO}_2\text{ /MWh-HHV-net}$$

GHG Efficiency, gross (without degradation) =  

$$(895.27 \text{ ~~874.39~~ lb CO}_2\text{ /MWh-HHV-net) (0.97 MWh-net / MWh-gross)}$$
  

$$= 868.41 \text{ ~~848.16~~ lb CO}_2\text{ /MWh-HHV-gross}$$

GHG Efficiency (with degradation)

AES assumes a maximum of 8% degradation can occur.

GHG Efficiency, net (with degradation) =  $(895.27 \text{ ~~874.39~~ lb CO}_2\text{ /MWh-HHV-net) (1 + 0.08)}$   

$$= 966.89 \text{ ~~944.34~~ lb CO}_2\text{ /MWh-HHV-net}$$

GHG Efficiency, gross (with degradation) =  $(868.41 \text{ ~~848.16~~ lb CO}_2\text{ /MWh-HHV-gross) (1 + 0.08)}$   

$$= 937.88 \text{ ~~916.01~~ lb CO}_2\text{ /MWh-HHV-gross}$$

Annual Capacity Factor

Annual Capacity Factor =  $\frac{[(245,993 \text{ kW average net electrical output (for 1-on-1) x } 900 \text{ ~~1318~~ hours/year) + (501,996 \text{ kW average net electrical output (for 2-on-1) x } 3,200 \text{ ~~4687~~ hours per year})]}{[665,162 \text{ kW (for 2-on-1 at 100\% CTG Load) x 8,760 hrs}] \times 100\%}$  =  

$$31.37\% \text{ ~~45.94\%}~~$$

### \*\*\*Compliance Demonstration

If the combined-cycle block operates above the “design efficiency” of 56% (or 50%, whichever is less), the 1000 lb CO<sub>2</sub>/MWh-gross standard is applicable. The applicant has provided thermal emissions calculations for  $31.37\% \text{ ~~45.94\%}~~$  capacity factor. Since GHG efficiency increases with an increased capacity factor, the  $937.88 \text{ ~~916.01}~~$

lb CO<sub>2</sub>/MWh-HHV-gross (with degradation) demonstrates that the combined-cycle block can meet the 1000 lb CO<sub>2</sub>/MWh-gross standard.

Conditions E193.11, E193.12, E193.14

Condition E193.11 provides the 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall only apply if a turbine supplies greater than 1,481,141 MWh-net electrical output to a utility distribution system on both a 12-operating-month and a 3-year rolling average basis. Compliance with the 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) is determined on a 12-operating month rolling average basis.



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**§60.40b(a)**—This subpart applies to each steam generating unit that commences construction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 MMBtu/hr). This subpart is not applicable to the combined-cycle turbines because the heat recovery steam generators are unfired and not equipped with duct burners.

**40 CFR Part 60 Subpart GG--NSPS for Stationary Gas Turbines**

*The analysis for A/N 618933-618934, 618936 is the same as for the **FDOC** and the **Prior Application**, as reproduced below.*

Subpart GG establishes requirements for stationary gas turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr (10.7 gigajoules per hour), based on lower heating value, which commences construction, modification, or reconstruction after October 3, 1997 and are not subject to subpart KKKK. Subpart KKKK is applicable to stationary combustion turbines with a heat input greater than 10 MMBtu/hr (10.7 gigajoules per hour), based on higher heating value, which commenced construction, modification or reconstruction after February 18, 2005. The combined-cycle turbines are subject to the requirements of 40 CFR Subpart KKKK (see below) and thus are exempt from the requirements of this subpart per §60.4305(b).

**40 CFR Part 60 Subpart KKKK-- NSPS for Stationary Gas Turbines**

*The analysis for A/N 618933-618934, 618936 is the same as for the **FDOC** and the **Prior Application**, as reproduced below.*

Subpart KKKK establishes emission standards and compliance schedules for the control of emissions from stationary combustion turbines that commenced construction, modification or reconstruction after February 18, 2005.

**§60.4305**

**(a)**—This subpart is applicable to stationary combustion turbines with a heat input greater than 10 MMBtu/hr (10.7 gigajoules per hour), based on the higher heating value of the fuel, which commenced construction, modification or reconstruction after February 18, 2005. Only heat input to the combustion turbine should be included when determining whether or not this subpart is applicable to the turbine. Any additional heat input to associated heat recovery steam generators (HRSG) or duct burners should not be included when determining the peak heat input. However, this part does apply to emissions from any associated HRSG and duct burners.

**(b)**—Stationary combustion turbines regulated under this subpart are exempt from the requirements of subpart GG. Heat recovery steam generators and duct burners regulated under this subpart are exempted from the requirements of subparts Da, Db, and Dc.

***Analysis:*** This subpart is applicable to the combined-cycle turbines, rated at 2275 MMBtu/hr at 28 °F each.

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**§60.4320(a)**—Gas turbines are required to meet the NO<sub>x</sub> emission limits specified in Table 1 of this subpart. Table 1 provides NO<sub>x</sub> emission standards based on combustion turbine type and heat input at peak rate. For a new natural-gas fired turbine with a heat input at peak load of greater than 850 MMBtu/hr, the NO<sub>x</sub> emission limit is 15 ppmv @ 15% O<sub>2</sub>.

*Analysis:* Since the combined-cycle turbines are rated at greater than 850 MMBtu/hr each, an emissions limit of 15 ppmv NO<sub>x</sub> will be included for these turbines. The combined-cycle turbines will meet the BACT limit of 2.0 ppmv @ 15% O<sub>2</sub>. Compliance with this subpart is expected.

**§60.4330(a)(2)**—Gas turbines are required to comply with (a)(1), (a)(2), or (a)(3) to meet the sulfur dioxide emission limit. Paragraph (a)(1) specifies the turbine exhaust gas shall not contain SO<sub>2</sub> in excess of 0.90 lbs/MWh gross output. Paragraph (a)(2) specifies the fuel shall not contain total potential sulfur emissions in excess of 0.060 lb SO<sub>2</sub>/MMBtu heat input for units located in continental areas.

*Analysis:* The 0.90 lbs/MWh is a stack limit that requires annual source testing for verification pursuant to §60.4415. The 0.06 lb/MMBtu is a fuel based limit which will require fuel monitoring (§60.4360) or fuel supplier data (§60.4365). As discussed in the analysis for §60.4365 below, the natural-gas fired turbines are expected to be in compliance with the 0.06 lb/MMBtu limit. Accordingly, an emissions limit of 0.06 lb/MMBtu SO<sub>2</sub> will be included for the combined-cycle turbines, pursuant to this subpart.

**§60.4340**—To demonstrate compliance for NO<sub>x</sub> if water or steam injection is not used, an alternative to the required annual performance testing is the installation and operation of a continuous monitoring system consisting of a certified NO<sub>x</sub> and O<sub>2</sub> CEMS.

*Analysis:* For this project, monitoring of the emissions from each combined-cycle turbine will be achieved with a CEMS certified in accordance with Rule 2012.

**§60.4360**—The total sulfur content of the fuel being fired in the turbine must be monitored using total sulfur methods described in §60.4415, except as provided in §60.4365, discussed below.

**§60.4365**—An election may be made not to monitor the total sulfur content of the fuel combusted in the turbine pursuant to the monitoring requirements in §60.4370, if the fuel is demonstrated not to exceed potential sulfur emissions of 0.060 lb SO<sub>2</sub>/MMBtu heat input for units located in continental areas. Two sources of information may be used to make the required demonstration: (1) The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for natural gas use in continental areas is 20 grains of sulfur or less per 100 standard cubic feet and has potential sulfur emissions of less than 26 ng

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SO<sub>2</sub>/J (0.060 lb SO<sub>2</sub>/MMBtu) heat input for continental areas, or (2) Representative fuel sampling data which show the sulfur content of the fuel does not exceed 26 ng SO<sub>2</sub>/J (0.060 lb SO<sub>2</sub>/MMBtu).

Analysis:

Rule 431.1 limits pipeline natural gas to 16 ppmv sulfur limit (calculated as H<sub>2</sub>S) specified in this rule. The 16 ppmv sulfur is equivalent to 1.0 grain/100 SCF (0.0626285 grain/100 SCF per 1 ppm), which is significantly less than 20 grains/100 SCF.

Further, Southern California Gas Company, Tariff Rule No. 30—Transportation of Customer-Owned Gas, allows up to 0.75 gr. S/100 scf total sulfur.

To convert 0.75 gr S/100 scf to units of lb SO<sub>2</sub>/MMBtu--  
 $(0.75 \text{ gr S}/100 \text{ ft}^3) (1 \text{ lb}/7000 \text{ gr}) (\text{ft}^3/913 \text{ Btu [LHV]}) (1\text{E}+06 \text{ Btu/MMBtu})$   
 $(64 \text{ lb SO}_x/32 \text{ lb S}) = 0.0023 \text{ lb SO}_2/\text{MMBtu} < 0.06 \text{ lb SO}_2/\text{MMBtu limit}$

**40 CFR Part 63 Subpart YYYY--NESHAPS for Stationary Combustion Turbines**

The **Prior Application** revised the **FDOC** analysis by incorporating the increase in annual operating hours and the corresponding increase in annual HAP emissions. For **A/N 618933-618934, 618936**, the analysis remains the same as for the **Prior Application**, as reproduced below.

This regulation applies to gas turbines located at major sources of HAP emissions. The applicability of federal requirements governing HAPs is dependent on whether a facility is a major source or area source for HAPs. A "major source" means "any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants." An "area source" means "any stationary source of hazardous air pollutants that is not a major source."

Combined-Cycle Turbines

Ammonia and propylene are toxic air contaminants for the purpose of Rule 1401, but not federal hazardous air pollutants. Therefore, the single highest HAP emissions are for formaldehyde.

From revised *Table 26* above (same as for **Prior Application**), the formaldehyde emissions from the combined-cycle turbines is ~~3.64~~ **5.30** tpy (calculated as 2 turbines \* ~~1.82~~ **2.65** tpy/turbine). The total combined HAPs is ~~8.10~~ **11.80** tpy (calculated as 2 turbines \* ~~4.05~~ **5.90** tpy/turbine).

Simple-Cycle Turbines

From revised *Table 42* in the **Prior Application** evaluation, the formaldehyde emissions from the simple-cycle turbines is ~~1.44~~ **0.68** tpy (calculated as 4 turbines \* ~~0.36~~ **0.17** tpy/turbine). The total combined HAPs is ~~3.2~~ **1.49** tpy (calculated as 4 turbines \* ~~0.80~~ **0.372** tpy/turbine).

Auxiliary Boiler

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From *Table 30* in the **Prior Application** evaluation, the formaldehyde emissions from the auxiliary boiler remains 0.00111 tpy. The total combined HAPs is 0.0074 tpy.

#### Facility

The total combined formaldehyde emissions from all sources is ~~5.08~~ **5.98** tpy, which is less than 10 tpy. The total combined HAPs from all sources is ~~44.34~~ **13.30** tpy, which is less than 25 tpy. Therefore, the AEC is an area source for HAPS, not a major source. The requirements of this regulation do **not** apply.

#### **40 CFR Part 64 – Compliance Assurance Monitoring**

The Compliance Assurance Monitoring (CAM) rule, 40 CFR Part 64, specifies the monitoring, reporting, and recordkeeping criteria that is required to be conducted by Title V facilities to demonstrate ongoing compliance with emission limitations and standards. The rule is intended to provide “reasonable assurance” that the control systems are operating properly to maintain compliance with the emission limits.

In general, CAM applies to emissions units that meet all of the following conditions:

- the unit is located at a major source for which a Title V permit is required; and
- the unit is subject to an emission limitation or standard; and
- the unit uses a control device to achieve compliance with a federally enforceable limit or standard; and
- the unit has potential pre-control emissions of at least 100% of the major source amount; and
- the unit is not otherwise exempt from CAM.

The combined-cycle turbines are located at a major source for which a Title V permit is required.

For the **Prior Application**, the CAM applicability was the same as for the **FDOC**, except that the CO major source threshold is corrected from 50 tpy to 100 tpy. For **A/N 618933-618934, 618936**, the CAM applicability remains the same as for the **Prior Application**, as reproduced below.

**Table 91 – CAM Applicability**

Equipment (device no.)	Subject to Emission Limitation or Standard	Use of External Control Device to Achieve Compliance with Limitation	Potential Pre-Control Emissions of at Least 100% of the Major Source Amount	Exemption	Applicability
Combined-Cycle Gas Turbines	CO: 1.5 ppmv	YES	YES > 100 TPY	CEMS <sup>1</sup>	NO
	NOx: 2.0 ppmv	YES	YES > 10 TPY	CEMS <sup>1</sup>	NO
	PM10: 8.5 lb/hr	NO			NO

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Nos. CCGT-1 & CCGT-2 (D165, D173)	SOx: 0.06 lbs/MMBtu VOC: 2.0 ppmv	NO YES			NO YES
			YES > 10 TPY		

<sup>1</sup> Each turbine is equipped with Continuous Emission Monitoring System (CEMS) for NOx pursuant to Rule 2012 and a CEMS for CO pursuant to Rule 218 and 218.1. Under 40 CFR §64.2(b)(1)(vi), emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method are exempt from CAM. Therefore, the CAM requirements do not apply to the turbines.

### Combined-Cycle Turbines

For the combined-cycle turbines, the NOx, CO, and VOC emissions are subject to BACT limits. Each turbine is controlled with an SCR to meet the NOx BACT limit and a CO catalyst to meet the CO and VOC BACT limits. For normal operations, the pre-control NOx, CO, and VOC are higher than the major source thresholds of 10 tpy, 100 tpy, and 10 tpy, respectively. Thus the CAM requirements are applicable to NOx, CO, and VOC, unless otherwise exempted.

For each turbine, a continuous emission monitoring system (CEMS) will be installed for NOx and for CO. The NOx CEMS will be certified in accordance with Rule 2012 requirements, and the CO CEMS will be certified in accordance with Rule 218 requirements. 40 CFR Part 64.2(b)(1)(vi) provides that the requirements of this part shall not apply to an emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1. §64.1 defines “continuous compliance determination method” to mean “a method, specified by the applicable standard or an applicable permit condition, which: (1) Is used to determine compliance with an emission limitation or standard on a continuous basis, consistent with the averaging period established for the emission limitation or standard; and (2) Provides data either in units of the standard or correlated directly with the compliance limit.” Since the NOx and CO CEMS qualify as continuous compliance determination methods, the CEMS provide an exemption from this subpart for NOx and CO.

This subpart also applies to the VOC emissions because the VOC BACT limit is achieved with the assistance of the oxidation catalyst. The oxidation catalyst is primarily installed to control CO emissions, but also controls VOC emissions to a very minor degree. The pre-control and post-control VOC levels have been provided by the manufacturer as 2.0 ppmvd in *Table 15 – Combined-Cycle Turbine Operating Scenarios*. The CO catalyst is located at the outlet of the turbine and designed to provide the required control efficiency at the expected turbine exhaust temperature range. There are no operational requirements for the CO catalyst. Since both CO and VOC are controlled by the oxidation catalyst, CO monitoring is a surrogate for VOC monitoring.

### **40 CFR Part 68—Chemical Accident Prevention Programs**

*The analysis for **A/N 618933-618934, 618936** is the same as for the **FDOC** and the **Prior Application**, as reproduced below.*

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**§68.1**—This part sets forth the list of regulated substances and thresholds and the requirements for owners or operators of stationary sources concerning the prevention of accidental releases.

**§68.10(a)**—An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process shall comply with the requirements of this part.

**§68.130(a)**—Regulated toxic and flammable substances are listed with the associated threshold quantities in Tables 1, 2, 3, and 4 to §68.130. Table 1 to §68.130—List of Regulated Toxic Substances and Threshold Quantities for Accidental Release Prevention [Alphabetical Order—77 Substances] listed “ammonia (anhydrous)” with a threshold quantity of 10,000 lbs, and “ammonia (conc 20% or greater)” with a threshold quantity of 20,000 lbs.

Because the two new ammonia tanks (Devices D163, D164) installed with the AEC project will contain 19% ammonia, not anhydrous ammonia or ammonia with a 20% or greater concentration, Part 68 is not applicable. Therefore, facility condition F24.1, which requires compliance with the accidental release prevention requirements pursuant to 40 CFR Part 68, is not applicable to the new tanks.

#### Analysis

Facility condition F24.1 is applicable to the four existing ammonia tanks (Devices D19, D151, D152, and D153) in Section D, because they are permitted to use 29% aqueous ammonia.

Condition F24.1 will be removed from the facility permit after the four existing tanks are removed from the AGS facility.

#### **Regulation XXXI—Acid Rain Permit Program (40 CFR Parts 72, 73, 74, 75, 76, 77, and 78 - Acid Rain Provisions)**

Acid Rain provisions are designed to control SO<sub>2</sub> and NO<sub>x</sub> emissions that could form acid rain from fossil fuel fired combustion devices in the electricity generating industry. Facilities are required to cover SO<sub>2</sub> emissions with “SO<sub>2</sub> allowances” or purchase of SO<sub>2</sub> offsets on the open market. The facility is also required to monitor SO<sub>2</sub> emissions through use of fuel gas meters and gas constituent analysis (use of emission factors is also acceptable in certain cases), or with the use of exhaust gas CEMS. The AEC facility will comply with the monitoring requirements of the acid rain provisions with the use of gas meters in conjunction with natural gas default sulfur data as allowed by the Acid Rain regulations (Appendix D to 40 CFR Part 75). If additional SO<sub>2</sub> credits are needed, AEC will obtain the credits from the SO<sub>2</sub> trading market. Based on the above, compliance with this rule is expected.

#### **STATE REGULATIONS**

##### **California Environmental Quality Act (CEQA)**

CEQA applies to projects undertaken by a public agency, funded by a public agency, or requires an issuance of a permit by a public agency. A “project” means the whole of an action that has a potential

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for resulting in physical change to the environment, and is an activity that may be subject to several discretionary approvals by government agencies. A project is exempt from CEQA if by statute, if considered ministerial or categorical, where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment.

The AEC project is subject to CEQA because there are no applicable exemptions. The California Energy Commission (CEC) has the statutory responsibility for certification of power plants rated at 50 MW and larger.

**California Code of Regulations (CCR), Title 20, Chapter 11—Greenhouse Gases Emission Performance Standard, Article 1—Provisions Applicable to Powerplants 10 MW and Larger (SB 1368)**

*The **Prior Application** revised the **FDOC** analysis by updating the thermal efficiency discussed at the end of analysis. For **A/N 618933-618934, 618936**, the analysis remains the same as for the **Prior Application**, as reproduced below.*

The California Emissions Performance Standard (EPS) of 1100 lbs CO<sub>2</sub>/MW-hour-net of electricity applies to local publicly owned electric utilities. California regulations stipulate that no local publicly owned electric utility shall enter into a covered procurement if greenhouse gases emissions from the power plant(s) subject to the covered procurement exceed the EPS. A “covered procurement” is defined in §2901(d) as “(1) A new ownership investment in a base load generation power plant, or (2) A new or renewed contract commitment, including a lease, for the procurement of electricity with a term of five years or greater by a local publicly owned electric utility with: (A) a base load generation power plant, unless the power plant is deemed compliant, or (B) any generating units added to a deemed-compliant base load generation power plant that combined result in an increase of 50 MW or more to the power plant’s rated capacity.”

The local publicly owned electric utility from which AES secures a covered procurement is required to submit a compliance filing to the California Energy Commission. The Commission then issues a decision on whether the covered procurement complies with the EPS.

The applicable sections of the regulation are reproduced below, with the rule analysis following.

**§ 2900. Scope.**

This Article applies to covered procurements entered into by local publicly owned electric utilities. The greenhouse gases emission performance standard established in section 2902(a) applies to any generation, regardless of capacity, supplied under a covered procurement. The provisions requiring local publicly owned electric utilities to report covered procurements, including Sections 2908, 2909, and 2910, apply only to covered procurements involving powerplants 10 MW and larger.

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**§ 2901. Definitions.**

- (a) "Annualized plant capacity factor" means the ratio of the annual amount of electricity produced, measured in kilowatt hours, divided by the annual amount of electricity the powerplant could have produced if it had been operated at its maximum permitted capacity during all hours of the year, expressed in kilowatt hours.
- (b) "Baseload generation" means electricity generation from a powerplant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent.
- (c) "Combined-cycle natural gas" means a powerplant that employs a combination of one or more natural gas turbines and one or more steam turbines in which electricity is produced in the steam turbine from otherwise lost waste heat exiting from one or more of the gas turbines.
- (k) "Permitted capacity" means the rated capacity of the powerplant unless the maximum output allowed under the operating permit is the effective constraint on the maximum output of the powerplant.
- (l) "Powerplant" means a facility for the generation of electricity, and is:
  - (1) a single generating unit; or
  - (2) multiple generating units that meet the following conditions:
    - (A) the generating units are co-located;
    - (B) each generating unit utilizes the same fuel and generation technology; and
    - (C) one or more of the generating units are operationally dependent on another.
- (m) "Rated capacity" means the powerplant's maximum rated output. For combustion or steam generating units, rated capacity means generating capacity and shall be calculated pursuant to Section 2003.

(Pursuant to § 2003(a), the "generating capacity" of an electric generating facility means the maximum gross rating of the plant's turbine generator(s), in megawatts ("MW"), minus the minimum auxiliary load.)

**§ 2902. Greenhouse Gases Emission Performance Standard.**

- (a) The greenhouse gases emission performance standard (EPS) applicable to this chapter is 1100 pounds (0.5 metric tons) of carbon dioxide (CO<sub>2</sub>) per megawatt hour (MWh) of electricity.
- (b) Unless otherwise specified in this Article, no local publicly owned electric utility shall enter into a covered procurement if greenhouse gases emissions from the powerplant(s) subject to the covered procurement exceed the EPS.

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**§ 2903. Compliance with the Emission Performance Standard.**

- (a) Except as provided in Subsection (b), a powerplant's compliance with the EPS shall be determined by dividing the powerplant's annual average carbon dioxide emissions in pounds by the powerplant's annual average net electricity production in MWh. This determination shall be based on capacity factors, heat rates, and corresponding emissions rates that reflect the expected operations of the powerplant and not on full load heat rates.

**§ 2905. Annual Average Electricity Production.**

- (a) Except as provided in Subsection (b), a powerplant's annual average electricity production in MWh shall be the sum of the net electricity available for all of the following: use onsite or at a host site in a commercial or industrial process or for sale or transmission from the powerplant.

**Analysis:**

Because § 2900 provides that local publicly owned electric facilities shall make a determination regarding compliance with the EPS prior into entering into a covered procurement, South Coast AQMD need not make a determination.

Thermal efficiency calculations are provided above to demonstrate compliance with 40 CFR 60 Subpart TTTT—Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units. For the purpose of showing compliance with the requirements of Subpart TTTT only, the thermal efficiency calculations indicate the greenhouse gas efficiency, with 8% degradation, for the combined-cycle block is ~~966.89 (FDOC)~~ **944.34** lb CO<sub>2</sub>/MWh-HHV-net.

**RECOMMENDATION**

Based on the above analysis, it is recommended that the revised Permits to Construct be issued following the conclusion of the required review and comment periods for the CEC, EPA, and public, subject to any comments received during these periods.



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • [www.aqmd.gov](http://www.aqmd.gov)

April 8, 2020  
*via electronic submittal*

Mr. Gerardo C. Rios (R9Airpermits\_sc@epa.gov)  
Chief - Permits Office  
US EPA, Region IX – Air 3  
75 Hawthorne Street  
San Francisco, CA 94105

Reference: Transmittal of Proposed Title V Minor Permit Revision  
AES Alamitos, LLC (ID 115394)

Dear Mr. Rios:

AES Alamitos, LLC (ID 115394) has proposed to revise their Title V permit under Application No. 618933 by increasing the NO<sub>x</sub> emissions limit for non-cold starts for the two combined-cycle turbines. This is a power plant (NAICS 221112) located at 690 N. Studebaker Rd, Long Beach, CA 90803-2221. This proposed permit revision is considered as a “minor permit revision” to their Title V permit.

Enclosed are the proposed Title V minor revision permit, statement of basis, and engineering evaluation. With your receipt of the proposed Title V minor revision permit, we will note that the EPA 45-day period begins today.

**In order to facilitate timely start-up of the combined cycle turbines we respectfully request expedited review of this proposal on or before April 22, 2020.**

If you have any questions on the proposed Title V revision permit, please contact Ms. Vicky Lee at (909) 396-2284 or by email at [vlee1@aqmd.gov](mailto:vlee1@aqmd.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read 'B. Chandan'.

Bhaskar Chandan, P.E., QEP  
Senior Air Quality Engineering Manager  
Engineering & Permitting  
Energy/Public Services/Waste  
Management/Terminals

BC:RC:VL  
Enclosures

cc: Stephen O’Kane, Manager

## **FACILITY PERMIT TO OPERATE**

**AES ALAMITOS, LLC  
690 N STUDEBAKER RD  
LONG BEACH, CA 90803**

### **NOTICE**

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Wayne Nastri  
Executive Officer

By \_\_\_\_\_  
Amir Dejbakhsh  
Deputy Executive Officer  
Engineering and Permitting

# FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

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C	Facility Plot Plan	TO BE DEVELOPED	
D	Facility Description and Equipment Specific Conditions	DRAFT	04/07/2020
E	Administrative Conditions	DRAFT	04/07/2020
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A	NOx and SOx Emitting Equipment Exempt From Written Permit Pursuant to Rule 219	DRAFT	04/07/2020
B	Rule Emission Limits	DRAFT	04/07/2020

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION A: FACILITY INFORMATION

**LEGAL OWNER &/OR OPERATOR:** AES ALAMITOS, LLC

**LEGAL OPERATOR (if different than owner):**

**EQUIPMENT LOCATION:** 690 N STUDEBAKER RD  
LONG BEACH, CA 90803-2221

**MAILING ADDRESS:** 690 N STUDEBAKER RD  
LONG BEACH, CA 90803

**RESPONSIBLE OFFICIAL:** WEIKKO WIRTA

**TITLE:** DIRECTOR OF OPERATIONS

**TELEPHONE NUMBER:** (562) 493-7831

**CONTACT PERSON:** COURY MCKINLAY

**TITLE:** ENVIRONMENTAL MANAGER

**TELEPHONE NUMBER:** (562) 493-7863

**TITLE V PERMIT ISSUED:** November 04, 2014

**TITLE V PERMIT EXPIRATION DATE:** November 03, 2019

TITLE V		RECLAIM	
YES	NOx:	YES	
	SOx:	NO	
	CYCLE:	1	
	ZONE:	COASTAL	

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

#### RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin End (month/year)	Zone	NOx RTC Initially Allocated	NOx RTC <sup>1</sup> Holding as of 01/01/2020 (pounds)	Non-Tradable <sup>2</sup> Non-Usable RTCs (pounds)
7/2017 6/2018	Coastal	0	0	0
1/2018 12/2018	Coastal	704485	132888	10359
7/2018 6/2019	Coastal	0	0	0
1/2019 12/2019	Coastal	704485	35635	10359
7/2019 6/2020	Coastal	0	0	0
1/2020 12/2020	Coastal	704485	430540	37672
7/2020 6/2021	Coastal	0	0	0
1/2021 12/2021	Coastal	704485	392322	38218
7/2021 6/2022	Coastal	0	0	0
1/2022 12/2022	Coastal	704485	316431	75891
7/2022 6/2023	Coastal	0	0	0
1/2023 12/2023	Coastal	704485	316431	0
7/2023 6/2024	Coastal	0	0	0
1/2024 12/2024	Coastal	704485	316431	0
7/2024 6/2025	Coastal	0	0	0
1/2025 12/2025	Coastal	704485	316431	0
7/2025 6/2026	Coastal	0	0	0

#### Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.
2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

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#### RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin End (month/year)	Zone	NOx RTC Initially Allocated	NOx RTC <sup>1</sup> Holding as of 01/01/2020 (pounds)	Non-Tradable <sup>2</sup> Non-Usable RTCs (pounds)
1/2026 12/2026	Coastal	704485	316431	0
7/2026 6/2027	Coastal	0	0	0
1/2027 12/2027	Coastal	704485	316431	0
7/2027 6/2028	Coastal	0	0	0
1/2028 12/2028	Coastal	704485	316431	0
7/2028 6/2029	Coastal	0	0	0
1/2029 12/2029	Coastal	704485	316431	0
7/2029 6/2030	Coastal	0	0	0
1/2030 12/2030	Coastal	704485	316431	0
7/2030 6/2031	Coastal	0	0	0
1/2031 12/2031	Coastal	704485	316431	0
7/2031 6/2032	Coastal	0	0	0
1/2032 12/2032	Coastal	704485	316431	0
7/2032 6/2033	Coastal	0	0	0
1/2033 12/2033	Coastal	704485	316431	0
7/2033 6/2034	Coastal	0	0	0
1/2034 12/2034	Coastal	704485	316431	0

**Footnotes:**

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.
2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

#### RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin End (month/year)	Zone	NOx RTC Initially Allocated	NOx RTC <sup>1</sup> Holding as of 01/01/2020 (pounds)	Non-Tradable <sup>2</sup> Non-Usable RTCs (pounds)
7/2034 6/2035	Coastal	0	0	0
1/2035 12/2035	Coastal	704485	316431	0

#### Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.
2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. If the facility submits a permit application to increase in an annual allocation to a level greater than the facility's starting Allocation plus Non-Tradable credits as listed below, the application will be evaluated for compliance with Rule 2005 (c)(4). Rule 2005 (e) - Trading Zone Restrictions applies if an annual allocation is increased to a level greater than the facility's Starting Allocation plus Non-Tradable Credits:

Year		Zone	NOx RTC	Non-Tradable
Begin	End		Starting Allocation	Credits(NTC)
(month/year)			(pounds)	(pounds)
1/1994	12/1994	Coastal	3542483	959910

# **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

## **SECTION C: FACILITY PLOT PLAN**

(TO BE DEVELOPED)

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 1: EXTERNAL COMBUSTION</b>					
<b>System 2: ELECTRIC GENERATION</b>					
BOILER, NO. 3, NATURAL GAS, COMBUSTION ENGINEERING, TANGENTIALLY FIRED, WITH FLUE GAS RECIRCULATION, OXYGEN CONTENT CONTROL, 3350 MMBTU/HR WITH A/N: 408706	D45	C139	NOX: MAJOR SOURCE**	CO: 300 PPMV NATURAL GAS (5) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; CO: 2000 PPMV (5A) [RULE 407, 4-2-1982]; NOX: 7 PPMV (5) [RULE 2009, 1-7-2005]; PM10: 0.01 GRAINS/SCF NATURAL GAS (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; PM10: 11 GRAINS/SCF NATURAL GAS (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]	A195.4, A195.6, A305.3, A327.1, B59.1, D28.2, E193.2, K40.2
GENERATOR, 320 MW					
SELECTIVE CATALYTIC REDUCTION, SERVING BOILER NO. 3, IN-DUCT TYPE, CORMETECH, TITANIA/VANADIA HONEYCOMB EXTRUSION, 2312 CU.FT. WITH A/N: 372944	C139	D45		NH3: 10 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.5, D12.6, D28.5, E179.4, E179.5, E193.2
AMMONIA INJECTION, TWO INJECTION GRIDS					

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 1: EXTERNAL COMBUSTION</b>					
BOILER, NO. 4, NATURAL GAS, COMBUSTION ENGINEERING, TANGENTIALLY FIRED, WITH FLUE GAS RECIRCULATION, OXYGEN CONTENT CONTROL, 3350 MMBTU/HR WITH A/N: 408707	D48	C141	NOX: MAJOR SOURCE**	CO: 300 PPMV NATURAL GAS (5) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; CO: 2000 PPMV (5A) [RULE 407, 4-2-1982]; NOX: 7 PPMV (5) [RULE 2009, 1-7-2005]; PM10: 0.01 GRAINS/SCF NATURAL GAS (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; PM10: 11 LBS/HR NATURAL GAS (5B) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; SO2: (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]	A195.4, A195.6, A305.4, A327.1, B59.1, D28.2, E193.2, K40.2
GENERATOR, 320 MW					
SELECTIVE CATALYTIC REDUCTION, SERVING BOILER NO. 4, IN-DUCT TYPE, CORMETECH, TITANIA/VANADIA HONEYCOMB EXTRUSION, 2312 CU.FT. WITH A/N: 372945	C141	D48		NH3: 10 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.5, D12.6, D28.5, E179.4, E179.5, E193.2
AMMONIA INJECTION, TWO INJECTION GRIDS					

\* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

\*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 4: INORGANIC CHEMICAL STORAGE</b>					
STORAGE TANK, UNDERGROUND, TK-001, AQUEOUS AMMONIA, DOUBLE WALLED, 20000 GALS; DIAMETER: 10 FT 2 IN; HEIGHT: 37 FT 10 IN A/N: 339195	D19				C157.1, E144.1
STORAGE TANK, FIXED ROOF, NO. 1, AQUEOUS AMMONIA 29%, WITH A VAPOR RETURN LINE, 20000 GALS A/N: 372946	D151				C157.2, E144.1, E193.2
STORAGE TANK, FIXED ROOF, NO. 2, AQUEOUS AMMONIA 29%, WITH A VAPOR RETURN LINE, 20000 GALS A/N: 372947	D152				C157.2, E144.1, E193.2
STORAGE TANK, FIXED ROOF, NO. 3, AQUEOUS AMMONIA 29% SOLUTION, WITH A VAPOR RETURN LINE, 20000 GALS A/N: 376484	D153				C157.2, E144.1, E193.2
<b>Process 11: Rule 219 Exempt Equipment Subject to Source-Specific Rules</b>					
RULE 219 EXEMPT EQUIPMENT, COATING EQUIPMENT, PORTABLE, ARCHITECTURAL COATINGS	E126			ROG: (9) [RULE 1113, 2-5-2016; RULE 1171, 2-1-2008; RULE 1171, 5-1-2009]	K67.7
RULE 219 EXEMPT EQUIPMENT, OIL WATER SEPARATORS, GRAVITY-TYPE, < 45 FT2 AIR/LIQUID INTERFACIAL AREA	E127				H23.1
RULE 219 EXEMPT EQUIPMENT, ABRASIVE BLASTING EQUIPMENT, GLOVE-BOX, <= 53 FT3, WITH DUST FILTER	E132			PM: (9) [RULE 1140, 8-2-1985; RULE 404, 2-7-1986; RULE 405, 2-7-1986]	D322.2, D381.1, K67.6
RULE 219 EXEMPT EQUIPMENT, AIR CONDITIONING UNITS	E212				H23.8

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

# **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

## **SECTION D: DEVICE ID INDEX**

**The following sub-section provides an index  
to the devices that make up the facility  
description sorted by device ID.**

**FACILITY PERMIT TO OPERATE  
AES ALAMITOS, LLC  
SECTION D: DEVICE ID INDEX**

Device Index For Section D			
Device ID	Section D Page No.	Process	System
D19	4	4	0
D45	1	1	2
D48	2	1	2
D51	3	1	2
C53	3	1	2
E126	4	11	0
E127	4	11	0
E132	4	11	0
C139	1	1	2
C141	2	1	2
D151	4	4	0
D152	4	4	0
D153	4	4	0
E212	4	11	0

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

#### **FACILITY CONDITIONS**

F2.1 The operator shall limit emissions from this facility as follows:

CONTAMINANT	EMISSIONS LIMIT	Header 3
PM2.5	Less than	100 TONS IN ANY ONE YEAR

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

**The operator shall comply with the terms and conditions set forth below:**

The operator 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 operator 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 =  $(FF1*EF1 + FF2*EF2 + FF3*EF3 + FF4*EF4 + FF5*EF5 + FF6*EF6 + FF7*EF7 + FF8*EF8 + FF9*EF9 + FF10*EF10 + FF11*EF11 + FF12*EF12 + FF13*EF13)/2000$

FF1 = Boiler No. 1 monthly fuel usage in mmscf; EF1 = 1.19 lb/mmscf

FF2 = Boiler No. 2 monthly fuel usage in mmscf; EF2 = 1.19 lb/mmscf

FF3 = Boiler No. 3 monthly fuel usage in mmscf; EF3 = 1.19 lb/mmscf

FF4 = Boiler No. 4 monthly fuel usage in mmscf; EF4 = 1.19 lb/mmscf

FF5 = Boiler No. 5 monthly fuel usage in mmscf; EF5 = 1.19 lb/mmscf

FF6 = Boiler No. 6 monthly fuel usage in mmscf; EF6 = 1.19 lb/mmscf

FF7 = Combined-Cycle Turbine No. CCGT-1 monthly fuel usage in mmscf; EF7 = 3.92 lb/mmscf

FF8 = Combined-Cycle Turbine No. CCGT-2 monthly fuel usage in mmscf; EF8 = 3.92 lb/mmscf

FF9 = Auxiliary Boiler monthly fuel usage in mmscf; EF9 = 7.42 lb/mmscf

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

FF10 = Simple-Cycle Turbine No. SCGT-1 monthly fuel usage in mmscf; EF10 = 7.44 lb/mmscf

FF11 = Simple-Cycle Turbine No. SCGT-2 monthly fuel usage in mmscf; EF11 = 7.44 lb/mmscf

FF12 = Simple-Cycle Turbine No. SCGT-3 monthly fuel usage in mmscf; EF12 = 7.44 lb/mmscf

FF13 = Simple-Cycle Turbine No. SCGT-4 monthly fuel usage in mmscf; EF13 = 7.44 lb/mmscf

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

AES Alamitos, LLC shall submit written reports of the monthly PM<sub>2.5</sub> 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 PM<sub>2.5</sub> compliance demonstration shall be maintained on site for at least five years and made available upon 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, 11-4-2016]**

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

#### The operator shall comply with the terms and conditions set forth below:

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

- (a) As dark or darker in shade as that designated No.1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or
- (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[**RULE 401, 3-2-1984**; RULE 401, 11-9-2001]

F18.1 Acid Rain SO<sub>2</sub> Allowance Allocation for affected units are as follows:

Device ID	Boiler ID	Contaminant	Tons in any year
45	Unit 3	SO <sub>2</sub>	81
48	Unit 4	SO <sub>2</sub>	541
51	Unit 5	SO <sub>2</sub>	3866

- a). The allowance allocation(s) shall apply to calendar years 2010 and beyond.
- b). The number of allowances allocated to Phase II affected units by U.S. EPA may change in a 1998 revision to 40CFR73 Tables 2,3, and 4. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned conditions necessitate a revision to the unit SO<sub>2</sub> allowance allocations identified in this permit (see 40 CFR 72.84)

[**40CFR 73 Subpart B, 1-11-1993**]

F21.1 Acid Rain SO<sub>2</sub> Allowance Allocation for retired units are as follows:

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

**The operator shall comply with the terms and conditions set forth below:**

Boiler ID	Contaminant	Tons in year
Unit 1	SO2	2703
Unit 2	SO2	17
Unit 6	SO2	936

- a). The allowance allocation(s) shall apply to calendar years 2010 and beyond.
- b). The number of allowances allocated to Phase II affected units by U.S. EPA may change in a 1998 revision to 40CFR73 Tables 2,3, and 4. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned conditions necessitate a revision to the unit SO2 allowance allocations identified in this permit (see 40 CFR 72.84).
- c). A unit exempted under 40CFR72.8 shall not emit any sulfur dioxide starting on the date it is exempted.
- d). The owners and operators of a unit exempted under 40CFR72.8 shall comply with monitoring requirements in accordance with part 75 and will be allocated allowances in accordance with 40CFR73.
- e). A unit exempted under 40CFR73 shall not resume operation unless the designated representative of the source that includes the unit submits an Acid Rain permit application for the unit not less than 24 months prior to the later of January 1, 2000, or the date the unit is to resume operation. On the earlier of the date the written exemption expires or the date an Acid Rain permit application is submitted or is required to be submitted under this paragraph, the unit shall no longer be exempted and shall be subject to all requirements of 40CFR72.

**[40CFR 73 Subpart B, 1-11-1993]**

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

**F24.1** Accidental release prevention requirements of Section 112(r)(7):

a). The operator shall comply with the accidental release prevention requirements pursuant to 40 CFR Part 68 and shall submit to the Executive Officer, as a part of an annual compliance certification, a statement that certifies compliance with all of the requirements of 40 CFR Part 68, including the registration and submission of a risk management plan (RMP).

b). The operator shall submit any additional relevant information requested by the Executive Officer or designated agency.

**[40CFR 68 - Accidental Release Prevention, 1-13-2017]**

**F52.1** This facility is subject to the applicable requirements of the following rules or regulation(s):

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

The facility shall submit a detailed retirement plan for the permanent shutdown of Boilers Nos. 1, 2, 6 and 3 (Devices D39, D42, D3, and D45, respectively), describing in detail the steps and schedule that will be taken to render Boilers Nos. 1, 2, 6, and 3 permanently inoperable.

The retirement plan shall be submitted to South Coast AQMD within 60 days after Permits to Construct for Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Devices D185, D191, D197, and D203 respectively) are issued.

AES shall not commence any construction of the Alamitos Energy Center Project including Gas Turbines Nos. CCGT-1, CCGT-2, SCGT-1, SCGT-2, SCGT-3, and SCGT-4, unless the retirement plan is approved in writing by South Coast AQMD. If South Coast AQMD notifies AES that the plan is not approvable, AES shall submit a revised plan addressing South Coast AQMD's concerns within 30 days.

Within 30 calendar days of actual shutdown but no later than January 10, 2020, AES shall provide South Coast AQMD with a notarized statement that Boilers Nos. 1, 2, and 6 are permanently shut down and that any re-start or operation of the boilers shall require new Permits to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

AES shall notify South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boilers Nos. 1, 2, and 6, or advise South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2019.

AES shall cease operation of Boilers Nos. 1, 2, and 6 within 90 calendar days of the first fire of Gas Turbines No. CCGT-1 or CCGT-2, whichever is earlier.

Within 30 calendar days of actual shutdown but no later than January 10, 2021 (unless the December 31, 2020 Once-Through Cooling Policy compliance date is extended by the SWRCB), AES shall provide South Coast AQMD with a notarized

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

In the event that the State Water Resources Control Board (SWRCB) extends the December 31, 2020 Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Once-Through Cooling Policy) compliance date for Boiler No. 3, AES shall: (1) Notify South Coast AQMD within 3 months of the approval of an extension, and

(2) Within 30 calendar days of actual shutdown of Boiler No. 3, provide South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention of Significant Deterioration Program.

AES shall notify South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boiler No. 3, or advise South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2020.

AES shall cease operation of Boiler No. 3 within 90 calendar days of the first fire of Gas Turbines No. SCGT-1, SCGT-2, SCGT-3, or SCGT-4, whichever is earliest.

**[RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996; RULE 1313(d), 12-7-1995]**

F52.2 This facility is subject to the applicable requirements of the following rules or regulation(s):

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

The "facility" is defined as the Alamitos Energy Center. The equipment includes Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2, common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4.

For all circuit breakers at the facility utilizing SF6, including the circuit breakers serving Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2; common Steam Turbine Generator; and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4, the operator shall install, operate, and maintain enclosed-pressure SF6 circuit breakers with a maximum annual leakage rate of 0.5 percent by weight. The circuit breakers shall be equipped with a 10 percent by weight leak detection system.

The leak detection system shall be calibrated in accordance with manufacturer's specifications. The manufacturer's specifications and records of all calibrations shall be maintained on site.

The total CO2e emissions from all circuit breakers shall not exceed 74.55 tons per calendar year.

The operator shall calculate the SF6 emissions due to leakage from the circuit breakers by using the mass balance in equation DD-1 at 40 CFR Part 98, Subpart DD, on an annual basis.

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

**[RULE 1714, 12-10-2012; RULE 1714, 3-1-2019]**

F67.1 The facility operator shall comply with all terms and conditions specified below..

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

Continuous operation of monitoring systems not subject to Rule 218 are not required when necessary calibration, maintenance or repair activities are performed in accordance with manufacturer's recommendation. The operator shall take all reasonable actions to minimize the time required to perform such activities. In no event shall any such activities exceed 96 consecutive hours for any one calibration, maintenance, or repair episode.

The operator shall notify the Executive Officer within 24 hours of the start of a calibration, maintenance, or repair activity, if the activity is expected to last more than 24 consecutive hours.

**[RULE 204, 10-8-1993]**

#### **DEVICE CONDITIONS**

##### **A. Emission Limits**

A195.2 The 20 PPM NH<sub>3</sub> emission limit(s) is averaged over 60 minutes at 3 percent O<sub>2</sub>, dry.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D51]

A195.4 The 300 PPM CO emission limit(s) is averaged over 60 minutes at 3 percent O<sub>2</sub>, dry.

**[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]**

[Devices subject to this condition : D45, D48, D51]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

A195.5 The 10 PPMV NH<sub>3</sub> emission limit(s) is averaged over 60 minutes at 3 percent O<sub>2</sub>, dry. The operator shall calculate and continuously record the NH<sub>3</sub> slip concentration using the following:  $\text{NH}_3 \text{ (ppmv)} = [a - b \cdot c / 1\text{E}6] \cdot 1\text{E}6 / b$ , where a = NH<sub>3</sub> injection rate (lbs/hr)/17 (lbs/lb-mole), b = dry exhaust gas flow rate (lbs/hr)/29 (lbs/lb-mole), c = change in measured NO<sub>x</sub> across the SCR (ppmvd). The operator shall install and maintain a NO<sub>x</sub> analyzer to measure the SCR inlet NO<sub>x</sub> ppmv accurate to +/- 5 percent calibrated at least once every 12 months.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C139, C141]

A195.6 The 7.0 PPMV NO<sub>x</sub> emission limit(s) is averaged over 720 operating hours and is a heat input weighted average with consecutive, non-overlapping averaging periods, as detailed below.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

A data acquisition system shall be installed and maintained to continuously record the raw data necessary to calculate the heat input weighted average NO<sub>x</sub> concentration (ppmv) and to calculate and record the heat input weighted average NO<sub>x</sub> concentration for each averaging period.

The average shall be calculated based on emissions during all boiler operating hours, except startups, shutdowns, CEMS calibration and maintenance periods, Part 75 linearity testing, RATA testing, equipment breakdown periods as defined in Rule 2004, and periods of zero fuel flow.

Startups are defined as whenever the unit is being brought up to normal operating temperature from an inactive status, and the exhaust temperature entering the SCR catalyst is less than 465 degrees F.

Shutdowns are defined as whenever the unit is allowed to cool from a normal operating temperature to inactive status and the exhaust temperature entering the SCR catalyst is less than 465 degrees F.

The heat input weighted NO<sub>x</sub> concentration shall be calculated using the following equation, or other equivalent equation:

1.  $PPMV(3\% O_2) = (Et/Q_t) * K$ ; where  $PPMV(3\% O_2)$  = the concentration of NO<sub>x</sub> in PPMV corrected to 3% O<sub>2</sub>; K = a conversion factor from lbs/MMBtu to PPM, which can be determined using EPA 40CFR60 Method 19 (the default value of K is 819); Et = total reported NO<sub>x</sub> emissions during the averaging period including emissions reported as a result of missing data procedures pursuant to Rule 2012; and Q<sub>t</sub> = Total heat input during the averaging period.

[RULE 2009, 1-7-2005]

[Devices subject to this condition : D45, D48]

A195.7 The 5.0 PPMV NO<sub>x</sub> emission limit(s) is averaged over 720 operating hours and is a heat input weighted average with consecutive, non-overlapping averaging periods, as detailed below.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

A data acquisition system shall be installed and maintained to continuously record the raw data necessary to calculate the heat input weighted average NOx concentration (ppmv) and to calculate and record the heat input weighted average NOx concentration for each averaging period.

The average shall be calculated based on emissions during all boiler operating hours, except startups, shutdowns, CEMS calibration and maintenance periods, Part 75 linearity testing, RATA testing, equipment breakdown periods as defined in Rule 2004, and periods of zero fuel flow.

Startups are defined as whenever the unit is being brought up to normal operating temperature from an inactive status, and the exhaust temperature entering the SCR catalyst is less than 465 degrees F.

Shutdowns are defined as whenever the unit is allowed to cool from a normal operating temperature to inactive status and the exhaust temperature entering the SCR catalyst is less than 465 degrees F.

The heat input weighted NOx concentration shall be calculated using the following equation, or other equivalent equation:

1.  $PPMV(3\% O_2) = (Et/Q_t) * K$ ; where  $PPMV(3\% O_2)$  = the concentration of NOx in PPMV corrected to 3% O<sub>2</sub>; K = a conversion factor from lbs/MMBtu to PPM, which can be determined using EPA 40CFR60 Method 19 (the default value of K is 819); Et = total reported NOx emissions during the averaging period including emissions reported as a result of missing data procedures pursuant to Rule 2012; and Q<sub>t</sub> = Total heat input during the averaging period.

[RULE 2009, 1-7-2005]

[Devices subject to this condition : D51]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

A305.3 Whenever this equipment is in operation, control device C139 may be operated at any control efficiency provided that the emission concentrations being monitored by the certified CEMS serving this equipment is below the valid upper range specified in the approved CEMS plan.

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D45]

A305.4 Whenever this equipment is in operation, control device C141 may be operated at any control efficiency provided that the emission concentrations being monitored by the certified CEMS serving this equipment is below the valid upper range specified in the approved CEMS plan.

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D48]

A327.1 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

**[RULE 475, 10-8-1976; RULE 475, 8-7-1978]**

[Devices subject to this condition : D45, D48, D51]

#### **B. Material/Fuel Type Limits**

B59.1 The operator shall only use the following material(s) in this device :

409 stainless steel or other equivalent material for air preheater baskets

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

[RULE 402, 5-7-1976]

[Devices subject to this condition : D45, D48, D51]

#### **C. Throughput or Operating Parameter Limits**

C157.1 The operator shall install and maintain a pressure relief valve set at 50 psig.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D19]

C157.2 The operator shall install and maintain a pressure relief valve set at 25 psig.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D151, D152, D153]

#### **D. Monitoring/Testing Requirements**

D12.5 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the boiler exhaust at the outlet of the SCR reactor.

[**RULE 2012, 5-6-2005**]

[Devices subject to this condition : C53]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

D12.6 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : C53, C139, C141]

D28.1 The operator shall conduct source test(s) in accordance with the following specifications:

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

The test shall be conducted to determine the NH<sub>3</sub> emissions using South Coast AQMD method 207.1 measured over a 60 minute averaging time period..

The test shall be conducted at least annually.

The test shall be conducted to determine the NH<sub>3</sub> emissions at the outlet.

The test shall be conducted that the NO<sub>x</sub> concentration during the source test does not exceed the limit in condition A195.7 averaged over the full duration of the test and corrected to 3% O<sub>2</sub> dry.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 3004(a)(4)-Periodic Monitoring, 8-11-1995]**

[Devices subject to this condition : D51]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

D28.2 The operator shall conduct source test(s) in accordance with the following specifications:

The test shall be conducted at least annually.

The test shall be conducted to determine the CO emissions at the outlet.

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

The test shall be conducted to determine compliance with the CO emissions by either: (a) conducting a source test using South Coast AQMD method 100.1 measured over a 30 minute averaging time, or (b) using a portable analyzer and a South Coast AQMD-approved test method.

The test shall be conducted when the equipment is operating under normal conditions. No test shall be required in any one year for which the equipment is not in operation.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]**

[Devices subject to this condition : D45, D48, D51]

D28.5 The operator shall conduct source test(s) in accordance with the following specifications:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

The test shall be conducted during ammonia injection periods, at least quarterly during the first twelve months of operation of the SCR, and at least annually thereafter.

The test shall be conducted and the results submitted to the South Coast AQMD within 45 days after the test date.

The District shall be notified of the date and time of the test at least 7 days prior to the test.

The test shall be conducted to determine the NH<sub>3</sub> emissions using South Coast AQMD Method 207.1 measured over a 60 minute averaging time period. The NO<sub>x</sub> concentration, as determined by reading the CEMS, shall be simultaneously recorded during the test. If the CEMS is inoperable, a test shall be conducted to determine the NO<sub>x</sub> 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.

The test shall be conducted that the NO<sub>x</sub> concentration during the source test does not exceed the limit in condition A195.6 averaged over the full duration of the test and corrected to 3% O<sub>2</sub> dry.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1401, 9-1-2017]**

[Devices subject to this condition : C139, C141]

D322.2 The operator shall perform annual inspection of the equipment and filter media for leaks, broken or torn filter media, and improperly installed filter media.

**[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]**

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : E132]

- D381.1 The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on an annual basis, at least, unless the equipment did not operate during the entire annual period. The routine annual inspection shall be conducted while the equipment is in operation and during daylight hours. If any visible emissions (not including condensed water vapor) are detected, the operator shall take corrective action(s) that eliminates the visible emissions within 24 hours and report the visible emissions as a potential deviation in accordance with the reporting requirements in Section K of this permit.

The operator shall keep the records in accordance with the recordkeeping requirements in Section K of this permit and the following records:

- 1). Stack or emission point identification;
- 2). Description of any corrective actions taken to abate visible emissions; and
- 3). Date and time visible emission was abated.

**[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]**

[Devices subject to this condition : E132]

#### **E. Equipment Operation/Construction Requirements**

- E73.1 Notwithstanding the requirements of Section E conditions, the operator may, at his discretion, choose not to use ammonia injection if any of the following requirement(s) are met:

the outlet exhaust temperature of the SCR reactor is 400 Deg F or less

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

[RULE 402, 5-7-1976]

[Devices subject to this condition : C53]

- E144.1 The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D19, D151, D152, D153]

- E179.3 For the purpose of the following condition number(s), continuously record shall be defined as recording at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour.

Condition Number 12-6

[**RULE 2012, 5-6-2005**; RULE 402, 5-7-1976]

[Devices subject to this condition : C53]

- E179.4 For the purpose of the following condition number(s), continuously record shall be defined as recording at least once every hour and shall be calculated upon the average of the continuous monitoring for that hour.

Condition Number 12-6

Condition Number 12-7

Condition Number 195-5

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : C139, C141]

- E179.5 For the purpose of the following condition number(s), continuously record shall be defined as recording at least once every month and shall be calculated based upon the average of the continuous monitoring for that month.

Condition Number 12-8

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : C139, C141]

- E193.1 The operator shall upon completion of construction, operate and maintain this equipment according to the following specifications:

In accordance with the operational phase air quality mitigation measures stipulated in the Mitigation Monitoring Plan document prepared for this project

**[CA PRC CEQA, 5-12-2017]**

[Devices subject to this condition : C53]

- E193.2 The operator shall construct, operate, and maintain this equipment according to the following specifications:

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

**The operator shall comply with the terms and conditions set forth below:**

For facilities operating under an Order of Abatement or a Settlement Agreement, in the event the specified schedule of installation of APC equipment under these agreements cannot be met, the operator must seek amendment of the Order of Abatement or Settlement Agreement at South Coast AQMD discretion.

The schedule for installation of APC equipment shall be done in consultation with the California Energy Commission (CEC) and the California Independent System Operator (CISO) to ensure that compliance with air pollution control laws and requirements can be achieved with no significant power interruption.

In accordance with all mitigation measures stipulated in Environmental Impact Report (SCH No. 2000111039) that was prepared for this project by the South Coast Air Quality Management District.

In accordance with the Settlement Agreement between AES Alamitos and the South Coast AQMD dated December 12, 2000, AES shall demonstrate compliance with item 5 of the agreement by installing and operating the air pollution control (APC) equipment by no later than September 9, 2001.

[**RULE 2010, 4-6-2007**; CA PRC CEQA, 5-12-2017]

[Devices subject to this condition : D45, D48, C139, C141, D151, D152, D153]

#### **H. Applicable Rules**

H23.1 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	464

[**RULE 464, 12-7-1990**]

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : E127]

H23.8 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
Refrigerants	District Rule	1415
Refrigerants	40CFR82, SUBPART	F

[RULE 1415, 12-3-2010; **40CFR 82 Subpart F, 12-27-2017**]

[Devices subject to this condition : E212]

#### **K. Record Keeping/Reporting**

K40.2 The operator shall provide to the District a source test report in accordance with the following specifications:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

Emission data shall be expressed in terms of lbs/MM cubic feet.

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

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

Source test results shall also include fuel flow rate (CFH) and generator output (MW) under which the test was conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 3 percent oxygen, dry basis.

Emission data shall be expressed in terms of mass rate (lbs/hr). In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1401, 9-1-2017; RULE 2012, 5-6-2005]**

[Devices subject to this condition : D45, D48]

K40.3 The operator shall provide to the District a source test report in accordance with the following specifications:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

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

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

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

Source test results shall also include the oxygen levels in the exhaust, fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

**[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]**

[Devices subject to this condition : D51]

- K48.1 The operator shall maintain records in a manner approved by the District, to demonstrate compliance with the following condition number(s):

Condition no. 12-5

Condition no. 12-6

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : C53]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

#### **The operator shall comply with the terms and conditions set forth below:**

K67.6 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

the name of the person performing the inspection and/or maintenance of the dust collector

the date, time and results of the inspection

the date, time and description of any maintenance or repairs resulting from the inspection

#### **[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]**

[Devices subject to this condition : E132]

K67.7 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

For architectural applications where no thinners, reducers, or other VOC containing materials are added, maintain semi-annual records for all coating consisting of (a) coating type, (b) VOC content as supplied in grams per liter (g/l) of materials for low-solids coatings, (c) VOC content as supplied in g/l of coating, less water and exempt solvent, for other coatings.

For architectural applications where thinners, reducers, or other VOC containing materials are added, maintain daily records for each coating consisting of (a) coating type, (b) VOC content as applied in grams per liter (g/l) of materials used for low-solids coatings, (c) VOC content as applied in g/l of coating, less water and exempt solvent, for other coatings.

#### **[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]**

[Devices subject to this condition : E126]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

**The operator shall comply with the terms and conditions set forth below:**

K67.8 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

the total hourly amount of injected ammonia(NH<sub>3</sub>)

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : C53]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION E: ADMINISTRATIVE CONDITIONS**

The operating conditions in this section shall apply to all permitted equipment at this facility unless superseded by condition(s) listed elsewhere in this permit.

1. The permit shall remain effective unless this permit is suspended, revoked, modified, reissued, denied, or it is expired for nonpayment of permit processing or annual operating fees. [201, 203, 209, 301]
  - a. The permit must be renewed annually by paying annual operating fees, and the permit shall expire if annual operating fees are not paid pursuant to requirements of Rule 301(d). [301(d)]
  - b. The Permit to Construct listed in Section H shall expire one year from the Permit to Construct issuance date, unless a Permit to Construct extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment, in which case the Permit to Construct serves as a temporary Permit to Operate. [202, 205]
  - c. The Title V permit shall expire as specified under Section K of the Title V permit. The permit expiration date of the Title V facility permit does not supercede the requirements of Rule 205. [205, 3004]
2. The operator shall maintain all equipment in such a manner that ensures proper operation of the equipment. [204]
3. This permit does not authorize the emissions of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules and Regulations of the SCAQMD. This permit cannot be considered as permission to violate existing laws, ordinances, regulations, or statutes of other governmental agencies. [204]
4. The operator shall not use equipment identified in this facility permit as being connected to air pollution control equipment unless they are so vented to the identified air pollution control equipment which is in full use and which has been included in this permit. [204]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION E: ADMINISTRATIVE CONDITIONS**

5. The operator shall not use any equipment having air pollution control device(s) incorporated within the equipment unless the air pollution control device is in full operation. [204]
6. The operator shall maintain records to demonstrate compliance with rules or permit conditions that limit equipment operating parameters, or the type or quantity of material processed. These records shall be made available to SCAQMD personnel upon request and be maintained for at least: [204]
  - a. Three years for a facility not subject to Title V; or
  - b. Five years for a facility subject to Title V.
7. The operator shall maintain and operate all equipment to ensure compliance with all emission limits as specified in this facility permit. Compliance with emission limits shall be determined according to the following specifications, unless otherwise specified by SCAQMD rules or permit conditions: [204]
  - a. For internal combustion engines and gas turbines, measured concentrations shall be corrected to 15 percent stack-gas oxygen content on a dry basis and be averaged over a period of 15 consecutive minutes; [1110.2, 1134, 204]
  - b. For other combustion devices, measured concentrations shall be corrected to 3 percent stack-gas oxygen content on a dry basis and be averaged over a period of 15 consecutive minutes; [1146, 1146.1, 204]
  - c. For a large NO<sub>x</sub> source, compliance with a RECLAIM concentration limit shall be measured over a continuous 60 minutes for that source; [2012]
  - d. For non-combustion sources, compliance with emission limits shall be determined and averaged over a period of 60 minutes; [204]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION E: ADMINISTRATIVE CONDITIONS**

- e. For the purpose of determining compliance with Rule 407, carbon monoxide (CO) shall be measured on a dry basis and be averaged over 15 consecutive minutes, and sulfur compounds which would exist as liquid or gas at standard conditions shall be calculated as sulfur dioxide (SO<sub>2</sub>) and be averaged over 15 consecutive minutes; [407]
  - f. For the purpose of determining compliance with Rule 409, combustion contaminant emission measurements shall be corrected to 12 percent of carbon dioxide (CO<sub>2</sub>) at standard conditions and averaged over 15 consecutive minutes. [409]
  - g. For the purpose of determining compliance with Rule 475, combustion contaminant emission measurements shall be corrected to 3 percent of oxygen (O<sub>2</sub>) at standard conditions and averaged over 15 consecutive minutes or any other averaging time specified by the Executive Officer. [475]
8. All equipment operating under the RECLAIM program shall comply concurrently with all SCAQMD Rules and Regulations, except those listed in Table 1 of Rule 2001 for NO<sub>x</sub> RECLAIM sources and Table 2 of Rule 2001 for SO<sub>x</sub> RECLAIM sources. Those provisions listed in Tables 1 or 2 shall not apply to NO<sub>x</sub> or SO<sub>x</sub> emissions after the date the facility has demonstrated compliance with all monitoring and reporting requirements of Rules 2011 or 2012, as applicable. Provisions of the listed SCAQMD rules in Tables 1 or 2 which have initial implementation dates in 1994 shall not apply to a RECLAIM NO<sub>x</sub> or SO<sub>x</sub> source, respectively. [2001]
9. The operator shall, when a source test is required by SCAQMD, provide a source test protocol to SCAQMD no later than 60 days before the proposed test date. The test shall not commence until the protocol is approved by SCAQMD. The test protocol shall contain the following information: [204, 304]
- a. Brief description of the equipment tested.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION E: ADMINISTRATIVE CONDITIONS**

- b. Brief process description, including maximum and normal operating temperatures, pressures, through-put, etc.
  - c. Operating conditions under which the test will be performed.
  - d. Method of measuring operating parameters, such as fuel rate and process weight. Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, and distances of flow disturbances, (e.g. elbows, tees, fans, dampers) from the sampling locations (upstream and downstream).
  - e. Brief description of sampling and analytical methods used to measure each pollutant, temperature, flow rates, and moisture.
  - f. Description of calibration and quality assurance procedures.
  - g. Determination that the testing laboratory qualifies as an "independent testing laboratory" under Rule 304 (no conflict of interest).
10. The operator shall submit a report no later than 60 days after conducting a source test, unless otherwise required by SCAQMD Rules or equipment-specific conditions. The report shall contain the following information: [204]
- a. The results of the source test.
  - b. Brief description of the equipment tested.
  - c. Operating conditions under which test will be performed.
  - d. Method of measuring operating parameters, such as fuel rate and process weight. Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, and distances of flow disturbances, (e.g. elbows, tees, fans, dampers) from the sampling locations (upstream and downstream).
  - e. Field and laboratory data forms, strip charts and analyses.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION E: ADMINISTRATIVE CONDITIONS**

- f. Calculations for volumetric flow rates, emission rates, control efficiency, and overall control efficiency.
- 11. The operator shall, when a source test is required, provide and maintain facilities for sampling and testing. These facilities shall comply with the requirements of SCAQMD Source Test Method 1.1 and 1.2. [217]
- 12. Whenever required to submit a written report, notification or other submittal to the Executive Officer, SCAQMD, or the District, the operator shall mail or deliver the material to: Deputy Executive Officer, Engineering and Compliance, SCAQMD, 21865 Copley Drive, Diamond Bar, CA 91765-4178. [204]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION F: RECLAIM MONITORING AND SOURCE TESTING REQUIREMENTS**

The Facility shall comply with all applicable monitoring and source testing requirements in Regulation XX. These requirements may include but are not limited to the following:

#### **I. NO<sub>x</sub> Monitoring Conditions**

A. The Operator of a NO<sub>x</sub> Major Source, as defined in Rule 2012, shall, as applicable:

1. Install, maintain, and operate an SCAQMD certified direct or time-shared monitoring device or an approved alternative monitoring device for each major NO<sub>x</sub> source to continuously measure the concentration of NO<sub>x</sub> emissions and all other applicable variables specified in Rule 2012, Table 2012-1 and Rule 2012, Appendix A, Table 2-A to determine the NO<sub>x</sub> emissions rate from each source. The time-sharing of CEMS among NO<sub>x</sub> sources may be allowed by the Executive Officer in accordance with the requirements for time sharing specified in Appendix A. [2012]
2. Install, maintain, and operate a totalizing fuel meter approved by the Executive Officer for each major source. [2012]
3. If the facility is operating existing CEMS and fuel meters, continue to follow recording and reporting procedures required by SCAQMD Rules and Regulations in effect prior to October 15, 1993 until the CEMS is certified pursuant to Rule 2012. [2012]
4. Use valid data collected by an SCAQMD certified or provisionally certified CEMS in proper operation that meets all the requirements of Appendix A of Rule 2012, unless final certification of the CEMS is denied, to determine mass emissions for all purposes, including, but not limited to, determining: [2012]
  - a. compliance with the annual Allocation;
  - b. excess emissions;
  - c. the amount of penalties; and
  - d. fees.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION F: RECLAIM MONITORING AND SOURCE TESTING REQUIREMENTS**

5. Follow missing data procedures as specified in Rule 2012 Appendix A whenever valid data is not available or collected to determine mass emissions for all purposes, including, but not limited to, determining: [2012]
  - a. compliance with the annual Allocation;
  - b. excess emissions;
  - c. the amount of penalties; and
  - d. fees.

B. The Operator of a NO<sub>x</sub> Large Source, as defined in Rule 2012, shall, as applicable:

Not Applicable

C. The Operator of a NO<sub>x</sub> Process Unit, as defined in Rule 2012, shall, as applicable:

Not Applicable

#### **II. NO<sub>x</sub> Source Testing and Tune-up conditions**

1. The operator shall conduct all required NO<sub>x</sub> source testing in compliance with an SCAQMD-approved source test protocol. [2012]
2. The operator shall, as applicable, conduct source tests for every large NO<sub>x</sub> source no later than December 31, 1996 and every 3 years thereafter. The source test shall include the determination of NO<sub>x</sub> concentration and a relative accuracy audit of the exhaust stack flow determination (e.g. in-stack flow monitor or fuel flow monitor based F-factor calculation). Such source test results shall be submitted per the schedule described by APEP. In lieu of submitting the first source test report, the facility permit holder may submit the results of a source test not more than 3 years old which meets the requirements when conducted. [2012]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION F: RECLAIM MONITORING AND SOURCE TESTING REQUIREMENTS**

3. All NO<sub>x</sub> large sources and NO<sub>x</sub> process units shall be tuned-up in accordance with the schedule specified in Rule 2012, Appendix A, Chapter 5, Table 5-B. [2012]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION G: RECORDKEEPING AND REPORTING REQUIREMENTS FOR RECLAIM SOURCES**

The Facility shall comply with all applicable reporting and recordkeeping requirements in Regulation XX. These requirements may include but are not limited to the following:

#### **I. Recordkeeping Requirements for all RECLAIM Sources**

1. The operator shall maintain all monitoring data required to be measured or reported pursuant to Rule 2011 and Rule 2012, whichever is applicable. All records shall be made available to SCAQMD staff upon request and be maintained for at least:
  - a. Three years after each APEP report is submitted to SCAQMD for a facility not subject to Title V, unless a different time period is required in Rule 2011 or Rule 2012 [2011 & 2012]; or
  - b. Five years after each APEP report is submitted to SCAQMD for a facility subject to Title V. [3004(a)(4)(E)]
  - c. Notwithstanding the above, all data gathered or computed for intervals of less than 15 minutes shall only be maintained a minimum of 48 hours. [2011 & 2012]
2. The operator shall store on site and make available to the Executive Officer upon request: records used to determine emissions, maintenance records, sources test reports, relative accuracy test audit reports, relative accuracy audit reports and fuel meter calibration records. [2011 & 2012]

#### **II. Reporting Requirements for all RECLAIM Sources**

1. The operator shall submit a quarterly certification of emissions including the total facility NO<sub>x</sub> or SO<sub>x</sub> emissions, whichever is applicable, for the quarter within 30 days after the end of the first three quarters and 60 days after the end of the fourth quarter of a compliance year. [2004]

#### **NO<sub>x</sub> Reporting Requirements**

- A. The Operator of a NO<sub>x</sub> Major Source, as defined in Rule 2012, shall, as applicable:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION G: RECORDKEEPING AND REPORTING REQUIREMENTS FOR RECLAIM SOURCES**

1. No later than 12 months after entry into the RECLAIM program or after the initial operation of a new major source, whichever is later, install, maintain, and operate a reporting device to electronically report everyday to the SCAQMD central station for each major NO<sub>x</sub> source, the total daily mass emissions of NO<sub>x</sub> and daily status codes. Such data shall be transmitted by 5:00 p.m. of the following day. If the facility experiences a power, computer, or other system failure that prevents the submittal of the daily report, the Facility Permit holder shall be granted 24 hours extension to submit the report. [2012]
2. Calculate NO<sub>x</sub> emissions pursuant to missing data procedures set forth in Appendix A, Chapter 2 of Rule 2012 if the Facility Permit holder fails to meet the deadline for submitting the daily report. Notwithstanding the preceding condition, in no more than three non-consecutive occurrences per compliance year the reporting deadline extension following a system failure that precludes the Facility Permit holder from timely reporting shall be 96 rather than 24 hours provided that the raw data as obtained by the direct monitoring device is stored at the facility. [2012]
3. Submit an electronic report within 15 days following the end of each month totaling NO<sub>x</sub> emissions from all major NO<sub>x</sub> sources during the month. [2012]
4. For those facilities with existing CEMS and fuel meters as of October 15, 1993, continue to follow recording and reporting procedures required by SCAQMD Rules and Regulations in effect until the CEMS is certified pursuant to Rule 2011 and/or Rule 2012, as applicable. [2012]

B. The Operator of a NO<sub>x</sub> Large Source, as defined in Rule 2012, shall:

Not Applicable

C. The Operator of a NO<sub>x</sub> Process Unit, as defined in Rule 2012, shall:

**FACILITY PERMIT TO OPERATE  
AES ALAMITOS, LLC**

**SECTION G: RECORDKEEPING AND REPORTING REQUIREMENTS FOR  
RECLAIM SOURCES**

Not Applicable

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 4: INORGANIC CHEMICAL STORAGE</b>					
STORAGE TANK, TANK-1 (COMBINED-CYCLE TURBINES), AQUEOUS AMMONIA 19 PERCENT, 22290 GALS; DIAMETER: 10 FT ; LENGTH: 36 FT A/N:	D163				C157.1, E144.1, E193.4, E193.5
STORAGE TANK, TANK-2 (SIMPLE-CYCLE TURBINES), AQUEOUS AMMONIA 19 PERCENT, 40000 GALS; DIAMETER: 13 FT ; LENGTH: 45 FT A/N: 579168 Permit to Construct Issued: 04/18/17	D164				C157.1, E74.1, E74.2, E144.1, E193.4, E193.5
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
<b>System 1: COMBINED-CYCLE TURBINES (AEC CCGT POWER BLOCK)</b>					

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. CCGT-1, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH A/N:	D165	C169	NOX: MAJOR SOURCE**	CO: 1.5 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; CO2: 1000 LBS/GROSS MWH NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 8.35 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; NOX: 16.66 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 8.5 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996;	A63.2, A99.1, A99.2, A195.8, A195.9, A195.10, A327.1, B61.1, C1.3, C1.4, D29.2, D29.3, D82.1, D82.2, E193.4, E193.5, E193.8, E193.11, E193.12, E193.14, E448.1, I297.1, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
<p>GENERATOR, NO. CCGT-1, 236.645 MW GROSS AT 28 F</p> <p>HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-1</p> <p>GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-2</p>				<p><i>RULE 1303(b)(2)-Offset, 12-6-2002</i>; <b>PM10</b>: 11 LBS/HR (5B) [<b>RULE 475, 10-8-1976</b>; <i>RULE 475, 8-7-1978</i>]; <b>SO2</b>: (9) [<b>40CFR 72 - Acid Rain Provisions, 11-24-1997</b>]; <b>SO2</b>: 0.06 LBS/MMBTU  <b>NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]</b>; <b>VOC</b>: 2 PPMV  <b>NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996</b>; <i>RULE 1303(a)(1)-BACT, 12-6-2002</i>]</p>	
CO OXIDATION CATALYST, NO. CCGT-1, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN A/N:	C169	D165 C170			E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
SELECTIVE CATALYTIC REDUCTION, NO. CCGT-1, CORMETECH, TITANIUM/ VANADIUM/TUNGSTEN, 1289 CU.FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH A/N:  AMMONIA INJECTION, AQUEOUS AMMONIA	C170	C169 S172		<b>NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</b>	A195.15, D12.9, D12.10, D12.11, D29.4, E193.4, E193.5
STACK, TURBINE NO. CCGT-1, HEIGHT: 150 FT ; DIAMETER: 20 FT A/N:	S172	C170			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. CCGT-2, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH A/N:	D173	C177	NOX: MAJOR SOURCE**	CO: 1.5 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; CO2: 1000 LBS/GROSS MWH NATURAL GAS (8A) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 8.35 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; NOX: 16.66 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 8.5 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996;	A63.2, A99.1, A99.2, A195.8, A195.9, A195.10, A327.1, B61.1, C1.3, C1.4, D29.2, D29.3, D82.1, D82.2, E193.4, E193.5, E193.8, E193.11, E193.12, E193.14, E448.1, I297.2, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
<p>GENERATOR, NO. CCGT-2, 236.645 MW GROSS AT 28 F</p> <p>HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-2</p> <p>GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-1</p>				<p><i>RULE 1303(b)(2)-Offset, 12-6-2002</i>; <b>PM10</b>: 11 LBS/HR (5B) [<b>RULE 475, 10-8-1976</b>; <i>RULE 475, 8-7-1978</i>]; <b>SO2</b>: (9) [<b>40CFR 72 - Acid Rain Provisions, 11-24-1997</b>]; <b>SO2</b>: 0.06 LBS/MMBTU  <b>NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]</b>; <b>VOC</b>: 2 PPMV  <b>NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996</b>; <i>RULE 1303(a)(1)-BACT, 12-6-2002</i>]</p>	
CO OXIDATION CATALYST, NO. CCGT-2, SYNERGY CATALYST, 342.5 CU. FT.; WIDTH: 25 FT 9 IN; HEIGHT: 76 FT; LENGTH: 2.1 IN A/N:	C177	D173 C178			E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
SELECTIVE CATALYTIC REDUCTION, NO. CCGT-2, CORMETECH, TITANIUM/ VANADIUM/TUNGSTEN, 1289 CU.FT.; WIDTH: 25 FT 8.5 IN; HEIGHT: 71 FT 7.2 IN; LENGTH: 1 FT 6 IN WITH A/N:  AMMONIA INJECTION, AQUEOUS AMMONIA	C178	C177 S180		<b>NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</b>	A195.15, D12.9, D12.10, D12.11, D29.4, E193.4, E193.5
STACK, TURBINE NO. CCGT-2, HEIGHT: 150 FT ; DIAMETER: 20 FT A/N:	S180	C178			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
BOILER, AUXILIARY, WATER-TUBE, NATURAL GAS, CLEAVER-BROOKS, MODEL NB-200D-50, WITH LOW NOX BURNER, FLUE GAS RECIRCULATION, 70.8 MMBTU/HR WITH A/N: 604014 Permit to Construct Issued: 07/10/19	D181	C183	NOX: MAJOR SOURCE**	CO: 50 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 400 PPMV NATURAL GAS (5) [RULE 1146, 11-1-2013; RULE 1146, 12-7-2018]; CO: 2000 PPMV NATURAL GAS (5A) [RULE 407, 4-2-1982]; NOX: 5 PPMV NATURAL GAS (4) [RULE 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 38.46 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 104.2 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.007 LBS/MMBTU NATURAL GAS (4) [RULE 1303(b)(2) -Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 0.1 GRAINS/SCF NATURAL GAS (5) [RULE 409, 8-7-1981]; VOC: 0.005 LBS/MMBTU NATURAL GAS (4) [RULE 1303(b)(2) -Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]	A63.4, A99.5, A99.6, A195.13, A195.14, C1.7, D29.5, D82.3, D82.4, E193.4, E193.5, E193.10, H23.7, I297.7, K40.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12: INTERNAL COMBUSTION - POWER GENERATION</b>					
BURNER, NATURAL GAS, CB-NATCOM, MODEL P-71-G23-11-16, WITH LOW NOX BURNER, 70.8 MMBTU/HR					
SELECTIVE CATALYTIC REDUCTION, AUXILIARY BOILER, BABCOCK & WILCOX, VANADIUM, 46 CU.FT.; WIDTH: 5 FT 5 IN; HEIGHT: 3 FT 8 IN; LENGTH: 7 FT 3 IN WITH A/N: 613323 Permit to Construct Issued: 07/10/19  AMMONIA INJECTION, AQUEOUS AMMONIA	C183	D181 S211		<b>NH3: 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]</b>	A195.16, D12.15, D12.16, D12.17, D29.7, E193.4, E193.5
STACK, AUXILIARY BOILER, HEIGHT: 80 FT ; DIAMETER: 3 FT A/N: 604014 Permit to Construct Issued: 07/10/19	S211	C183			
<b>System 2: SIMPLE-CYCLE TURBINES (AEC SCGT POWER BLOCK)</b>					

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-1, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N:	D185	C187	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E74.2, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.3, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-1, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579162 Permit to Construct Issued: 04/18/17	C187	D185 C188			E74.1, E74.2, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-1, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579162 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C188	C187 S190		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E74.2, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-1, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N:	S190	C188			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-2, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N:	D191	C193	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2) -Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E74.2, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.4, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-2, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579163 Permit to Construct Issued: 04/18/17	C193	D191 C194			E74.1, E74.2, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-2, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579163 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C194	C193 S196		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E74.2, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-2, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N:	S196	C194			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-3, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N:	D197	C199	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (5) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E74.2, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.5, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-3, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579164 Permit to Construct Issued: 04/18/17	C199	D197 C200			E74.1, E74.2, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-3, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579164 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C200	C199 S202		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E74.2, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-3, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N:	S202	C200			

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GAS TURBINE, NO. SCGT-4, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LMS-100 PB, 882 MMBTU/HR AT 59 DEG F, WITH INTERCOOLER AND DRY LOW-NOX COMBUSTOR WITH A/N:	D203	C205	NOX: MAJOR SOURCE**	CO: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1) -BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; CO2: 120 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart TTTT, 10-23-2015]; NOX: 2.5 PPMV NATURAL GAS (4) [RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]; NOX: 11.21 LBS/MMSCF NATURAL GAS (1A) [RULE 2012, 5-6-2005]; NOX: 15 PPMV NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; NOX: 25.24 LBS/MMSCF NATURAL GAS (1) [RULE 2012, 5-6-2005]; PM10: 0.01 GRAINS/SCF (5A) [RULE 475, 10-8-1976; RULE 475, 8-7-1978]; PM10: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM10: 6.23 LBS/HR NATURAL GAS (4) [RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2) -Offset, 12-6-2002]; PM10: 11 LBS/HR (5B) [RULE 475, 10-8-1976; RULE 475,	A63.3, A99.3, A99.4, A195.10, A195.11, A195.17, A327.1, B61.1, C1.5, C1.6, D29.2, D29.3, D82.1, D82.2, E74.1, E74.2, E193.4, E193.5, E193.9, E193.13, E193.15, E448.1, I297.6, K40.4

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
GENERATOR, 100.438 MW GROSS AT 59 F				8-7-1978]; SO <sub>2</sub> : (9) [40CFR 72 - Acid Rain Provisions, 11-24-1997]; SO <sub>2</sub> : 0.06 LBS/MMBTU NATURAL GAS (8) [40CFR 60 Subpart KKKK, 3-20-2009]; VOC: 2 PPMV NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	
CO OXIDATION CATALYST, NO. SCGT-4, BASF, MODEL CAMET, 165.57 CU. FT.; WIDTH: 2.5 IN; HEIGHT: 22 FT; LENGTH: 36 FT 1.5 IN A/N: 579165 Permit to Construct Issued: 04/18/17	C205	D203 C206			E74.1, E74.2, E193.5
SELECTIVE CATALYTIC REDUCTION, NO. SCGT-4, CORMETECH, MODEL CMHT, TITANIUM/VANADIUM/ TUNGSTEN, 621.96 CU.FT.; WIDTH: 4 FT 11 IN; HEIGHT: 11 FT ; LENGTH: 11 FT 6 IN WITH A/N: 579165 Permit to Construct Issued: 04/18/17  AMMONIA INJECTION, AQUEOUS AMMONIA	C206	C205 S208		NH <sub>3</sub> : 5 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]	A195.15, D12.12, D12.13, D12.14, D29.4, E74.1, E74.2, E193.4, E193.5

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
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(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
<b>Process 12:INTERNAL COMBUSTION - POWER GENERATION</b>					
STACK, TURBINE NO. SCGT-4, HEIGHT: 80 FT ; DIAMETER: 13 FT 6 IN A/N:	S208	C206			
<b>Process 13:OIL/WATER SEPARATION</b>					
STORAGE TANK, NO. OWS-1 (COMBINED-CYCLE TURBINES), WASTE WATER, ABOVE GROUND, 5000 GALS; DIAMETER: 5 FT 6 IN; LENGTH: 30 FT A/N: 579169 Permit to Construct Issued: 04/18/17	D209				E193.4, E193.5, E193.16
STORAGE TANK, NO. OWS-2 (SIMPLE-CYCLE TURBINES), WASTE WATER, ABOVE GROUND, 5000 GALS; DIAMETER: 5 FT 6 IN; LENGTH: 30 FT A/N: 579170 Permit to Construct Issued: 04/18/17	D210				E74.1, E74.2, E193.4, E193.5, E193.16

- \* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate  
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit  
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit  
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)  
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements
- \*\* Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

# **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

## **SECTION H: DEVICE ID INDEX**

**The following sub-section provides an index  
to the devices that make up the facility  
description sorted by device ID.**

# FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

## SECTION H: DEVICE ID INDEX

Device Index For Section H			
Device ID	Section H Page No.	Process	System
D163	1	4	0
D164	1	4	0
D165	3	12	1
C169	3	12	1
C170	4	12	1
S172	4	12	1
D173	6	12	1
C177	6	12	1
C178	7	12	1
S180	7	12	1
D181	9	12	1
C183	9	12	1
D185	11	12	2
C187	11	12	2
C188	11	12	2
S190	12	12	2
D191	14	12	2
C193	14	12	2
C194	14	12	2
S196	15	12	2
D197	17	12	2
C199	17	12	2
C200	17	12	2
S202	18	12	2
D203	20	12	2
C205	20	12	2
C206	20	12	2
S208	21	12	2
D209	21	13	0
D210	21	13	0
S211	9	12	1

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

#### **FACILITY CONDITIONS**

F2.1 The operator shall limit emissions from this facility as follows:

CONTAMINANT	EMISSIONS LIMIT	Header 3
PM2.5	Less than	100 TONS IN ANY ONE YEAR

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The operator 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 PM<sub>2.5</sub> is demonstrated.

Compliance with the annual emission limit shall be based on a 12-month rolling average basis. The operator shall calculate the PM<sub>2.5</sub> emissions for the facility by summing the PM<sub>2.5</sub> emissions for each of the sources by using the equation below.

Facility PM<sub>2.5</sub>, 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

FF1 = Boiler No. 1 monthly fuel usage in mmscf; EF1 = 1.19 lb/mmscf

FF2 = Boiler No. 2 monthly fuel usage in mmscf; EF2 = 1.19 lb/mmscf

FF3 = Boiler No. 3 monthly fuel usage in mmscf; EF3 = 1.19 lb/mmscf

FF4 = Boiler No. 4 monthly fuel usage in mmscf; EF4 = 1.19 lb/mmscf

FF5 = Boiler No. 5 monthly fuel usage in mmscf; EF5 = 1.19 lb/mmscf

FF6 = Boiler No. 6 monthly fuel usage in mmscf; EF6 = 1.19 lb/mmscf

FF7 = Combined-Cycle Turbine No. CCGT-1 monthly fuel usage in mmscf; EF7 = 3.92 lb/mmscf

FF8 = Combined-Cycle Turbine No. CCGT-2 monthly fuel usage in mmscf; EF8 = 3.92 lb/mmscf

FF9 = Auxiliary Boiler monthly fuel usage in mmscf; EF9 = 7.42 lb/mmscf

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

FF10 = Simple-Cycle Turbine No. SCGT-1 monthly fuel usage in mmscf; EF10 = 7.44 lb/mmscf

FF11 = Simple-Cycle Turbine No. SCGT-2 monthly fuel usage in mmscf; EF11 = 7.44 lb/mmscf

FF12 = Simple-Cycle Turbine No. SCGT-3 monthly fuel usage in mmscf; EF12 = 7.44 lb/mmscf

FF13 = Simple-Cycle Turbine No. SCGT-4 monthly fuel usage in mmscf; EF13 = 7.44 lb/mmscf

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

AES Alamitos, LLC shall submit written reports of the monthly PM<sub>2.5</sub> 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 PM<sub>2.5</sub> compliance demonstration shall be maintained on site for at least five years and made available upon 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, 11-4-2016]**

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated No.1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

**[RULE 401, 3-2-1984; RULE 401, 11-9-2001]**

F18.1 Acid Rain SO<sub>2</sub> Allowance Allocation for affected units are as follows:

Device ID	Boiler ID	Contaminant	Tons in any year
45	Unit 3	SO <sub>2</sub>	81
48	Unit 4	SO <sub>2</sub>	541
51	Unit 5	SO <sub>2</sub>	3866

a). The allowance allocation(s) shall apply to calendar years 2010 and beyond.

b). The number of allowances allocated to Phase II affected units by U.S. EPA may change in a 1998 revision to 40CFR73 Tables 2,3, and 4. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned conditions necessitate a revision to the unit SO<sub>2</sub> allowance allocations identified in this permit (see 40 CFR 72.84)

**[40CFR 73 Subpart B, 1-11-1993]**

F21.1 Acid Rain SO<sub>2</sub> Allowance Allocation for retired units are as follows:

Boiler ID	Contaminant	Tons in year
Unit 1	SO <sub>2</sub>	2703

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Unit 2	SO2	17
Unit 6	SO2	936

- a). The allowance allocation(s) shall apply to calendar years 2010 and beyond.
- b). The number of allowances allocated to Phase II affected units by U.S. EPA may change in a 1998 revision to 40CFR73 Tables 2,3, and 4. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned conditions necessitate a revision to the unit SO2 allowance allocations identified in this permit (see 40 CFR 72.84).
- c). A unit exempted under 40CFR72.8 shall not emit any sulfur dioxide starting on the date it is exempted.
- d). The owners and operators of a unit exempted under 40CFR72.8 shall comply with monitoring requirements in accordance with part 75 and will be allocated allowances in accordance with 40CFR73.
- e). A unit exempted under 40CFR73 shall not resume operation unless the designated representative of the source that includes the unit submits an Acid Rain permit application for the unit not less than 24 months prior to the later of January 1, 2000, or the date the unit is to resume operation. On the earlier of the date the written exemption expires or the date an Acid Rain permit application is submitted or is required to be submitted under this paragraph, the unit shall no longer be exempted and shall be subject to all requirements of 40CFR72.

**[40CFR 73 Subpart B, 1-11-1993]**

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

F24.1 Accidental release prevention requirements of Section 112(r)(7):

a). The operator shall comply with the accidental release prevention requirements pursuant to 40 CFR Part 68 and shall submit to the Executive Officer, as a part of an annual compliance certification, a statement that certifies compliance with all of the requirements of 40 CFR Part 68, including the registration and submission of a risk management plan (RMP).

b). The operator shall submit any additional relevant information requested by the Executive Officer or designated agency.

**[40CFR 68 - Accidental Release Prevention, 1-13-2017]**

F52.1 This facility is subject to the applicable requirements of the following rules or regulation(s):

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The facility shall submit a detailed retirement plan for the permanent shutdown of Boilers Nos. 1, 2, 6 and 3 (Devices D39, D42, D3, and D45, respectively), describing in detail the steps and schedule that will be taken to render Boilers Nos. 1, 2, 6, and 3 permanently inoperable.

The retirement plan shall be submitted to South Coast AQMD within 60 days after Permits to Construct for Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Devices D185, D191, D197, and D203 respectively) are issued.

AES shall not commence any construction of the Alamitos Energy Center Project including Gas Turbines Nos. CCGT-1, CCGT-2, SCGT-1, SCGT-2, SCGT-3, and SCGT-4, unless the retirement plan is approved in writing by South Coast AQMD. If South Coast AQMD notifies AES that the plan is not approvable, AES shall submit a revised plan addressing South Coast AQMD's concerns within 30 days.

Within 30 calendar days of actual shutdown but no later than January 10, 2020, AES shall provide South Coast AQMD with a notarized statement that Boilers Nos. 1, 2, and 6 are permanently shut down and that any re-start or operation of the boilers shall require new Permits to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

AES shall notify South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boilers Nos. 1, 2, and 6, or advise South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2019.

AES shall cease operation of Boilers Nos. 1, 2, and 6 within 90 calendar days of the first fire of Gas Turbines No. CCGT-1 or CCGT-2, whichever is earlier.

Within 30 calendar days of actual shutdown but no later than January 10, 2021 (unless the December 31, 2020 Once-Through Cooling Policy compliance date is extended by the SWRCB), AES shall provide South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention Of Significant Deterioration Program.

In the event that the State Water Resources Control Board (SWRCB) extends the December 31, 2020 Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Once-Through Cooling Policy) compliance date for Boiler No. 3, AES shall: (1) Notify South Coast AQMD within 3 months of the approval of an extension, and

(2) Within 30 calendar days of actual shutdown of Boiler No. 3, provide South Coast AQMD with a notarized statement that Boiler No. 3 is permanently shut down and that any re-start or operation of the boiler shall require a new Permit to Construct and be subject to all requirements of Nonattainment New Source Review and the Prevention of Significant Deterioration Program.

AES shall notify South Coast AQMD 30 days prior to the implementation of the approved retirement plan for permanent shutdown of Boiler No. 3, or advise South Coast AQMD as soon as practicable should AES undertake permanent shutdown prior to December 31, 2020.

AES shall cease operation of Boiler No. 3 within 90 calendar days of the first fire of Gas Turbines No. SCGT-1, SCGT-2, SCGT-3, or SCGT-4, whichever is earliest.

**[RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996; RULE 1313(d), 12-7-1995]**

F52.2 This facility is subject to the applicable requirements of the following rules or regulation(s):

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The "facility" is defined as the Alamitos Energy Center. The equipment includes Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2, common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4.

For all circuit breakers at the facility utilizing SF6, including the circuit breakers serving Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2; common Steam Turbine Generator; and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4, the operator shall install, operate, and maintain enclosed-pressure SF6 circuit breakers with a maximum annual leakage rate of 0.5 percent by weight. The circuit breakers shall be equipped with a 10 percent by weight leak detection system.

The leak detection system shall be calibrated in accordance with manufacturer's specifications. The manufacturer's specifications and records of all calibrations shall be maintained on site.

The total CO2e emissions from all circuit breakers shall not exceed 74.55 tons per calendar year.

The operator shall calculate the SF6 emissions due to leakage from the circuit breakers by using the mass balance in equation DD-1 at 40 CFR Part 98, Subpart DD, on an annual basis.

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

**[RULE 1714, 12-10-2012; RULE 1714, 3-1-2019]**

F67.1 The facility operator shall comply with all terms and conditions specified below..

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Continuous operation of monitoring systems not subject to Rule 218 are not required when necessary calibration, maintenance or repair activities are performed in accordance with manufacturer's recommendation. The operator shall take all reasonable actions to minimize the time required to perform such activities. In no event shall any such activities exceed 96 consecutive hours for any one calibration, maintenance, or repair episode.

The operator shall notify the Executive Officer within 24 hours of the start of a calibration, maintenance, or repair activity, if the activity is expected to last more than 24 consecutive hours.

**[RULE 204, 10-8-1993]**

### DEVICE CONDITIONS

#### A. Emission Limits

A63.2 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 95023 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 13314 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 6324 LBS IN ANY CALENDAR MONTH
PM2.5	Less than or equal to 6324 LBS IN ANY CALENDAR MONTH
SOX	Less than or equal to 3616 LBS IN ANY CALENDAR MONTH
CO	Less than or equal to 194717 LBS IN ANY ONE YEAR
VOC	Less than or equal to 63488 LBS IN ANY ONE YEAR

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

PM10	Less than or equal to 55633 LBS IN ANY ONE YEAR
PM2.5	Less than or equal to 55633 LBS IN ANY ONE YEAR
SOX	Less than or equal to 10483 LBS IN ANY ONE YEAR

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

For the purposes of this condition, the above emission limits shall be based on the emissions from a single turbine.

The turbine shall not commence with normal operation until the commissioning process has been completed. Normal operation commences when the turbine is able to supply electrical energy to the power grid as required under contract with the relevant entities. The South Coast AQMD shall be notified in writing once the commissioning process for each turbine is completed.

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

The operator shall calculate the monthly emissions for CO, VOC, PM10, PM2.5, 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, 61.18 lb/mmcf; VOC, 8.86 lb/mmcf; PM10/PM2.5, 5.11 lb/mmcf; and SOx, 2.92 lb/mmcf.

For normal operation, the emission factors shall be as follows: VOC, 4.70 lb/mmcf; PM10/PM2.5, 3.92 lb/mmcf; and SOx, 2.24 lb/mmcf.

For normal operation, the CO emissions shall be measured with the 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, 15.28 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.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

Compliance with the annual emission limits shall be based on a 12-operating month-rolling-average basis, following completion of the commissioning period.

The emission factors for the monthly emission limits shall be the same as the emission factors used to demonstrate compliance with the annual emission limits, except the annual emission factor for SO<sub>x</sub> is 0.75 lb/mmcf.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1304.1, 9-6-2013; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173]

A63.3 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 8594 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 1973 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 4638 LBS IN ANY CALENDAR MONTH
PM2.5	Less than or equal to 4638 LBS IN ANY CALENDAR MONTH
SOX	Less than or equal to 1207 LBS IN ANY CALENDAR MONTH

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

CO	Less than or equal to 24543 LBS IN ANY ONE YEAR
VOC	Less than or equal to 4533 LBS IN ANY ONE YEAR
PM10	Less than or equal to 6596 LBS IN ANY ONE YEAR
PM2.5	Less than or equal to 6596 LBS IN ANY ONE YEAR
SOX	Less than or equal to 573 LBS IN ANY ONE YEAR

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

For the purposes of this condition, the above emission limits shall be based on the emissions from a single turbine.

The turbine shall not commence with normal operation until the commissioning process has been completed. Normal operation commences when the turbine is able to supply electrical energy to the power grid as required under contract with the relevant entities. The South Coast AQMD shall be notified in writing once the commissioning process for each turbine is completed.

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

The operator shall calculate the monthly emissions for CO, VOC, PM10, PM2.5, 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, 112.03 lb/mmcf; VOC, 3.69 lb/mmcf; PM10/PM2.5, 2.00 lb/mmcf; and SOx, 7.69 lb/mmcf.

For normal operation, the emission factors shall be as follows: VOC, 3.17 lb/mmcf; PM10/PM2.5, 7.44 lb/mmcf; and SOx, 1.94 lb/mmcf.

For normal operation, the CO emissions shall be measured with the 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, 8.84 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

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

normal operation emissions.

Compliance with the annual emission limits shall be based on a 12-operating month-rolling-average basis, following completion of the commissioning period.

The emission factors for the monthly emission limits shall be the same as the emission factors used to demonstrate compliance with the annual emission limits, except the annual emission factor for SO<sub>x</sub> is 0.65 lb/mmcf.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1304.1, 9-6-2013; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D185, D191, D197, D203]

A63.4 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 605 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 102 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 113.5 LBS IN ANY CALENDAR MONTH
PM2.5	Less than or equal to 113.5 LBS IN ANY CALENDAR MONTH
SOX	Less than or equal to 32 LBS IN ANY CALENDAR MONTH

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

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 operator shall calculate the monthly emissions for CO, VOC, PM10/PM2.5, 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 normal operation, the emission factors shall be as follows: 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 operator shall maintain records in a manner approved by the South Coast AQMD to demonstrate compliance with this condition and the records shall be made available to South Coast AQMD personnel upon request. The records shall

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

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**The operator shall comply with the terms and conditions set forth below:**

include, but not be limited to, natural gas usage in a calendar month.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D181]

- A99.1 The 16.66 LBS/MMSCF NOX emission limit(s) shall only apply during the turbine commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D165, D173]

- A99.2 The 8.79 LBS/MMSCF NOX emission limit(s) shall only apply during the interim period after commissioning but prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D165, D173]

- A99.3 The 25.24 LBS/MMSCF NOX emission limit(s) shall only apply during the turbine commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D185, D191, D197, D203]

- A99.4 The 11.21 LBS/MMSCF NOX emission limit(s) shall only apply during the interim period after commissioning but prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D185, D191, D197, D203]

- A99.5 The 38.46 LBS/MMSCF NOX emission limit(s) shall only apply during the interim period prior to CEMS certification to report RECLAIM emissions, not to exceed one year after start of unit operation.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D181]

- A99.6 The 104.20 LBS/MMSCF NOX emission limit(s) shall only apply during the boiler commissioning period to report RECLAIM emissions, not to exceed one year after start of unit operations.

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

**[RULE 2012, 5-6-2005]**

[Devices subject to this condition : D181]

- A195.8 The 2.0 PPMV NOX emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

A195.9 The 1.5 PPMV CO emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173]

A195.10 The 2.0 PPMV VOC emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

A195.11 The 2.5 PPMV NOX emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

A195.13 The 5.0 PPMV NOX emission limit(s) is 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, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

A195.14 The 50.0 PPMV CO emission limit(s) is averaged over 1 hour, dry basis at 3 percent oxygen. This limit shall not apply to boiler commissioning and startup periods.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D181]

A195.15 The 5.0 PPMV NH<sub>3</sub> emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen.

The operator shall calculate and continuously record the NH<sub>3</sub> slip concentration using the following equation:

$$\text{NH}_3 \text{ (ppmvd)} = [a - b * (c * 1.2) / 1,000,000] * 1,000,000 / b, \text{ where:}$$

a = NH<sub>3</sub> injection rate (lb/hr)/17(lb/lb-mol)

b = dry exhaust gas flow rate (scf/hr)/385.3 scf/lb-mol)

c = change in measured NO<sub>x</sub> across the SCR (ppmvd at 15% O<sub>2</sub>)

The operator shall install and maintain a NO<sub>x</sub> analyzer to measure the SCR inlet NO<sub>x</sub> ppmv accurate to within plus or minus 5 percent calibrated at least once every 12 months. The operator shall use the method described above or another alternative method approved by the Executive Officer.

The ammonia slip calculation procedure shall be in effect no later than 90 days after initial startup of the turbine.

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information without corroborative data using an approved reference method for the determination of ammonia.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C170, C178, C188, C194, C200, C206]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

A195.16 The 5.0 PPMV NH<sub>3</sub> emission limit(s) is averaged over 1 hour, dry basis at 3 percent oxygen.

The operator shall calculate and continuously record the NH<sub>3</sub> slip concentration using the following equation:

$$\text{NH}_3 \text{ (ppmvd)} = [a - b \cdot (c \cdot 1.2) / 1,000,000] \cdot 1,000,000 / b$$
, where:

a = NH<sub>3</sub> injection rate (lb/hr)/17(lb/lb-mol)

b = dry exhaust gas flow rate (scf/hr)/385.3 scf/lb-mol)

c = change in measured NO<sub>x</sub> across the SCR (ppmvd at 3% O<sub>2</sub>)

The operator shall install and maintain a NO<sub>x</sub> analyzer to measure the SCR inlet NO<sub>x</sub> ppmv accurate to within plus or minus 5 percent calibrated at least once every 12 months. The operator shall use the method described above or another alternative method approved by the Executive Officer.

The ammonia slip calculation procedure shall be in effect no later than 90 days after initial startup of the boiler.

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information without corroborative data using an approved reference method for the determination of ammonia.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C183]

A195.17 The 2.0 PPMV CO emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup, and shutdown periods.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D185, D191, D197, D203]

A327.1 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

**[RULE 475, 10-8-1976; RULE 475, 8-7-1978]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

#### **B. Material/Fuel Type Limits**

B61.1 The operator shall not use natural gas containing the following specified compounds:

Compound	Range	grain per 100 scf
H2S	greater than	0.25

This concentration limit is an annual average based on monthly samples of natural gas composition or gas supplier documentation. Gaseous fuel samples shall be tested using South Coast AQMD Method 307-91 for total sulfur calculated as H2S.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

#### **C. Throughput or Operating Parameter Limits**

C1.3 The operator shall limit the number of start-ups to no more than 62 in any one calendar month.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The number of cold startups shall not exceed 15 in any calendar month, with no more than 2 startups in any one day.

The number of cold startups shall not exceed 80 in any calendar year, and the total number of startups shall not exceed 500 in any calendar year.

For the purposes of this condition, a cold startup is defined as a startup which occurs after the combustion turbine has been shut down for 48 hours or more. A cold startup shall not exceed 60 minutes. The NO<sub>x</sub> emissions from a cold startup shall not exceed 61 lbs. The CO emissions from a cold startup shall not exceed 325 lbs. The VOC emissions from a cold startup shall not exceed 36 lbs.

For the purposes of this condition, a non-cold startup is defined as a startup which occurs after the combustion turbine has been shut down less than 48 hours. A non-cold startup shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a non-cold startup shall not exceed 32 lbs. The CO emissions from a non-cold startup shall not exceed 137 lbs. The VOC emissions from a non-cold startup shall not exceed 25 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

- C1.4 The operator shall limit the number of shut-downs to no more than 62 in any one calendar month.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

The number of shutdowns shall not exceed 500 in any calendar year.

Each shutdown shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a shutdown event shall not exceed 10 lbs. The CO emissions from a shutdown event shall not exceed 133 lbs. The VOC emissions from a shutdown event shall not exceed 32 lbs.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

C1.5 The operator shall limit the number of start-ups to no more than 62 in any one calendar month.

The number of startups shall not exceed 2 startups in any one day. The number of startups shall not exceed 500 in any calendar year.

A startup shall not exceed 30 minutes. The NO<sub>x</sub> emissions from a startup shall not exceed 16.6 lbs. The CO emissions from a startup shall not exceed 15.4 lbs. The VOC emissions from a startup shall not exceed 2.80 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

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

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

- C1.6 The operator shall limit the number of shut-downs to no more than 62 in any one calendar month.

The number of shutdowns shall not exceed 500 in any calendar year.

Each shutdown shall not exceed 13 minutes. The NO<sub>x</sub> emissions from a shutdown event shall not exceed 3.12 lbs. The CO emissions from a shutdown event shall not exceed 28.1 lbs. The VOC emissions from a shutdown event shall not exceed 3.06 lbs.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

- C1.7 The operator shall limit the number of start-ups to no more than 10 in any one calendar month.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

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 NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> emissions from a hot startup shall not exceed 0.62 lbs.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

C157.1 The operator shall install and maintain a pressure relief valve set at 50 psig.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : D163, D164]

#### **D. Monitoring/Testing Requirements**

D12.9 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 20 and 242 pounds per hour, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

D12.10 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 450 degrees F and 800 degrees F, except during startups and shutdowns.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

- D12.11 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 1.6 inches water column.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C170, C178]

- D12.12 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 110 and 180 pounds per hour, except during startups and shutdowns.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C188, C194, C200, C206]

- D12.13 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 500 degrees F and 870 degrees F, except during startups and shutdowns.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C188, C194, C200, C206]

- D12.14 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 3.0 inches water column.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C188, C194, C200, C206]

D12.15 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>).

The operator 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 operator shall maintain the ammonia injection rate between 0.3 and 3.9 pounds per hour.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C183]

D12.16 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The operator 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 temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 415 degrees F and 628 degrees F, except during startups and shutdowns.

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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C183]

D12.17 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The operator 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 month and shall be calculated based upon the average of the continuous monitoring for that month.

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

The pressure differential shall not exceed 2.0 inches water column.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : C183]

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
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

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**The operator shall comply with the terms and conditions set forth below:**

VOC emissions	District Method 25.3 Modified	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	EPA Method 201A and 202	District-approved averaging time	Outlet of the SCR serving this equipment
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The test shall be conducted after South Coast AQMD approval of the source test protocol, but no later than 180 days after initial start-up. 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 to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, the combined-cycle turbine and steam turbine generating output in MW-gross and MW-net, and the simple-cycle turbine generating output in MW-gross and MW-net.

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

The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The sampling time for PM and PM<sub>2.5</sub> tests shall be 4 hours or longer as necessary to obtain a measureable amount of sample.

The tests shall be conducted when the combined-cycle turbine is operating at loads of 45, 75, and 100 percent of maximum load, and the simple-cycle turbine is operating at loads of 50, 75, and 100 percent of maximum load.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by South Coast AQMD, the operator shall use South Coast AQMD Method 25.3 modified as follows:

- a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,
- b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and

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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

c) Analysis of Summa canisters per the canister analysis portion of South Coast AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified South Coast AQMD Method 25.3, nor does it mean that it may be used in lieu of South Coast AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

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

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	District-approved averaging time	Fuel Sample
VOC emissions	District Method 25.3 Modified	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

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### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The test(s) shall be conducted at least once every three years.

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 when this equipment is operating at 100 percent of maximum load.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by South Coast AQMD, the operator shall use Method 25.3 modified as follows:

- a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,
- b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and
- c) Analysis of Summa canisters per the canister analysis portion of South Coast AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified South Coast AQMD Method 25.3, nor does it mean that it may be used in lieu of South Coast AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

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

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

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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

D29.4 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

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(s) shall be conducted quarterly during the first twelve months of operation of the catalytic control device and annually thereafter when four consecutive quarterly source tests demonstrate compliance with the ammonia emission limit. If an annual test is failed, four consecutive quarterly source tests must demonstrate compliance with the ammonia emissions limits prior to resuming annual source tests.

The NO<sub>x</sub> 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 NO<sub>x</sub> 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 1135, 11-2-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

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### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

[Devices subject to this condition : C170, C178, C188, C194, C200, C206]

D29.5 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
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	EPA Method 201A and 202	District-approved averaging time	Outlet of the SCR serving this equipment
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

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### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

The test shall be conducted after South Coast AQMD approval of the source test protocol, but no later than 180 days after initial start-up. The 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 F, (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 South Coast AQMD approved source test protocol. The protocol shall be submitted to the South Coast AQMD engineer no later than 90 days before the proposed test date and shall be approved by the South Coast AQMD before the test commences.

The test protocol shall include the identity of the testing lab, confirmation that the test lab is approved under the 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 South Coast AQMD Guidelines for Construction of Sampling and Testing Facilities, pursuant to Rule 217.

The sampling time for the PM10 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.

**[RULE 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

D29.7 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR serving this equipment

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 quarterly to demonstrate compliance with the ammonia emission limit during the first 12 months of unit operation and thereafter, except that source tests may be conducted annually within 12 months thereafter when four consecutive quarterly source tests demonstrate compliance with the ammonia emission limit. If an annual test is failed, four consecutive quarterly source tests 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 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : C183]

D82.1 The operator shall install and maintain a CEMS to measure the following parameters:

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**The operator shall comply with the terms and conditions set forth below:**

CO concentration in ppmv.

Concentrations shall be corrected to 15 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 operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

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

CO Emission Rate, lbs/hr =  $K * C_{co} * F_d [20.9 / (20.9\% - \%O_2 d)] [(Q_g * HHV) / 10E+06]$ , where:

1.  $K = 7.267 * 10E-08$  (lb/scf)/ppm
2.  $C_{co}$  = Average of four consecutive 15 min. average CO concentrations, ppm
3.  $F_d$  = 8710 dscf/MMBTU natural gas
4.  $\%O_2 d$  = Hourly average % by volume O<sub>2</sub> dry, corresponding to  $C_{co}$
- $Q_g$  = Fuel gas usage during the hour, scf/hr
6. HHV = Gross high heating value of fuel gas, BTU/scf

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:

NO<sub>x</sub> concentration in ppmv.

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

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 REG XX CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

Rule 2012 provisional RATA testing shall be completed and submitted to the South Coast AQMD within 90 days of the conclusion of the turbine commissioning period. During the interim period between the initial start-up and the provisional certification date of the CEMS, the operator shall comply with the monitoring requirements of Rule 2012(h)(2) and 2012(h)(3).

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015; RULE 2012, 5-6-2005]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

D82.3 The operator shall install and maintain a CEMS to measure the following parameters:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

NO<sub>x</sub> concentration in ppmv.

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

The CEMS shall be installed and operating no later than 90 days after initial start-up of the auxiliary boiler, and in accordance with an approved South Coast AQMD REG XX CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

Rule 2012 provisional RATA testing shall be completed and submitted to the South Coast AQMD within 90 days of the conclusion of the boiler commissioning period. During the interim period between the initial start-up and the provisional certification date of the CEMS, the operator shall comply with the monitoring requirements of Rule 2012(h)(2) and 2012(h)(3).

**[RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015; RULE 2012, 5-6-2005]**

[Devices subject to this condition : D181]

D82.4 The operator 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 operator shall not install the CEMS prior to receiving initial approval from South Coast AQMD.

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

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988]**

[Devices subject to this condition : D181]

#### **E. Equipment Operation/Construction Requirements**

- E74.1 Notwithstanding the requirements of Section E conditions, the Operator may commence the construction of Phase II of this project if all the following condition(s) are met:

The BACT/LAER determination for the Phase II of this project shall be reviewed and modified (by South Coast 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.

**[40CFR 52.21 - PSD, 6-19-1978]**

[Devices subject to this condition : D164, D185, C187, C188, D191, C193, C194, D197, C199, C200, D203, C205, C206, D210]

- E74.2 Notwithstanding the requirements of Section E conditions, the Operator may commence the construction of Phase II of this project if all the following condition(s) are met:

Rule 1325 compliance for the Phase II of this project shall be reviewed and required by South Coast AQMD as appropriate prior to the commencement of construction of Phase II of the project.

**[RULE 1325, 11-4-2016; RULE 1325, 1-4-2019]**

[Devices subject to this condition : D164, D185, C187, C188, D191, C193, C194, D197, C199, C200, D203, C205, C206, D210]

- E144.1 The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D163, D164]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

E193.4 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

In accordance with all air quality mitigation measures stipulated in the final California Energy Commission decision for the 13-AFC-01 project.

[CA PRC CEQA, 5-12-2017]

[Devices subject to this condition : D163, D164, D165, C170, D173, C178, D181, C183, D185, C188, D191, C194, D197, C200, D203, C206, D209, D210]

E193.5 The operator shall install this equipment according to the following requirements:

The Permit to Construct shall expire one year from the issuance date, unless an extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment.

Construction of Phase 1 of the project (defined as the combined cycle turbines and associated control equipment, the auxiliary boiler and associated control equipment, storage tank D163, and oil water separator D209) shall commence within 18 months from the date of the Permit to Construct, unless an extension is granted by the Permitting Authority.

Construction of Phase 2 of the project (defined as the simple cycle turbines and associated control equipment, storage tank D164, and oil water separator D210) shall commence within 18 months of June 30, 2022 unless an extension is granted by the Permitting Authority.

Construction shall not be discontinued for a period of 18 months or more at any time during Phase 1 or Phase 2.

**[RULE 205, 1-5-1990; 40CFR 52.21 - PSD, 6-19-1978]**

[Devices subject to this condition : D163, D164, D165, C169, C170, D173, C177, C178, D181, C183, D185, C187, C188, D191, C193, C194, D197, C199, C200, D203, C205, C206, D209, D210]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

E193.8 The operator shall operate and maintain this equipment according to the following requirements:

Total commissioning hours shall not exceed 996 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 996 hours, commissioning hours without control shall not exceed 216 hours.

Two turbines may be commissioned at the same time.

The operator shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, and natural gas fuel usage.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173]

E193.9 The operator shall operate and maintain this equipment according to the following requirements:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

Total commissioning hours shall not exceed 280 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 280 hours, commissioning hours without control shall not exceed 4 hours.

Four turbines may be commissioned at the same time.

The operator shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The operator shall provide the South Coast AQMD with written notification of the initial startup date. The operator shall maintain records in a manner approved by the South Coast AQMD to demonstrate compliance with this condition and the records shall be made available to South Coast AQMD personnel upon request. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, and natural gas fuel usage.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

E193.10 The operator shall operate and maintain this equipment according to the following requirements:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

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

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

The operator shall provide the South Coast AQMD with written notification of the initial startup date. The operator shall maintain records in a manner approved by the South Coast AQMD to demonstrate compliance with this condition and the records shall be made available to 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, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

E193.11 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall only apply if this turbine supplies greater than 1,481,141 MWh-net electrical output to a utility power distribution system on both a 12-operating-month and a 3-year rolling average basis.

Compliance with the 1000 lbs per gross megawatt-hours CO<sub>2</sub> emission limit (inclusive of degradation) shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT.

**[40CFR 60 Subpart TTTT, 10-23-2015]**

[Devices subject to this condition : D165, D173]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

E193.12 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The 120 lbs/MMBtu CO<sub>2</sub> emission limit shall only apply if this turbine supplies no more than 1,481,141 MWh-net electrical output to a utility power distribution system on either a 12-operating-month or a 3-year rolling average basis.

Compliance with the 120 lbs/MMBtu CO<sub>2</sub> emission limit shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT.

**[40CFR 60 Subpart TTTT, 10-23-2015]**

[Devices subject to this condition : D165, D173]

E193.13 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

The 120 lbs/MMBtu CO<sub>2</sub> emission limit for non-base load turbines shall apply.

Compliance with the 120 lbs/MMBtu CO<sub>2</sub> emission limit shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT, including applicable requirements for recordkeeping and reporting.

**[40CFR 60 Subpart TTTT, 10-23-2015]**

[Devices subject to this condition : D185, D191, D197, D203]

E193.14 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

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

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

$$\text{GHG} = 61.41 * \text{FF}$$

Where GHG is the greenhouse gas emissions in tons of CO<sub>2</sub> and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO<sub>2</sub> emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO<sub>2</sub> emissions from this equipment shall not exceed 861,119 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO<sub>2</sub> emissions shall not exceed 916.01 lbs per gross megawatt-hours (inclusive of equipment degradation).

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

**[RULE 1714, 12-10-2012; RULE 1714, 3-1-2019]**

[Devices subject to this condition : D165, D173]

E193.15 The operator shall upon completion of construction, operate and maintain this equipment according to the following requirements:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

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

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

$$\text{GHG} = 61.41 * \text{FF}$$

Where GHG is the greenhouse gas emissions in tons of CO<sub>2</sub> and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the CO<sub>2</sub> emissions in pounds per net megawatt-hour based on a 12-month rolling average. The CO<sub>2</sub> emissions from this equipment shall not exceed 54,185 tons per year per turbine on a 12-month rolling average basis. The calendar annual average CO<sub>2</sub> emissions shall not exceed 1506.98 lbs per gross megawatt-hours (inclusive of equipment degradation).

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

**[RULE 1714, 12-10-2012; RULE 1714, 3-1-2019]**

[Devices subject to this condition : D185, D191, D197, D203]

E193.16 The operator shall construct, operate, and maintain this equipment according to the following requirements:

The equipment shall be equipped with a fixed cover to minimize VOC emissions.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]**

[Devices subject to this condition : D209, D210]

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

**The operator shall comply with the terms and conditions set forth below:**

E448.1 The operator shall comply with the following requirements:

The total electrical output on a gross basis from Combined-Cycle Turbines Nos. CCGT-1 and CCGT-2 (Devices D165 and D173, respectively), common Steam Turbine Generator, and Simple-Cycle Turbines Nos. SCGT-1, SCGT-2, SCGT-3, and SCGT-4 (Device D185, D191, D197, and D203, respectively) shall not exceed 1094.7 MW-gross at 59 deg F.

The gross electrical output shall be measured at the single generator serving each of the combined-cycle turbines, the single generator serving the common steam turbine, and the single generator servicing each of the simple-cycle turbines. The monitoring equipment shall meet ANSI Standard No. C12 or equivalent, and have an accuracy of +/- 0.2 percent. The gross electrical output from the generators shall be recorded at the CEMS DAS over a 15-minute averaging time period.

The operator shall record and maintain written records of the maximum amount of electricity produced from this equipment and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by South Coast AQMD.

**[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

#### **H. Applicable Rules**

H23.7 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
CO	District Rule	1146
NOX	District Rule	1146
NOX	District Rule	1100

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

[RULE 1100, 12-7-2018; **RULE 1146, 11-1-2013**; RULE 1146, 12-7-2018]

[Devices subject to this condition : D181]

#### **I. Administrative**

- I297.1 This equipment shall not be operated unless the facility holds 112607 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[**RULE 2005, 12-4-2015**]

[Devices subject to this condition : D165]

- I297.2 This equipment shall not be operated unless the facility holds 112607 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[**RULE 2005, 12-4-2015**]

[Devices subject to this condition : D173]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

- I297.3 This equipment shall not be operated unless the facility holds 21322 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 12-4-2015]**

[Devices subject to this condition : D185]

- I297.4 This equipment shall not be operated unless the facility holds 21322 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 12-4-2015]**

[Devices subject to this condition : D191]

- I297.5 This equipment shall not be operated unless the facility holds 21322 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 12-4-2015]**

[Devices subject to this condition : D197]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

- I297.6 This equipment shall not be operated unless the facility holds 21322 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 12-4-2015]**

[Devices subject to this condition : D203]

- I297.7 This equipment shall not be operated unless the facility holds 1351 pounds of NO<sub>x</sub> RTCs in its allocation account to offset the annual emissions increase for the first year of operation. RTCs held to satisfy this condition may be transferred only after one year from the initial start of operation. If the hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

**[RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

### **K. Record Keeping/Reporting**

- K40.4 The operator shall provide to the District a source test report in accordance with the following specifications:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

#### **The operator shall comply with the terms and conditions set forth below:**

Source test results shall be submitted to the South Coast AQMD no later than 90 days after the source tests required by conditions D29.2, D29.3, and D29.4 are conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 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 exhaust flow rates shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, the fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

**[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D165, D173, D185, D191, D197, D203]

- K40.5 The operator shall provide to the District a source test report in accordance with the following specifications:

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

**The operator shall comply with the terms and conditions set forth below:**

Source test results shall be submitted to the South Coast AQMD no later than 90 days after the source tests required by conditions D29.5 and D29.7 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 F, (4) the oxygen content of the exhaust gases, in percent, and (5) the fuel flow rate.

**[RULE 1146, 11-1-2013; RULE 1146, 12-7-2018; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1703(a)(2) - PSD-BACT, 10-7-1988; RULE 2005, 12-4-2015]**

[Devices subject to this condition : D181]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION I: PLANS AND SCHEDULES**

This section lists all plans approved by AQMD for the purposes of meeting the requirements of applicable AQMD rules.

NONE

NOTE: This section does not list compliance schedules pursuant to the requirements of Regulation XXX - Title V Permits; Rule 3004(a)(10)(C). For equipment subject to a variance, order for abatement, or alternative operating condition granted pursuant to Rule 518.2, equipment specific conditions are added to the equipment in Section D or H of the permit.

**FACILITY PERMIT TO OPERATE  
AES ALAMITOS, LLC**

**SECTION J: AIR TOXICS**

**NOT APPLICABLE**

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration GENERAL PROVISIONS**

1. This permit may be revised, revoked, reopened and reissued, or terminated for cause, or for failure to comply with regulatory requirements, permit terms, or conditions. [3004(a)(7)(C)]
2. This permit does not convey any property rights of any sort or any exclusive privilege. [3004(a)(7)(E)]

#### **Permit Renewal and Expiration**

3. (A) Except for solid waste incineration facilities subject to standards under section 129(e) of the Clean Air Act, this permit shall expire five years from the date that this Title V permit is issued. The operator's right to operate under this permit terminates at midnight on this date, unless the facility is protected by an application shield in accordance with Rule 3002(b), due to the filing of a timely and complete application for a Title V permit renewal, consistent with Rule 3003. [3004(a)(2), 3004(f)]  
  
(B) A Title V permit for a solid waste incineration facility combusting municipal waste subject to standards under Section 129(e) of the Clean Air Act shall expire 12 years from the date of issuance unless such permit has been renewed pursuant to this regulation. These permits shall be reviewed by the Executive Officer at least every five years from the date of issuance. [3004(f)(2)]
4. To renew this permit, the operator shall submit to the Executive Officer an application for renewal at least 180 days, but not more than 545 days, prior to the expiration date of this permit. [3003(a)(6)]

#### **Duty to Provide Information**

5. The applicant for, or holder of, a Title V permit shall furnish, pursuant to Rule 3002(d) and (e), timely information and records to the Executive Officer or designee within a reasonable time as specified in writing by the Executive Officer or designee. [3004(a)(7)(F)]

#### **Payment of Fees**

6. The operator shall pay all required fees specified in Regulation III - Fees. [3004(a)(7)(G)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration**

#### **Reopening for Cause**

7. The Executive Officer will reopen and revise this permit if any of the following circumstances occur:
- (A) Additional regulatory requirements become applicable with a remaining permit term of three or more years. Reopening is not required if the effective date of the requirement is later than the expiration date of this permit, unless the permit or any of its terms and conditions has been extended pursuant to paragraph (f)(4) of Rule 3004.
  - (B) The Executive Officer or EPA Administrator determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.
  - (C) The Executive Officer or EPA Administrator determines that the permit must be revised or revoked to assure compliance with the applicable requirements. [3005(g)(1)]

#### **COMPLIANCE PROVISIONS**

8. The operator shall comply with all regulatory requirements, and all permit terms and conditions, except:
- (A) As provided for by the emergency provisions of condition no. 17 or condition no. 18, or
  - (B) As provided by an alternative operating condition granted pursuant to a federally approved (SIP-approved) Rule 518.2.

Any non-compliance with any federally enforceable permit condition constitutes a violation of the Federal Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or denial of a permit renewal application. Non-compliance may also be grounds for civil or criminal penalties under the California State Health and Safety Code. [3004(a)(7)(A)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration**

9. The operator shall allow the Executive Officer or authorized representative, upon presentation of appropriate credentials to:
  - (A) Enter the operator's premises where emission-related activities are conducted, or records are kept under the conditions of this permit;
  - (B) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
  - (C) Inspect at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
  - (D) Sample or monitor at reasonable times, substances or parameters for the purpose of assuring compliance with the facility permit or regulatory requirements. [3004(a)(10)(B)]
10. All terms and conditions in this permit, including any provisions designed to limit a facility's potential to emit, are enforceable by the EPA Administrator and citizens under the federal Clean Air Act, unless the term or condition is designated as not federally enforceable. Each day during any portion of which a violation occurs is a separate offense. [3004(g)]
11. A challenge to any permit condition or requirement raised by EPA, the operator, or any other person, shall not invalidate or otherwise affect the remaining portions of this permit. [3007(b)]
12. The filing of any application for a permit revision, revocation, or termination, or a notification of planned changes or anticipated non-compliance does not stay any permit condition. [3004(a)(7)(D)]
13. It shall not be a defense for a person in an enforcement action, including those listed in Rule 3002(c)(2), that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit, except as provided for in "Emergency Provisions" of this section. [3004(a)(7)(H)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration**

14. The operator shall not build, erect, install, or use any equipment, the use of which, without resulting in a reduction in the total release of air contaminants to atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Chapter 3 (commencing with Section 41700) of Part 4, of Division 26 of the California Health and Safety Code or of AQMD rules. This rule shall not apply to cases in which the only violation involved is of Section 41700 of the California Health and Safety Code, or Rule 402 of AQMD Rules. [408]
15. Nothing in this permit or in any permit shield can alter or affect:
- (A) Under Section 303 of the federal Clean Air Act, the provisions for emergency orders;
  - (B) The liability of the operator for any violation of applicable requirements prior to or at the time of permit issuance;
  - (C) The applicable requirements of the Acid Rain Program, Regulation XXXI;
  - (D) The ability of EPA to obtain information from the operator pursuant to Section 114 of the federal Clean Air Act;
  - (E) The applicability of state or local requirements that are not "applicable requirements", as defined in Rule 3000, at the time of permit issuance but which do apply to the facility, such as toxics requirements unique to the State; and
  - (F) The applicability of regulatory requirements with compliance dates after the permit issuance date. [3004(c)(3)]
16. For any portable equipment that requires an AQMD or state permit or registration, excluding a) portable engines, b) military tactical support equipment and c) AQMD-permitted portable equipment that are not a major source, are not located at the facility for more than 12 consecutive months after commencing operation, and whose operation does not conflict with the terms or conditions of this Title V permit: 1) the facility operator shall keep a copy of the AQMD or state permit or registration; 2) the equipment operator shall comply with the conditions on the permit or registration and all other regulatory requirements; and 3) the facility operator shall treat the permit or registration as a part of its Title V permit, subject to recordkeeping, reporting and certification requirements. [3004(a)(1)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration EMERGENCY PROVISIONS**

17. An emergency<sup>1</sup> constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limit only if:
- (A) Properly signed, contemporaneous operating records or other credible evidence demonstrate that:
    - (1) An emergency occurred and the operator can identify the cause(s) of the emergency;
    - (2) The facility was operated properly (i.e. operated and maintained in accordance with the manufacturer's specifications, and in compliance with all regulatory requirements or a compliance plan), before the emergency occurred;
    - (3) The operator took all reasonable steps to minimize levels of emissions that exceeded emissions standard, or other requirements in the permit; and,
    - (4) The operator submitted a written notice of the emergency to the AQMD within two working days of the time when the emissions limitations were exceeded due to the emergency. The notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken; and
  - (B) The operator complies with the breakdown provisions of Rule 430 – Breakdown Provisions, or subdivision (i) of Rule 2004 – Requirements, whichever is applicable. [3002(g), 430, 2004(i)]
18. The operator is excused from complying with any regulatory requirement that is suspended by the Executive Officer during a state of emergency or state of war emergency, in accordance with Rule 118 - Emergencies. [118]

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<sup>1</sup> "Emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the operator, including acts of God, which: (A) requires immediate corrective action to restore normal operation; and (B) causes the facility to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency; and (C) is not caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration RECORDKEEPING PROVISIONS**

19. In addition to any other recordkeeping requirements specified elsewhere in this permit, the operator shall keep records of required monitoring information, where applicable, that include:

- (A) The date, place as defined in the Title V permit, and time of sampling or measurements;
- (B) The date(s) analyses were performed;
- (C) The company or entity that performed the analyses;
- (D) The analytical techniques or methods used;
- (E) The results of such analyses; and
- (F) The operating conditions as existing at the time of sampling or measurement. [3004(a)(4)(B)]

20. The operator shall maintain records pursuant to Rule 109 and any applicable material safety data sheet (MSDS) for any equipment claimed to be exempt from a written permit by Rule 219 based on the information in those records. [219(t)]

21. The operator shall keep all records of monitoring data required by this permit or by regulatory requirements for a period of at least five years from the date of the monitoring sample, measurement, report, or application. [3004(a)(4)(E)]

### **REPORTING PROVISIONS**

22. The operator shall comply with the following requirements for prompt reporting of deviations:

- (A) Breakdowns shall be reported as required by Rule 430 – Breakdown Provisions or subdivision (i) of Rule 2004 - Requirements, whichever is applicable.

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration**

- (B) Other deviations from permit or applicable rule emission limitations, equipment operating conditions, or work practice standards, determined by observation or by any monitoring or testing required by the permit or applicable rules that result in emissions greater than those allowed by the permit or applicable rules shall be reported within 72 hours (unless a shorter reporting period is specified in an applicable State or Federal Regulation) of discovery of the deviation by contacting AQMD enforcement personnel assigned to this facility or otherwise calling (800) CUT-SMOG.
  - (C) A written report of such deviations reported pursuant to (B), and any corrective actions or preventative measures taken, shall be submitted to AQMD, in an AQMD approved format, within 14 days of discovery of the deviation.
  - (D) All other deviations shall be reported with the monitoring report required by condition no. 23. [3004(a)(5)]
23. Unless more frequent reporting of monitoring results are specified in other permit conditions or in regulatory requirements, the operator shall submit reports of any required monitoring to the AQMD at least twice per year. The report shall include a) a statement whether all monitoring required by the permit was conducted; and b) identification of all instances of deviations from permit or regulatory requirements. A report for the first six calendar months of the year is due by August 31 and a report for the last six calendar months of the year is due by February 28. [3004(a)(4)(F)]
24. The operator shall submit to the Executive Officer and to the Environmental Protection Agency (EPA), an annual compliance certification. For RECLAIM facilities, the certification is due when the Annual Permit Emissions Program (APEP) report is due and shall cover the same reporting period. For other facilities, the certification is due on March 1 for the previous calendar year. The certification need not include the period preceding the date the initial Title V permit was issued. Each compliance certification shall include:
- (A) Identification of each permit term or condition that is the basis of the certification;

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **SECTION K: TITLE V Administration**

- (B) The compliance status during the reporting period;
- (C) Whether compliance was continuous or intermittent;
- (D) The method(s) used to determine compliance over the reporting period and currently, and
- (E) Any other facts specifically required by the Executive Officer to determine compliance.

The EPA copy of the certification shall be sent to: Director of the Air Division Attn:  
Air-3 USEPA, Region IX 75 Hawthorne St. San Francisco, CA 94105 [3004(a)(10)(E)]

25. All records, reports, and documents required to be submitted by a Title V operator to AQMD or EPA shall contain a certification of accuracy consistent with Rule 3003(c)(7) by a responsible official (as defined in Rule 3000). [3004(a)(12)]

### **PERIODIC MONITORING**

26. All periodic monitoring required by this permit pursuant to Rule 3004(a)(4)(c) is based on the requirements and justifications in the AQMD document "Periodic Monitoring Guidelines for Title V Facilities" or in case-by-case determinations documented in the TitleV application file. [3004(a)(4)]

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION K: TITLE V Administration

#### *FACILITY RULES*

*This facility is subject to the following rules and regulations*

With the exception of Rule 402, 473, 477, 1118 and Rules 1401 through 1420, the following rules that are designated as non-federally enforceable are pending EPA approval as part of the state implementation plan. Upon the effective date of that approval, the approved rule(s) will become federally enforceable, and any earlier versions of those rules will no longer be federally enforceable.

<b>RULE SOURCE</b>	<b>Adopted/Amended Date</b>	<b>FEDERAL Enforceability</b>
RULE 109	5-2-2003	Federally enforceable
RULE 1100	12-7-2018	Non federally enforceable
RULE 1113	2-5-2016	Federally enforceable
RULE 1135	11-2-2018	Non federally enforceable
RULE 1140	8-2-1985	Federally enforceable
RULE 1146	11-1-2013	Federally enforceable
RULE 1146	12-7-2018	Non federally enforceable
RULE 1171	2-1-2008	Federally enforceable
RULE 1171	5-1-2009	Non federally enforceable
RULE 118	12-7-1995	Non federally enforceable
RULE 1303(a)(1)-BACT	12-6-2002	Non federally enforceable
RULE 1303(a)(1)-BACT	5-10-1996	Federally enforceable
RULE 1303(b)(2)-Offset	12-6-2002	Non federally enforceable
RULE 1303(b)(2)-Offset	5-10-1996	Federally enforceable
RULE 1304(a)-Modeling and Offset Exemption	6-14-1996	Federally enforceable
RULE 1304.1	9-6-2013	Non federally enforceable
RULE 1313(d)	12-7-1995	Federally enforceable
RULE 1325	1-4-2019	Non federally enforceable
RULE 1325	11-4-2016	Federally enforceable
RULE 1401	9-1-2017	Non federally enforceable
RULE 1415	12-3-2010	Non federally enforceable

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION K: TITLE V Administration

<b>RULE SOURCE</b>	<b>Adopted/Amended Date</b>	<b>FEDERAL Enforceability</b>
RULE 1703(a)(2) - PSD-BACT	10-7-1988	Federally enforceable
RULE 1714	12-10-2012	Federally enforceable
RULE 1714	3-1-2019	Non federally enforceable
RULE 2005	12-4-2015	Federally enforceable
RULE 2009	1-7-2005	Non federally enforceable
RULE 2010	4-6-2007	Federally enforceable
RULE 2012	5-6-2005	Federally enforceable
RULE 204	10-8-1993	Federally enforceable
RULE 205	1-5-1990	Federally enforceable
RULE 217	1-5-1990	Federally enforceable
RULE 218	5-14-1999	Federally enforceable
RULE 218.1	5-14-1999	Federally enforceable
RULE 218.1	5-4-2012	Non federally enforceable
RULE 219	4-6-2018	Non federally enforceable
RULE 219	9-4-1981	Federally enforceable
RULE 3002	11-5-2010	Federally enforceable
RULE 3003	11-5-2010	Federally enforceable
RULE 3004(a)(4)-Periodic Monitoring	12-12-1997	Federally enforceable
RULE 3005	11-5-2010	Federally enforceable
RULE 3007	10-8-1993	Federally enforceable
RULE 301	7-12-2019	Non federally enforceable
RULE 304	5-3-2019	Non federally enforceable
RULE 401	11-9-2001	Non federally enforceable
RULE 401	3-2-1984	Federally enforceable
RULE 402	5-7-1976	Non federally enforceable
RULE 404	2-7-1986	Federally enforceable
RULE 405	2-7-1986	Federally enforceable
RULE 407	4-2-1982	Federally enforceable
RULE 408	5-4-2018	Non federally enforceable
RULE 408	5-7-1976	Federally enforceable
RULE 409	8-7-1981	Federally enforceable

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### SECTION K: TITLE V Administration

<b>RULE SOURCE</b>	<b>Adopted/Amended Date</b>	<b>FEDERAL Enforceability</b>
RULE 430	7-12-1996	Non federally enforceable
RULE 431.1	6-12-1998	Federally enforceable
RULE 464	12-7-1990	Federally enforceable
RULE 475	10-8-1976	Federally enforceable
RULE 475	8-7-1978	Non federally enforceable
RULE 701	6-13-1997	Federally enforceable
CA PRC CEQA	5-12-2017	Non federally enforceable
40CFR 52.21 - PSD	6-19-1978	Federally enforceable
40CFR 60 Subpart KKKK	3-20-2009	Federally enforceable
40CFR 60 Subpart TTTT	10-23-2015	Federally enforceable
40CFR 68 - Accidental Release Prevention	1-13-2017	Federally enforceable
40CFR 72 - Acid Rain Provisions	11-24-1997	Federally enforceable
40CFR 73 Subpart B	1-11-1993	Federally enforceable
40CFR 82 Subpart F	12-27-2017	Federally enforceable

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX A: NOX AND SOX EMITTING EQUIPMENT EXEMPT FROM WRITTEN PERMIT PURSUANT TO RULE 219**

1. IC ENGINES, 50 BHP OR LESS, GASOLINE-FIRED

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [RULE 1113 02-05-2016]**

- (1) Except as provided in paragraphs (c)(3), (c)(4) of the Rule, no person shall supply, sell, offer for sale, market, manufacture, blend, repackage, apply, store at a worksite, or solicit the application of any architectural coating within the District that is listed in the Table of Standards 1 and contains VOC (excluding any colorant added to tint bases) in excess of the corresponding VOC limit specified in the table, after the effective date specified.
- (2) No person within the District shall, at the point of sale of any architectural coating subject to the above paragraph (1), add to such coating any colorant that contains VOC in excess of the corresponding applicable VOC limit specified in the Table of Standards 2.

# FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

## APPENDIX B: RULE EMISSION LIMITS [RULE 1113 02-05-2016]

### TABLE OF STANDARDS 1 VOC LIMITS

**Grams of VOC Per Liter of Coating,  
Less Water and Less Exempt Compounds**

COATING CATEGORY	Category Codes	Current Limit <sup>1</sup>	Effective Date			Small Container Exemption
			1/1/14	2/5/16	1/1/19	
Bond Breakers	5	350				✓
Building Envelope Coating	62	100			50	✓
Concrete-Curing Compounds	7	100				✓
Concrete-Curing Compounds For Roadways and Bridges <sup>2</sup>	7	350				✓ <sup>3</sup>
Concrete Surface Retarder	58	50	50			✓
Default	51	50	50			✓
Driveway Sealer	52	50				✓
Dry-Fog Coatings	8	50	50			✓
Faux Finishing Coatings						
Clear Topcoat	9a	100	100			✓
Decorative Coatings	9	350				✓
Glazes	9b	350				✓
Japan	9c	350				✓
Trowel Applied Coatings	9d	50	50			✓
Fire-Proofing Coatings	10	150	150			✓
Flats	13	50				✓ <sup>5</sup>
Floor Coatings	14	50				✓
Form Release Compound	16	100	100			✓
Graphic Arts (Sign) Coatings	17	200	150	200		✓
Industrial Maintenance (IM) Coatings	19	100				✓ <sup>5</sup>
Color Indicating Safety Coatings		480				✓ <sup>5</sup>
High Temperature IM Coatings	18	420				✓ <sup>5</sup>
Non-Sacrificial Anti-Graffiti Coatings	19a	100				✓ <sup>5</sup>
Zinc-Rich IM Primers	56	100				✓ <sup>5</sup>
Magnesite Cement Coatings	22	450				✓ <sup>3</sup>
Mastic Coatings	23	100	100			✓
Metallic Pigmented Coatings	24	150	150			✓
Multi-Color Coatings	25	250				✓ <sup>3</sup>
Nonflat Coatings	26, 27, 28	50				✓ <sup>5</sup>

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 1113 02-05-2016]

Pre-Treatment Wash Primers	29	420				✓ <sup>3</sup>
Primers, Sealers, and Undercoaters	30	100				✓
Reactive Penetrating Sealers	59	350				✓ <sup>4</sup>
Recycled Coatings	33	250			150	✓
Roof Coatings	34	50				✓
Roof Coatings, Aluminum	53	100				✓
Roof Primers, Bituminous	4	350				✓ <sup>3</sup>
Rust Preventative Coatings	35	100				✓ <sup>6</sup>
Sacrificial Anti-Graffiti Coatings	60	50				✓ <sup>3</sup>
Shellac						
Clear	37	730				✓ <sup>4</sup>
Pigmented	38	550				✓ <sup>4</sup>
Specialty Primers	39	100				✓
Stains	41	100				✓
Stains, Interior	40	250				✓
Stone Consolidants	61	450				✓ <sup>3</sup>
Swimming Pool Coatings						
Repair	43	340				✓ <sup>3</sup>
Other	42	340				✓ <sup>3</sup>
Tile and Stone Sealers	63	100				✓
Traffic Coatings	45	100				✓
Tub and Tile Refinishing Coatings	64	420				✓ <sup>4</sup>
Waterproofing Sealers	48	100				✓
Waterproofing Concrete/Masonry Sealers	49	100				✓
Wood Coatings		275				
Varnish	46, 47	275				
Sanding Sealers	36	275				
Lacquer	20	275				

# FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

## APPENDIX B: RULE EMISSION LIMITS [RULE 1113 02-05-2016]

Wood Conditioners	65	100				
Wood Preservatives						
Below-Ground	50	350				✓ <sup>3</sup>
Other	55	350				✓ <sup>3</sup>

1. The specified limits remain in effect unless revised limits are listed in subsequent columns in the Table of Standards.
2. Does not include compounds used for curbs and gutters, sidewalks, islands, driveways and other miscellaneous concrete areas.
3. Effective 02/05/2016, the small container exemption no longer applies per (f)(1).
4. Effective 01/01/2018, the small container exemption no longer applies per (f)(1).
5. Effective 01/01/2019, the small container exemption is further restricted per (f)(1).
6. Effective 01/01/2020, the small container exemption is further restricted per (f)(1).

### TABLE OF STANDARDS 1 (cont.) VOC LIMITS

#### Grams of VOC Per Liter of Material

COATING	Limit
Low-Solids Coating	120

# **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

## **APPENDIX B: RULE EMISSION LIMITS [RULE 1113 02-05-2016]**

### **TABLE OF STANDARDS 2 VOC LIMITS FOR COLORANTS**

**Grams of VOC Per Liter of Colorant  
Less Water and Less Exempt Compounds**

<b>COLORANT ADDED TO</b>	<b>Limit</b>
Architectural Coatings, excluding IM Coatings	50
Solvent-Based IM	600
Waterborne IM	50

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [RULE 1140 08-02-1985]**

- (1) The operator shall not, if he complies with an applicable performance standard in section (b)(4) of Rule 1140, discharge into the atmosphere from any abrasive blasting any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:
  - (A) As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
  - (B) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in (1)(A).
- (2) The operator shall not, if he is not complying with an applicable performance standard in section (b)(4) of Rule 1140, discharge into the atmosphere from any abrasive blasting any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:
  - (A) As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
  - (B) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in (2)(A).

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 1171 02-01-2008]

(1) Solvent Requirements

A person shall not use a solvent to perform solvent cleaning operations unless the solvent complies with the applicable requirements set forth below:

	<b>CURRENT LIMITS*</b>	<b>EFFECTIVE 1/1/2008*</b>	<b>EFFECTIVE 1/1/2009</b>
<b>SOLVENT CLEANING ACTIVITY</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>
(A) Product Cleaning During Manufacturing Process Or Surface Preparation For Coating, Adhesive, Or Ink Application			
(i) General	25 (0.21)		
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)		
(iii) Medical Devices & Pharmaceuticals	800 (6.7)		
(B) Repair and Maintenance Cleaning			
(i) General	25 (0.21)		
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)		

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 1171 02-01-2008]

	CURRENT LIMITS*	EFFECTIVE 1/1/2008*	EFFECTIVE 1/1/2009
SOLVENT CLEANING ACTIVITY (cont.)	VOC g/l (lb/gal)	VOC g/l (lb/gal)	VOC g/l (lb/gal)
(iii) Medical Devices & Pharmaceuticals			
(A) Tools, Equipment, & Machinery	800 (6.7)		
(B) General Work Surfaces	600 (5.0)		
(C) Cleaning of Coatings or Adhesives Application Equipment	25 (0.21)		
(D) Cleaning of Ink Application Equipment			
(i) General	25 (0.21)		
(ii) Flexographic Printing	25 (0.21)		
(iii) Gravure Printing			
(A) Publication	100 (0.83)		
(B) Packaging	25 (0.21)		
(iv) Lithographic (Offset) or Letter Press Printing			
(A) Roller Wash, Blanket Wash, & On-Press Components			
(I) Newsprint	100 (0.83)		

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 1171 02-01-2008]

	<b>CURRENT LIMITS*</b>	<b>EFFECTIVE 1/1/2008*</b>	<b>EFFECTIVE 1/1/2009</b>
<b>SOLVENT CLEANING ACTIVITY (cont.)</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>
(II) Other Substrates	500 (4.2)	100 (0.83)	
(B) Removable Press Components	25 (0.21)		
(v) Screen Printing	500 (4.2)	100 (0.83)	
(vi) Ultraviolet Ink/ Electron Beam Ink Application Equipment (except screen printing)	650 (5.4)	650 (5.4)	100 (0.83)
(vii) Specialty Flexographic Printing	100 (0.83)		
(E) Cleaning of Polyester Resin Application Equipment	25 (0.21)		

\* The specified limits remain in effect unless revised limits are listed in subsequent columns.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 1171 05-01-2009]

(1) Solvent Requirements

A person shall not use a solvent to perform solvent cleaning operations unless the solvent complies with the applicable requirements set forth below:

	<b>CURRENT LIMITS*</b>	<b>EFFECTIVE 1/1/2010</b>
<b>SOLVENT CLEANING ACTIVITY</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>
(A) Product Cleaning During Manufacturing Process Or Surface Preparation For Coating, Adhesive, Or Ink Application		
(i) General	25 (0.21)	
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)	
(iii) Medical Devices & Pharmaceuticals	800 (6.7)	
(B) Repair and Maintenance Cleaning		
(i) General	25 (0.21)	
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)	

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 1171 05-01-2009]

	<b>CURRENT LIMITS*</b>	<b>EFFECTIVE 1/1/2010</b>
<b>SOLVENT CLEANING ACTIVITY (cont.)</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>
(iii) Medical Devices & Pharmaceuticals		
(A) Tools, Equipment, & Machinery	800 (6.7)	
(B) General Work Surfaces	600 (5.0)	
(C) Cleaning of Coatings or Adhesives Application Equipment	25 (0.21)	
(D) Cleaning of Ink Application Equipment		
(i) General	25 (0.21)	
(ii) Flexographic Printing	25 (0.21)	
(iii) Gravure Printing		
(A) Publication	100 (0.83)	
(B) Packaging	25 (0.21)	
(iv) Lithographic (Offset) or Letter Press Printing		
(A) Roller Wash, Blanket Wash, & On-Press Components	100 (0.83)	

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### APPENDIX B: RULE EMISSION LIMITS [RULE 1171 05-01-2009]

	<b>CURRENT LIMITS*</b>	<b>EFFECTIVE 1/1/2010</b>
<b>SOLVENT CLEANING ACTIVITY (cont.)</b>	<b>VOC g/l (lb/gal)</b>	<b>VOC g/l (lb/gal)</b>
(B) Removable Press Components	25 (0.21)	
(v) Screen Printing	100 (0.83)	
(vi) Ultraviolet Ink/ Electron Beam Ink Application Equipment (except screen printing)	650 (5.4)	100 (0.83)
(vii) Specialty Flexographic Printing	100 (0.83)	
(E) Cleaning of Polyester Resin Application Equipment	25 (0.21)	

\* The specified limits remain in effect unless revised limits are listed in subsequent columns.

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 404 10-05-1979]

The operator shall not discharge into the atmosphere from this equipment, particulate matter in excess of the concentration at standard conditions, shown in Table 404(a).

Where the volume discharged is between figures listed in the Table, the exact concentration permitted to be discharged shall be determined by linear interpolation.

For the purposes of this rule, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period.

**TABLE 404(a)**

Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter” Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions		Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions	
Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot	Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot
25 or less	883 or less	450	0.196	900	31780	118	0.0515
30	1059	420	.183	1000	35310	113	.0493
35	1236	397	.173	1100	38850	109	.0476
40	1413	377	.165	1200	42380	106	.0463
45	1589	361	.158	1300	45910	102	.0445

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 404 10-05-1979]

Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter” Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions		Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions	
Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot	Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot
50	1766	347	.152	1400	49440	100	.0437
60	2119	324	.141	1500	52970	97	.0424
70	2472	306	.134	1750	61800	92	.0402
80	2825	291	.127	2000	70630	87	.0380
90	3178	279	.122	2250	79460	83	.0362
100	3531	267	.117	2500	88290	80	.0349
125	4414	246	.107	3000	105900	75	.0327
150	5297	230	.100	4000	141300	67	.0293
175	6180	217	.0947	5000	176600	62	.0271
200	7063	206	.0900	6000	211900	58	.0253
250	8829	190	.0830	8000	282500	52	.0227
300	10590	177	.0773	10000	353100	48	.0210
350	12360	167	.0730	15000	529700	41	.0179
400	14130	159	.0694	20000	706300	37	.0162
450	15890	152	.0664	25000	882900	34	.0148

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 404 10-05-1979]

Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter” Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions		Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions	
Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot	Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot
500	17660	146	.0637	30000	1059000	32	.0140
600	21190	137	.0598	40000	1413000	28	.0122
700	24720	129	.0563	50000	1766000	26	.0114
800	28250	123	.0537	70000 or more	2472000 or more	23	.0100

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 404 02-07-1986]

The operator shall not discharge into the atmosphere from this equipment, particulate matter in excess of the concentration at standard conditions, shown in Table 404(a). Where the volume discharged is between figures listed in the Table, the exact concentration permitted to be discharged shall be determined by linear interpolation.

For the purposes of this rule, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period.

**TABLE 404(a)**

Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter” Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions		Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions	
Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot	Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot
25 or less	883 or less	450	0.196	900	31780	118	0.0515
30	1059	420	.183	1000	35310	113	.0493
35	1236	397	.173	1100	38850	109	.0476
40	1413	377	.165	1200	42380	106	.0463
45	1589	361	.158	1300	45910	102	.0445

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 404 02-07-1986]

Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter” Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions		Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions	
Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot	Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot
50	1766	347	.152	1400	49440	100	.0437
60	2119	324	.141	1500	52970	97	.0424
70	2472	306	.134	1750	61800	92	.0402
80	2825	291	.127	2000	70630	87	.0380
90	3178	279	.122	2250	79460	83	.0362
100	3531	267	.117	2500	88290	80	.0349
125	4414	246	.107	3000	105900	75	.0327
150	5297	230	.100	4000	141300	67	.0293
175	6180	217	.0947	5000	176600	62	.0271
200	7063	206	.0900	6000	211900	58	.0253
250	8829	190	.0830	8000	282500	52	.0227
300	10590	177	.0773	10000	353100	48	.0210
350	12360	167	.0730	15000	529700	41	.0179
400	14130	159	.0694	20000	706300	37	.0162
450	15890	152	.0664	25000	882900	34	.0148

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 404 02-07-1986]

Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter” Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions		Volume Discharged Calculated as Dry Gas At Standard Conditions		Maximum Concentration of Particulate Matter Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions	
Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot	Cubic meters Per Minute	Cubic feet Per Minute	Milligrams per Cubic Meter	Grains per Cubic Foot
500	17660	146	.0637	30000	1059000	32	.0140
600	21190	137	.0598	40000	1413000	28	.0122
700	24720	129	.0563	50000	1766000	26	.0114
800	28250	123	.0537	70000 or more	2472000 or more	23	.0100

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 405 02-07-1986]

The operator shall not discharge into the atmosphere from this equipment, solid particulate matter including lead and lead compounds in excess of the rate shown in Table 405(a).

Where the process weight per hour is between figures listed in the table, the exact weight of permitted discharge shall be determined by linear interpolation.

For the purposes of this rule, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period.

**TABLE 405(a)**

Process Weight Per Hour		Maximum Discharge Rate Allowed for Solid Particulate Matter (Aggregate Discharged From All Points of Process)		Process Weight Per Hour		Maximum Discharge Rate Allowed for Solid Particulate Matter (Aggregate Discharged From All points of Process)	
Kilograms Per Hour	Pounds Per Hour	Kilograms Per Hour	Pounds Per Hour	Kilograms Per Hour	Pounds Per Hour	Kilograms Per Hour	Pounds Per Hour
100 or less	220 or less	0.450	0.99	9000	19840	5.308	11.7
150	331	0.585	1.29	10000	22050	5.440	12.0
200	441	0.703	1.55	12500	27560	5.732	12.6
250	551	0.804	1.77	15000	33070	5.982	13.2
300	661	0.897	1.98	17500	38580	6.202	13.7
350	772	0.983	2.17	20000	44090	6.399	14.1
400	882	1.063	2.34	25000	55120	6.743	14.9
450	992	1.138	2.51	30000	66140	7.037	15.5
500	1102	1.209	2.67	35000	77160	7.296	16.1
600	1323	1.340	2.95	40000	88180	7.527	16.6

## FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC

### APPENDIX B: RULE EMISSION LIMITS [RULE 405 02-07-1986]

Process Weight Per Hour		Maximum Discharge Rate Allowed for Solid Particulate Matter (Aggregate Discharged From All Points of Process		Process Weight Per Hour		Maximum Discharge Rate Allowed for Solid Particulate Matter (Aggregate Discharged From All points of Process	
Kilograms Per Hour	Pounds Per Hour	Kilograms Per Hour	Pounds Per Hour	Kilograms Per Hour	Pounds Per Hour	Kilograms Per Hour	Pounds Per Hour
700	1543	1.461	3.22	45000	99210	7.738	17.1
800	1764	1.573	3.47	50000	110200	7.931	17.5
900	1984	1.678	3.70	60000	132300	8.277	18.2
1000	2205	1.777	3.92	70000	154300	8.582	18.9
1250	2756	2.003	4.42	80000	176400	8.854	19.5
1500	3307	2.206	4.86	90000	198400	9.102	20.1
1750	3858	2.392	5.27	100000	220500	9.329	20.6
2000	4409	2.563	5.65	125000	275600	9.830	21.7
2250	4960	2.723	6.00	150000	330700	10.26	22.6
2500	5512	2.874	6.34	175000	385800	10.64	23.5
2750	6063	3.016	6.65	200000	440900	10.97	24.2
3000	6614	3.151	6.95	225000	496000	11.28	24.9
3250	7165	3.280	7.23	250000	551200	11.56	25.5
3600	7716	3.404	7.50	275000	606300	11.82	26.1
4000	8818	3.637	8.02	300000	661400	12.07	26.6
4500	9921	3.855	8.50	325000	716500	12.30	27.1
5000	11020	4.059	8.95	350000	771600	12.51	27.6
6000	13230	4.434	9.78	400000	881800	12.91	28.5
7000	15430	4.775	10.5	450000	992100	13.27	29.3
8000	17640	5.089	11.2	500000 or more	1102000 or more	13.60	30.0

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [40CFR 72 - Acid Rain Provisions 11-24-1997]**

1. A Title V permit revision is not required for emission increases that are authorized by allowances acquired under the Acid Rain Program, provided that the increases do not trigger a Title V permit revision under any other applicable requirement. [70.6 (a)(4)(ii)]

#### **Monitoring Requirements**

2. The owners and operators and, to the extent applicable, the designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR Parts 74, 75, and 76. [40 CFR 72.50, 72.31, 72.9(b)(1)]
3. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the acid rain emissions limitations and emissions reduction requirements for sulfur dioxide (SO<sub>2</sub>) under the Acid Rain Program. [40 CFR 72.9(b)(2), 40 CFR 75.2]
4. The requirements of 40 CFR Parts 74 and 75 shall not affect the responsibility of the operator to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements and other provisions of this permit. [40 CFR 72.9(b)(3), 40 CFR 72.5]

#### **Sulfur Dioxide Requirements**

5. The owners and operators of each source and each affected unit at the source shall:
  - (A) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR Part 73, Section 73.34(C)) not less than the total annual emissions of SO<sub>2</sub> for the previous calendar year from the unit; and, [40 CFR 72.9(c)(i)],
  - (B) Comply with the applicable acid rain emissions limitations for SO<sub>2</sub>. [40 CFR 72.9(c)(ii)]
6. Each ton of SO<sub>2</sub> emitted in excess of the acid rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 72.9(g)(7)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [40CFR 72 - Acid Rain Provisions 11-24-1997]**

7. SO<sub>2</sub> allowances shall be held in, deducted from, or transferred among allowance tracking system accounts in accordance with the Acid Rain Program. [40 CFR 72.9(g)(4)]
8. A SO<sub>2</sub> allowance shall not be deducted in order to comply with the requirements under paragraph 41(A) of the SO<sub>2</sub> requirements prior to the calendar year for which the allowance was allocated. [40 CFR 72.9(g)(5)]
9. An affected unit shall be subject to the SO<sub>2</sub> requirements under the Acid Rain Program as follows:[40 CFR 72.6(a)]
  - (A) Starting January 1, 2000, an affected unit under 40 CFR Part 72, Section 72.6(a)(2); or [40 CFR 72.6(a)(2)]
  - (B) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR Part 75, an affected unit under 40 CFR Part 72, Section 72.6(a)(3). [40CFR 72.6(a)(3)]
10. An allowance allocated by the EPA administrator under the Acid Rain Program is a limited authorization to emit SO<sub>2</sub> in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the acid rain permit application, the acid rain permit, or the written exemption under 40 CFR Part 72, Sections 72.7, 72.8, or 72.14, and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR 72.9 (c)(6)]
11. An allowance allocated by the EPA Administrator under the Acid Rain Program does not constitute a property right. [40 CFR 72.9(c)(7)]

### **Excess Emissions Requirements**

12. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR 72.9(e)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [40CFR 72 - Acid Rain Provisions 11-24-1997]**

13. The owners and operators of an affected unit that has excess emissions in any calendar year shall: [40 CFR 72.9(e)(2)]

(A) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR Part 77; and [40 CFR 72.9(e)(2)(i)]

(B) Comply with the terms of an approved offset plan, as required by 40 CFR Part 77. [40 CFR 72.9(e)(2)(ii)]

#### **Recordkeeping and Reporting Requirements**

14. Unless otherwise provided, the owners and operators of the source and each affected unit at the source that are subject to the acid rain provisions under Title IV shall keep on site at the source each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the EPA Administrator or the Executive Officer: [40 CFR 72.9(f)(1)]

(A) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such five year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative; [40 CFR 72.9(f)(1)(i)]

(B) All emissions monitoring information, in accordance with 40 CFR Part 75; [40 CFR 72.9(f)(1)(ii)]

(C) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and, [40 CFR 72.9(f)(1)(iii)]

(D) Copies of all documents used to complete an acid rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program. [40 CFR 72.9(f)(1)(iv)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [40CFR 72 - Acid Rain Provisions 11-24-1997]**

15. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 72 Subpart I and 40 CFR Part 75. [40 CFR 72.9(f)(2)]

#### **Liability**

16. Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete acid rain permit application, an acid rain permit, or a written exemption under 40 CFR Part 72, Sections 72.7, 72.8, or 72.14, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to Section 113(c) of the Act. [40 CFR 72.9 (g)(1)]
17. Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to Section 113(c) of the Act and 18 U.S.C. 1001. [40 CFR 72.9 (g)(2)]
18. No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect. [40 CFR 72.9 (g)(3)]
19. Each affected source and each affected unit shall meet the requirements of the Acid Rain Program. [40 CFR 72.9 (g)(4)]
20. Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source. [40 CFR 72.9 (g)(5)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [40CFR 72 - Acid Rain Provisions 11-24-1997]**

21. Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR Part 72, Section 72.44 (Phase II repowering extension plans) and 40 CFR Part 76, Section 76.11 (NO<sub>x</sub> averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR Part 75 (including 40 CFR Part 75, Sections 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one affected unit shall not be liable for any violation by any other affected unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative. [40 CFR 72.9 (g)(6)]
22. Each violation of a provision of 40 CFR Parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act. [40 CFR 72.9 (g)(7)]

#### **Effect on Other Authorities**

23. No provision of the Acid Rain Program, an acid rain permit application, an acid rain permit, or a written exemption under 40 CFR Part 72, Sections 72.7, 72.8, or 72.14 shall be construed as: [40 CFR 72.9 (h)]
  - (A) Except as expressly provided in Title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of Title I of the Act relating to applicable National Ambient Air Quality Standards or state implementation plans; [40 CFR 72.9 (h)(1)]
  - (B) Limiting the number of allowances a unit can hold; *provided*, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act; [40 CFR 72.9 (h)(2)]

## **FACILITY PERMIT TO OPERATE AES ALAMITOS, LLC**

### **APPENDIX B: RULE EMISSION LIMITS [40CFR 72 - Acid Rain Provisions 11-24-1997]**

(C) Requiring a change of any kind in any state law regulating electric utility rates and charges, affecting any state law regarding such state regulation, or limiting such state regulation, including any prudence review requirements under such state law; [40 CFR 72.9 (h)(3)]

(D) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or, [40 CFR 72.9 (h)(4)]

(E) Interfering with or impairing any program for competitive bidding for power supply in a state in which such program is established. [40 CFR 72.9 (h)(5)]

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND PERMITTING DIVISION</b>  <b>STATEMENT OF BASIS (SOB) ANALYSIS</b>  <b>MINOR TITLE V REVISION PERMITS TO CONSTRUCT</b>	PAGE 1	PAGES 10
	TV APPL. NO. 618933 (TV/RECLAIM Rev), 618934, 618936	DATE 4/7/20
	PROCESSOR V. Lee	REVIEWER

**Facility Name:** AES ALAMITOS, LLC  
**Facility ID:** 115394  
**NAICS Code:** 221112  
**Equipment Location:** 690 N. Studebaker Rd, Long Beach, CA 90803-2221

**Mailing Address:** 690 N. Studebaker Rd, Long Beach, CA 90803-2221

**South Coast AQMD Contact Person:** Vicky Lee  
**Phone Number:** (909) 396-2284  
**E-Mail Address:** vlee1@aqmd.gov

# **1. Introduction/History, Scope of Permit and Recommendation**

Title V is a national operating permit program for air pollution sources. Facilities subject to Title V must obtain a Title V permit and comply with specific Title V procedures to modify the permit. Title V does not necessarily include any new requirements for reducing emissions. It does, however, include new permitting, noticing, recordkeeping, and reporting requirements. This Statement of Basis is for a Minor Title V Revision.

The South Coast AQMD implements Title V through Regulation XXX – Title V Permits, adopted by the South Coast AQMD Governing Board in order to comply with EPA’s requirement that local air permitting authorities develop a Title V program. Regulation XXX was developed with the participation of the public and affected facilities through a series of public workshops, working group meetings, public hearings and other meetings.

The Title V major source threshold for a particular pollutant depends on the attainment status of the pollutant. For the federal standards, NO<sub>2</sub>, SO<sub>2</sub>, CO, and PM<sub>10</sub> are in attainment, while PM<sub>2.5</sub> is serious non-attainment and ozone is extreme non-attainment. Lead is in partial non-attainment (Los Angeles County only). For the state standards, PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone are non-attainment, while NO<sub>2</sub> and CO are attainment. For the South Coast Air Basin (SOCAB) the threshold levels are as follows:

<b>Pollutant</b>	<b>SOCAB Major Source Thresholds (tpy)</b>
VOC	10
NO <sub>x</sub>	10
SO <sub>x</sub>	100
CO	100
PM-10	100
PM-2.5	70
Single HAP	10
Combination of HAPS	25

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND PERMITTING DIVISION</b>  <b>STATEMENT OF BASIS (SOB) ANALYSIS</b>  <b>MINOR TITLE V REVISION PERMITS TO CONSTRUCT</b>	PAGE 2	PAGES 10
	TV APPL. NO. 618933 (TV/RECLAIM Rev), 618934, 618936	DATE 4/7/20
	PROCESSOR V. Lee	REVIEWER

**\*\*\* The South Coast AQMD has prepared an engineering evaluation (“Evaluation”) for this project. Rather than duplicate virtually the entire 179-page Evaluation into the SOB, this SOB will refer to the Evaluation, which is included as an attachment to the SOB.**

AES Alamitos, LLC (AES) (ID 115394), a wholly owned subsidiary of The AES Corporation (AES), operates the existing Alamitos Generating Station (AGS), which consists of six utility boilers (Units 1 - 6), six Selective Reduction Systems (SCRs), four aqueous ammonia tanks (29 wt. %), and Rule 219 exempt equipment. The facility is Title V and RECLAIM, with the Title V term running from 11/4/14 to 11/3/19. **Update:** Boilers Nos. 1, 2, and 6 were permanently retired as of 12/31/19 to provide emission offsets to offset the generating capacity of the AEC’s new Combined-Cycle Block, consisting of Turbines Nos. CCGT-1 (D165) and No. CCGT-2 (D173). The facility permit was issued on 3/17/20 pursuant to A/N 619108 as an administrative permit revision to permanently remove retired Boilers Nos. 1, 2, and 6 and the associated SCRs from the facility permit. (See p. 25 - 26 of the Evaluation for additional discussion on the AGS.)

On 10/23/15, AES submitted applications for Permits to Construct for the Alamitos Energy Center (AEC), a repowering project. The California State Water Resources Control Board’s *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (OTC Policy) was adopted on 5/4/2010 and became effective on 10/1/2010. The Policy applies to existing power plants that currently have the ability to withdraw cooling water from the State’s coastal and estuarine waters using a single-pass system, also known as once-through cooling (OTC). The existing Utility Boilers at AGS use once-through ocean water cooling. The repowering was to bring the AGS into compliance by the current facility compliance date of December 31, 2020 by eliminating the use of ocean water for once-through cooling at the facility.

The South Coast AQMD issued the Preliminary Determination of Compliance (PDOC) (California Energy Commission (CEC) terminology for engineering evaluation) and proposed revised Title V permit for the AEC project on 6/30/16. The Final Determination of Compliance (FDOC) package, including the Draft Facility Permit for FDOC, was issued on 11/18/16. On 2/13/17, the CEC issued the Presiding Member’s Proposed Decision (PMPD) to approve the AEC project. On 4/18/17, the South Coast AQMD issued the Permits to Construct for the AEC, consisting of two combined-cycle turbines, four simple-cycle turbines, an auxiliary boiler, two SCR/CO catalyst systems for the combined-cycle turbines, four SCR/CO catalyst systems for the simple-cycle turbines, SCR for the auxiliary boiler, aqueous ammonia tank for the combined-cycle turbines, aqueous ammonia tank for the simple-cycle turbines, oil/water separator for the combined-cycle turbines, and oil/water separator for the simple-cycle turbines.

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*South Coast AQMD Applications Submitted*

On 2/11/20, AES submitted applications for the two combined-cycle turbines to increase the NOx emissions limit for non-cold starts set forth in condition C1.3 from 17 lbs to 32 lbs. A/N 618936 was submitted for Combined-Cycle Turbine No. 1 and A/N 618934 was submitted for Combined-Cycle Turbine No. 2. (See pp. 36 – 37 of the Evaluation for additional discussion on the above applications.)

California Energy Commission

The California Energy Commission (CEC) is the lead agency for licensing thermal power plants 50 megawatts and larger under the California Environmental Quality Act (CEQA) and has a certified regulatory program under CEQA. Under its certified program, the CEC is exempt from having to prepare an environmental impact report. Its certified program, however, does require environmental analysis of the project, including an analysis of alternatives and mitigation measures to minimize any significant adverse effect the project may have on the environment.

The CEC's certification process subsumes all requirements of local, regional, state, and federal agencies required for the construction of a new plant. The CEC coordinates its review of the proposed facility with the agencies that will be issuing permits to ensure that its certification incorporates the conditions that are required by these various agencies. As the AEC will be rated at greater than 50 megawatts, it is subject to the CEC's certification process.

**Recommended Action:**

The permit action is for a Minor Title V Permit Revision for the AEC pursuant to Rule 3000(b)(15)(A)(v). The increase in annual NOx emissions for the facility does not result in an emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations. (See pp. 156 - 158 of the Evaluation for the analysis.)

Pursuant to Rule 3006(b), this minor permit revision is exempt from public participation requirements under Rule 3006(b). Pursuant to Rule 3003(j), the proposed permit evaluation package will be submitted to EPA for a 45-day review period. Pursuant to Rule 3003(m), letter providing notice will be provided to the affected states. Following the conclusion of the required review and comment periods for the EPA and affected states, the revised Permits to Construct will be issued for the two combined-cycle turbines (D165, D173).

**Equipment Descriptions**

The equipment descriptions below are reproduced from pp. 2 – 5 of the Evaluation.

- **Application No. 618936**  
Application Submittal Date: 2/11/20

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GAS TURBINE, NO. CCGT-1, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH

GENERATOR, NO. CCGT-1 , 236.645 MW GROSS AT 28 F

HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-1

GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-2

STACK, TURBINE NO. CCGT-1, HEIGHT: 150 FT; DIAMETER: 20 FT

- **Application No. 618934**

Application Submittal Date: 2/11/20

GAS TURBINE, NO. CCGT-2, COMBINED-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, 2275 MMBTU/HR HHV AT 28 F, WITH DRY LOW-NOX COMBUSTOR, GE DLN 2.6, WITH

GENERATOR, NO. CCGT-2 , 236.645 MW GROSS AT 28 F

HEAT EXCHANGER, HEAT RECOVERY STEAM GENERATOR (HRSG), NO. CCGT-2

GENERATOR, STEAM TURBINE GENERATOR (STG), 219.615 MW GROSS AT 28 F, COMMON WITH HRSG NO. CCGT-1

STACK, TURBINE NO. CCGT-2, HEIGHT: 150 FT; DIAMETER: 20 FT

- **Application No. 618933**

Application Submittal Date(s): 2/11/20

MINOR TITLE V REVISION

## 2. **Facility and Process Descriptions**

### Facility Description

The project/facility description is on pp. 30 - 32 of the Evaluation.

### Process Description

The process description is on pp. 38 - 39 of the Evaluation.

## 3. **Construction and Permitting History**

The construction and permitting history of the existing facility, Alamitos Generating Station, is on pp. 25 - 26 of the Evaluation.

The permitting history of the Alamitos Energy Center, currently under construction, is on pp. 26 - 30 of the Evaluation.

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*Permit Revisions since the Issuance of the Most Recent Title V Renewal Permit on November 4, 2014*

The most recent Title V Renewal, A/N 549420, was issued on 11/4/14, and will expire on 11/3/19.

First Permit Revision, A/N 579140, 579142-143, -145, -147, -150, -152, -158, 579160-170 for which the permits were issued on 4/18/17 for the new Alamitos Energy Center. The revision was a “significant permit revision.”

Second Permit Revision, A/N 604014, 613323, and 604013 for which the permits were issued on 7/10/19 for the *Auxiliary Boiler, Auxiliary Boiler SCR, and Title V/RECLAIM Revision*. The revision was a “minor permit revision” because the proposed condition changes did not result in an increase of criteria or toxic air contaminant emissions.

Proposed Third Permit Revision, A/N 604015, 604018, 604020, 608431-608433, 610354-610360, for which the evaluation package was submitted to EPA for review on 2/25/20. The applications proposed to increase the annual operating hours for the combined-cycle turbines and decrease the annual operating hours for the simple-cycle turbines. This proposed permit revision is considered as a “significant permit revision” to their Title V permit and is pending EPA review.

Proposed Title V Renewal, A/N 612392, for which the evaluation package was submitted to EPA for review on 2/25/20. The Title V renewal is pending EPA review.

#### **4. Regulatory Applicability Determination**

Applicable legal requirements for which the proposed equipment is required to comply are identified in the Title V permit (for example, Section D, E, and H of the proposed Title V permit). The South Coast AQMD has evaluated the applicable requirements for the auxiliary boiler and SCR and determined that the equipment complies with all applicable rule and regulations. The applicable federally and non-federally enforceable rules and requirements for the equipment are set forth on pp. 63 – 179 of the Evaluation.

#### **5. Monitoring and Operational Requirements**

Applicable monitoring and operational requirements for which the facility is required to comply are identified in the Title V permit (for example, Section D, F, and J and Appendix B). Applicability determinations (i.e., determinations made by the District with respect to what legal requirements apply to a specific piece of equipment, process, or operation) are set forth in pp. 63 – 179 of the Evaluation.

All periodic monitoring requirements were developed using strict adherence to the following applicable guidance documents: South Coast AQMD Periodic Monitoring Guidelines for Title V Facilities (November 1997); CAPCOA/CARB/EPA Region IX Periodic Monitoring

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Recommendations for Generally Applicable Requirements in SIP (June 1999); and CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in SIP: Combustion Sources (July 2001).

### **Compliance Assurance Monitoring (CAM)**

The compliance assurance monitoring regulatory analysis is set forth on pp. 174 - 175 of the Evaluation.

## **6. Permit Features**

### **Permit Shield**

A permit shield is an optional part of a Title V permit that gives the facility an explicit protection from requirements that do not apply to the facility. A permit shield is a provision in a permit that states that compliance with the conditions of the permit shall be deemed compliance with all identified regulatory requirements. To incorporate a permit shield into the Title V permit involves submission of applications for change of conditions for each of the equipment affected by the permit shield. Permit shields are addressed in Rule 3004 (c). AES has not applied for a permit shield.

### **Streamlining Requirements**

Some emission units may be subject to multiple requirements which are closely related or redundant. The conditions may be streamlined to simplify the permit conditions and compliance. Emission limits, work practice standards, and monitoring, recordkeeping, and reporting requirements may be streamlined. Compliance with a streamlined condition will be deemed compliance with the underlying requirements whether or not the emission unit is actually in compliance with the specific underlying requirement. AES has not applied for any streamlined conditions.

## **7. Emissions And Health Risks**

**Criteria Pollutant Emissions  
Annual Reported Emissions for Reporting Period 2018**

<b>Pollutant ID</b>	<b>Pollutant Description</b>	<b>Annual Emissions, tpy</b>
CO	Carbon Monoxide	519.279
NOX	Nitrogen Oxides	39.717
PM	Particulate Matter	6.617
SOX	Sulfur Oxides	3.708
VOC	Volatile Organic Compounds	7.543

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**Toxic Air Contaminant Emissions (TAC)  
Annual Reported Emissions for Reporting Period 2018**

<b>Pollutant ID</b>	<b>Pollutant Description</b>	<b>Annual Emissions, lb/yr</b>
106990	1,3-Butadiene	0.007
7664417	Ammonia	28510.625
1332214	Asbestos	0.002
71432	Benzene	21.050
50000	Formaldehyde	44.534
91203	Naphthalene	3.710
7440020	Nickel	0.000
1151	PAHs, total, with components not reported	1.236

The emissions calculations for the criteria pollutants, greenhouse gases, and toxic air contaminant emissions are set forth on pp. 41 - 63 of the Evaluation.

The rule analysis for Rule 1401—New Source Review of Toxic Air Contaminants is set forth on pp. 117 - 122 of the Evaluation.

**8. Compliance History Since Last Title V Renewal**

The facility has been subject to both self-reporting requirements and South Coast AQMD inspections.

The facility has been subject to both self-reporting requirements and South Coast AQMD inspections. The facility has received 45 public complaints (44 received from 10/5/19 – 11/7/19 during the uncontrolled first fire phase of the commissioning of the two new combined-cycle turbines), no Notices to Comply (NCs) and four Notices of Violations (NOVs) since the current Title V renewal permit was issued on November 4, 2014. The public complaints consisting of visible emissions (smoke), noise and chemical odor, resulted in two Notices of Violation.

Below is a summary of the Notices to Comply (none) and Notices of Violation. There are currently no outstanding compliance issues with this facility because the uncontrolled first fire of the two combined-cycle turbines has been concluded and the associated opacity issues resolved.

**Notices to Comply Summary**

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NC No.	Issued Date	Violation Date	Summary	Final Action
NONE				

#### Notices of Violation Summary

NOV No.	Issued Date	Violation Date	Summary	Final Action
P67929	10/8/19	10/6/19	Opacity greater than R1 (20%) for greater than 3 minutes in an hour. Opacity greater than R2 (40%) for greater than 3 minutes in an hour. Failure to operate permitted equipment in compliance with all terms specified in Title V permit at all times. Discharge of air contaminants causing detriment, nuisance, or annoyance to a considerable amount of person or to the public.	Variance (see below).
P67928	10/3/19	10/3/19	Opacity greater than R1 (20%) for greater than 3 minutes in an hour. Opacity greater than R2 (40%) for greater than 3 minutes in an hour. Failure to operate permitted equipment in compliance with all terms specified in Title V permit at all times.	In compliance.
P62083	5/19/17	7/4/16	Failure to submit timely electronic report of mass emissions of NOx and status codes for the report date of 7/3/16 on Device #42.	In compliance.
P62058	6/4/15	4/25/14	Submitted inaccurate QCERs in the 1 <sup>st</sup> and 3 <sup>rd</sup> quarters of the 2014 Compliance Year.	In compliance.

- Emergency Variance, Case No. 5278-1

The petition for an emergency variance was heard on 10/10/19. The Order Granting an Emergency Variance stated: "Petitioner is granted an emergency variance from 401(b)(1) and H&S §41701 for Gas Turbine Unit Nos. CCGT-1 and CCGT-2, Device ID Nos. D165 and D173; and Stack Turbine Nos. CCGT-1 and CCGT-2, and is a Title V and RECLAIM Facility Permit to Operate (P/O) [for facility ID] No. 115394 for the period commencing October 10, 2019 for the remaining hours of the 216 non-consecutive hours

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for Gas Turbine Unit #1 and for all 216 non-consecutive hours allowed by the permit for commissioning for Gas Turbine Unit #2 over a period that shall not exceed 30 days.” The order included conditions that limited operations for the purposes of commissioning during the variance period, required visible emissions from the units to be read and recorded by a CARB certified visible emissions evaluator under specified circumstances, required further outreach via emails to neighbors and publication in a local newspaper, required written records of the time that the gas turbines are operated, and required specified notifications to the South Coast AQMD.

On 10/14/19, Stephen O’Kane, Manager Sustainability and Compliance, notified Compliance & Enforcement, then Engineering & Permitting that the uncontrolled step of commissioning has been completed. At AES Alamitos, Turbine 1 only used 83 hours and Turbine 2 only 53 hours, both well under the 216 hours allowed for uncontrolled commissioning. Condition E193.8 states: “Total commissioning hours shall not exceed 996 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 996 hours, commissioning hours without control shall not exceed 216 hours.”

- Regular Variance, Case No. 5278-2  
On 2/5/20, AES filed a Petition for a Regular Variance seeking a variance to the 17 lb NOx non-cold startup emission limits in Condition C1.3 and is proposing a revised limit of 32 lbs NOx per non-cold startup event for the two combined-cycle turbines until the modification applications, A/Ns 618933, 618934, 618936, have been evaluated and revised Permits to Construct are issued. The hearing date was scheduled for 3/18/20 but was postponed (continued) to April 28 due to the COVID-19 related restrictions on public meetings at the Hearing Board.

## 9. Compliance Certification

The facility filed a *Form 500-ACC Title V – Report for Annual Compliance Certification* for all years following the previous Title V renewal. The Compliance Certification covering the period from 1/1/18 to 12/31/18 is summarized below. The facility has been in compliance with all of the terms in the Title V permit, except non-compliance for the following.

Device No.	Applicable Requirement	Federally Enforceable Requirement?	Non-Compliant Operations	How Compliance Was Achieved	Date Achieved Compliance	Remedial Measures
Utility Boiler No. 6 (D3)	Condition D12.5 provides that the operator shall install and maintain a temperature gauge to	Yes	Temperature indicators were reading inaccurate due to moisture impacting the multi variable control units	See “Remedial Measures.”	7/13/18	The temperature permissive was reset in the Rosemont to keep the SCR from tripping. Once the unit came offline

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Device No.	Applicable Requirement	Federally Enforceable Requirement?	Non-Compliant Operations	How Compliance Was Achieved	Date Achieved Compliance	Remedial Measures
	accurately indicate the temperature of the boiler exhaust at the outlet of the SCR reactor.		(MVCU) which caused the SCR blower to trip.			space heaters were placed in MVCU to help control the moisture.
Utility Boiler No. 1 (D39)	Rule 2012	Yes	Unit 1 CEMS NOx analyzer stopped operating properly which resulted in a high NOx alarm.	See "Remedial Measures."	8/3/18	The analyzer was found to be not working properly due to a leaking sample line that needed to be tightened.
Utility Boiler No. 6 (D3)	Rule 2012	Yes	Unit 6 CEMS sample pump and chiller went bad and needed to be replaced. Both were discovered as a result of a failed daily calibration. The unit was offline at the time of discovery.	See "Remedial Measures."	9/18/18	The Unit 6 CEMS sample pump and chiller were replaced. A bias and response test were completed after the repairs and CEMS data was reconciled for the time period while the repairs were made.
Utility Boiler No. 2 (D42)	Rule 2012	Yes	U2 CEMS NOx analyzer sample pump failed which resulted in a high NOx alarm.	See "Remedial Measures."	2/20/18	The U2 CEMS NOx analyzer sample pump was replaced with a new one.

#### **10. Conditions To Be Imposed**

The conditions are set forth on pp. 6 - 24 of the Evaluation.