

**Minor Modification to a Covered Source Permit**  
**Review Summary**

**Application No.:** 0087-06

**Permit No.:** 0087-02-C

**Applicant:** Applied Energy Services (AES) Hawaii, Inc.

**Facility:** 203 MW Coal-Fired Cogeneration Plant  
Located at 91-086 Kaomi Loop, Campbell Industrial Park,  
Kapolei, Oahu

**Mailing Address:** AES Hawaii, Inc.  
91-086 Kaomi Loop  
Kapolei, Hawaii 96707

**Responsible Official:** Jeff Walsh  
President and General Manager  
Ph: 682-5330

**Point of Contact:** Jason Tremblay  
Environmental Coordinator  
Ph. (808) 682-3412

**Application Date:** March 12, 2013

**Proposed Project:**

SICC: 4911 (Electric Services)

AES Hawaii, Inc. is proposing a minor modification to Covered Source Permit (CSP) No. 0087-02-C with the removal of the restriction on fuel sulfur content in coal. The CSP currently limits firing coal with a maximum sulfur content not to exceed 1.5% by weight. In addition, the CSP permit limits sulfur dioxide (SO<sub>2</sub>) emissions to 645 lb/hr, 1.2 lb/MMBtu, and 48 ppmvd @ 15% O<sub>2</sub>. These emission limits will remain unchanged in the permit. Compliance with the emissions limitations is determined by utilizing a Continuous Emission Monitoring System (CEMs) to measure SO<sub>2</sub> concentration and to determine the mass emission rate.

The primary fuel for the boilers is coal purchased from multinational suppliers, and the current restriction on fuel sulfur content limits market options. The high market demand for lower sulfur coal will potentially result in substantially higher fuel cost. The demand is likely to lead to constrained supply increasing cost and jeopardizing reliable generation. Although, specific alternate fuel supply has not been identified, removal of the sulfur content restriction will provide future market flexibility. The existing control and monitoring systems will ensure that fuel flexibility will not impact emission levels as described below.

AES currently achieves 75% to 90% reduction in SO<sub>2</sub> emissions by injecting pulverized limestone into the combustion zone. The SO<sub>2</sub> is absorbed by the limestone and forms gypsum. The heavier particles drop to the hopper while the lighter particles are carried by the flue gas

and captured by the boiler baghouses. AES has evaluated the design and operational history of the emissions control system, and believes that the constraint on sulfur concentration is not necessary to maintain emissions within previously represented allowable emission limits. Rather, increases in sulfur content in the coal can be accommodated and managed within the existing system without any modification.

The historical CEMs data supports the conclusion that the existing control systems are sufficient to limit emissions of SO<sub>2</sub> below permit limits without limits on fuel sulfur content. The system design is capable of controlling higher sulfur loads without an increase in SO<sub>2</sub> emissions.

No increases are proposed to current permit allowable emission rates. The CEMs system will continue to provide the basis for compliance demonstrations with the existing PSD permit limits, and records will be maintained to demonstrate that changes in actual emissions after removal of the restriction on coal sulfur content are maintained below PSD major modification thresholds.

This modification is considered a minor modification since it:

- (1) Does not increase the emissions of any air pollutant above the permitted emission limits;
- (2) Does not result in or increase the emissions of any air pollutant not limited by permit to levels equal to or above:
  - (A) 500 pounds per year of a hazardous air pollutant;
  - (B) twenty-five (25) percent of significant amounts of emission as defined in section 11-60.1-1, paragraph (1) in the definition of "significant";
  - (C) five (5) tons per year of carbon monoxide; or
  - (D) two (2) tons per year of each regulated air pollutant other than carbon monoxide;
- (3) Does not violate any applicable requirement;
- (4) Does not involve significant changes to existing monitoring requirements or any relaxation or significant change to existing reporting or recordkeeping requirements in the permit. Any change to the existing monitoring, reporting, or recordkeeping requirements that reduces the enforceability of the permit is considered a significant change;
- (5) Does not require or change a case-by-case determination of an emission limitation or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
- (6) Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement, and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
  - (A) A federally enforceable emissions cap assumed to avoid classification as a modification pursuant to any provision of Title I of the Act or subchapter 7; and
  - (B) An alternative emissions limit approved pursuant to regulations promulgated pursuant to Section 112(i)(5) of the Act or subchapter 9; and
- (7) Is not a modification pursuant to any provision of Title I of the Act.

An application fee of \$200.00 for a minor modification application was submitted and processed.

**Equipment Description:**

CFB Boilers A and B - Two (2) Alstrom Pyropower Corp. circulating fluidized bed (CFB) steam boilers with a total maximum design heat input of 2,150 MMBtu/hr.

**Air Pollution Controls:**

Air Pollution Control Equipment for CFB Boilers:

1. Limestone injection system;
2. Selective non-catalytic reduction (SNCR) with ammonia/urea injection (Thermal DeNO<sub>x</sub>);  
and
3. Two (2) Asea Brown Boveri (ABB) baghouses (Flakt Model 2).

**Applicable Requirements:**

Hawaii Administrative Rules (HAR)

Title 11 Chapter 11-59, Ambient Air Quality Standards

Title 11 Chapter 11-60.1, Air Pollution Control

Subchapter 1, General Requirements

Subchapter 2, General Prohibitions

11-60.1-5, Permit Conditions

11-60.1-11, Sampling, Testing, and Reporting Methods

11-60.1-16, Prompt Reporting of Deviations

11-60.1-31, Applicability

11-60.1-32, Visible Emissions

11-60.1-33, Fugitive Dust

11-60.1-38, Sulfur Oxides from Fuel Combustion

Subchapter 5, Covered Sources

Subchapter 6, Fees for Covered Sources

11-60.1-111, Definitions

11-60.1-112, General Fee Provisions for Covered Sources

11-60.1-113, Application Fees for Covered Sources

11-60.1-114, Annual Fees for Covered Sources

Subchapter 7, Prevention of Significant Deterioration

Subchapter 8, Standards of Performance for Stationary Sources

Subchapter 9, Hazardous Air Pollutants

Subchapter 10, Field Citations

40 Code of Federal Regulations (CFR) Part 60 - New Source Performance Standard (NSPS)

Subpart A - General Provisions

Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for  
Which Construction is Commenced After September 18, 1978.

Subpart Kb -Standards of Performance for Volatile Organic Liquid Storage Vessels.

Subpart Y -Standards of Performance for Coal Preparation Plants.

Subpart OOO -Standards of Performance for Nonmetallic Mineral Processing Plants

40 CFR Part 68 - Accidental Release Prevention Requirements

40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT)  
Subpart A – General Provisions  
Subpart UUUUU – National Emission Standards for Hazardous Air Pollutants from Coal and Oil Fired Electric Utility Steam Generating Units

**Non-Applicable Requirements:**

40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT)  
Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers

This cooling tower is not subject to NESHAPS, Subpart Q, because it did not use chromium-based water chemicals at the time this NESHAPS was promulgated, nor does AES use this chemical at the present time.

**Prevention of Significant Deterioration (PSD):**

A PSD major modification is defined as a project at an existing major stationary source that will result in a significant emissions increase and a significant net emissions increase of any pollutant subject to regulations approved pursuant to the Clean Air Act as defined in 40 CFR §52.21. Since there are no significant emission increases for the proposed modification, PSD is not triggered.

**Best Available Control Technology (BACT):**

As defined in HAR §11-60.1-1, a Best Available Control Technology (BACT) review is required for new or modified sources that trigger significant emission limits. No new or modified sources that trigger significant emission limits are proposed with this modification.

**Compliance Assurance Monitoring (CAM):**

No change from Covered Source Permit No. 0087-02-C.

CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential precontrol emissions that are greater than the major source level [ $>100$  tpy]; and (5) not otherwise be exempt from CAM. CAM is applicable to the boilers for SO<sub>2</sub>, NO<sub>2</sub>, and PM since items 1 through 5 above apply. AES has met CAM requirements with the use of CEMS for SO<sub>2</sub>, NO<sub>x</sub>, and opacity. Monitoring opacity is sufficient since opacity is a direct correlation to PM emissions.

**Consolidated Emissions Reporting Rule (CERR)/In-house Reporting Applicability:**

No change from Covered Source Permit No. 0087-02-C.

## PROPOSED

40 CFR Part 51, Subpart A – Emission Inventory Reporting Requirements, determines CER based on the emissions of criteria air pollutants from Type A or Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the CER triggering levels as shown in the table below.

Pollutant	Type A CERR Trigger Level <sup>1,3</sup> (tpy)	Type B CERR Trigger Level <sup>1</sup> (tpy)	Pollutant	In-house Total Facility Trigger Level <sup>2</sup> (tpy)	Total Facility Emissions (tpy)
NO <sub>x</sub>	≥ 2500	≥ 100	NO <sub>x</sub>	≥ 25	1040.66
SO <sub>x</sub>	≥ 2500	≥ 100	SO <sub>x</sub>	≥ 25	2841.53
CO	≥ 2500	≥ 1000	CO	≥ 250	1790.75
PM			PM	≥ 25	350.62
PM <sub>10</sub>	≥ 250	≥ 100	PM <sub>10</sub>	≥ 25	350.62
PM <sub>2.5</sub>	≥ 250	≥ 100	PM <sub>2.5</sub>		350.62
VOC	≥ 250	≥ 100	VOC	≥ 25	141.13
Pb	≥ 5	≥ 5	Pb	≥ 5	25.0
			HAPS	≥ 5	26.90

<sup>1</sup> Based on actual emissions

<sup>2</sup> Based on potential emissions

<sup>3</sup> Type A sources are a subset of the Type B sources and are the larger emitting source by pollutant

This facility emits above the CER triggering levels. Therefore, CER requirements are applicable.

The Clean Air Branch also requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels. Annual emissions reporting is required for this facility for in-house recordkeeping purposes because it is a covered source and facility-wide emissions of NO<sub>x</sub>, SO<sub>x</sub>, CO, PM/PM<sub>10</sub>, VOC, Pb and HAPS exceed in-house triggering levels.

### **Insignificant Activities:**

No change from Covered Source Permit No. 0087-02-C.

### **Alternate Operating Scenarios:**

No change from Covered Source Permit No. 0087-02-C.

### **Synthetic Minor Source:**

No change from Covered Source Permit No. 0087-02-C.

### **Project Emissions:**

No change from Covered Source Permit No. 0087-02-C.

### **Greenhouse Gas (GHG) Emissions:**

No change from Covered Source Permit No. 0087-02-C.

**Ambient Air Quality Impact Assessment (AAQIA):**

An ambient air quality impact assessment is not required for minor modifications since there are no changes in emissions.

**Significant Permit Conditions:**

Proposed additions are underlined and proposed deletions are struck through.

Attachment IIA, Special Condition No. C.1 will be revised as follows:

The CFB boilers (boilers) shall be fired primarily on coal ~~with a maximum sulfur content not to exceed 1.5 percent by weight.~~ In the event that the emissions of sulfur dioxide (SO<sub>2</sub>) exceed 645.0 lb/hr, 1.2 lb/MMBtu, or 48 ppmvd @ 15% O<sub>2</sub> while firing coal with a sulfur content in excess of 1.5 percent by weight, the permittee shall immediately take steps to limit the feed rate of coal until such time as the process returns to compliance with the SO<sub>2</sub> permit limits in Attachment IIA, Special Condition No. C.10. During hot or cold startups, the boilers may be fired on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5 percent by weight.

**Conclusion and Recommendations:**

A minor modification to Covered Source Permit (CSP) No. 0087-02-C for AES Hawaii, Inc. is recommended based on the information provided in the air permit application, the significant permit conditions above, and subject to a 45-day EPA review period. The fuel monitoring and recordkeeping of the sulfur content of the coal per Attachment IIA, Special Condition No. D.1 remains unchanged in the permit.

Reviewer: Darin Lum  
Date: 4/2013