Covered Source Permit Review Summary (Renewal)

Application File No.: 0087-07

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 Trembley
Environmental Coordinator
Ph. 682-3412

Application Date: Received on July 19, 2013 and additional information dated August 21, 2013 and December 9, 2013.

Proposed Project:

SICC: 4911 (Electric Services)

General Information
The AES Hawaii, Inc. (AES) facility is a 203 MW (maximum), 180 MW (nominal) coal-fired cogeneration plant. This facility is located at Campbell Industrial Park on the southwest corner of Oahu, approximately 3,000 feet north of Barbers Point. AES was the first major coal-fired electric power plant constructed in Hawaii 1990. It is considered a cogeneration facility because it sells steam to Chevron U.S.A. refinery and electrical power to the Hawaiian Electric Company (HECO), and the remainder used at the facility. The Standard Industrial Classification Code (SICC) is 4911 since the facility generates electrical power for sale. The facility is a major covered source since annual emissions for PM, SO_2, NO_x, CO, and VOC (criteria pollutants) each exceed 100 tpy and lead (Pb as HAPs) exceed 10 tpy. The facility is subject to Prevention of Significant Deterioration (PSD) requirements and is currently permitted by PSD No. HI 88-02 and CSP No. 0087-02-C.

Power Plant
The power plant includes two (2) Alhstrom Pyropower Corp. circulating fluidized bed steam boilers with a total maximum design heat input of 2,150 MMBtu/hr. Each boiler includes a combustion zone, hot zone, and convective pass. Fuel is combusted in the combustion zone. The combustion products (gases and particulate matter) then move through the hot cyclone where the heavy particulate matter (partially burned fuel and ash) is separated from the hot

exhaust gas. The hot exhaust gas, which includes fine particulate matter, moves into the convective pass for additional heat transfer to produce superheated steam for the turbine generator. The turbine generator is a single shaft, 3,600 rpm unit which generates electricity for transmission through a 138 kV power line from the plant to HECO's substation. AES is a fully dispatchable plant that operates 24 hr/day except during periodic maintenance shutdowns. Dispatchable means that it follows the load demand requirement which ranges from 35% to 100%.

Fuels for Power Plant

The power plant primarily fires coal during normal operations. The coal is purchased under a multi-year contract with an Indonesian supplier. The heating value of coal may vary between 9,000 and 12,000 Btu/lb and the maximum sulfur content is 1.5% by weight.

AES may use alternate fuels such as wood, tire derived fuel (TDF), specification spec used oil, and activated carbon as supplemental fuel to the coal. The quantity of these fuels is very small in comparison to coal.

1. A maximum of 20 ton/hr and 175,200 tons per any rolling 12 month period of wood may be fed into the boilers.
2. A maximum of 7.5 tph of TDF may be fed into the boilers. The TDF is received pre-processed from a supplier in sizes ½" and smaller. A blending system is used to combine the TDF with the coal.
3. A maximum of 3,000,000 gal of spec used oil may be fed into the boilers. Spec used oil is received from approved suppliers and stored in a 17,631 gal tank.
4. Spent activated carbon is considered similar to coal and therefore has no limit. It is usually supplied by the Board of Water Supply, Hawaii Independent Energy, LLC. or Kalaeloa Partners.

Coal Processing

Coal storage is divided between active and inactive storage piles. Coal is normally received on-site via a fully enclosed, overland conveyor from the deep draft harbor. The maximum design capacity of the coal preparation equipment is 275 tph, but the normal coal feed rate is 107.5 tph to the boilers.

Limestone Processing

Limestone is delivered on-site via trucks and stored as active storage piles. The equipment includes front-end loaders, storage hoppers, conveyors, pneumatic lines, and two (2) 4.75 MMBtu/hr limestone pulverizer/dryers fired on fuel oil. The maximum design capacity is 40 tph of limestone.

Ash Handling

AES generates fly ash, bed ash, and conditioned ash as a combustion byproduct. The equipment includes front-end loaders, scarifiers, surge hoppers, conveyors, pneumatic lines, silos, and ash mixer. The ash is then transported off-site for commercial uses via trucks. The ash handling system is designed to process 186,800 tons of dry ash per year. Normal operations yield 80,000 tons per year.

Cooling Tower Operation

A wet cooling tower is used to dissipate heat loads. The circulating water rate is 104,000 gal/min, and the potential operating hours are 24 hours per day year-round (8,760 hours per

year). The applicant is requesting that the total dissolved solids (TDS) in the cooling tower circulating water be raised from 44,000 mg/l to 52,000 mg/l and the TDS concentration limit be clarified to be based on a calendar year annual average in Attachment IID, Special Condition No. B.4.a.

An application fee of $3,000.00 for the renewal of a PSD covered source was submitted and processed.

Equipment Description:

1. Two (2) boilers A and B manufactured by Alhstrom Pyropower Corporation.

    a. Total maximum design heat input of 2,150 MMBtu/hr fired on coal, wood, TDF, fuel oil, and spent activated carbon.
    b. Air pollution control devices for the boiler are low-temperature staged combustion, selective non-catalytic reduction (SNCR) with ammonia/urea injection (Thermal DeNO$_x$), limestone injection, and two (2) baghouses (ABB Flakt Model 2). The combined emissions flow through one stack.

    c. 25,000 gal pressurized anhydrous ammonia storage tank.

2. Coal processing

    a. Overland coal conveyor from the deep draft harbor to the stockpiles.
    b. Two (2) coal lowering wells.
    c. Four (4) coal conveyors.
    d. Coal reclaim hopper.
    e. 275 tph coal crusher
    f. Four (4) coal storage silos.
    g. One (1) Mikro-Pulsaire baghouse for the coal crusher (model no. 64S-8-40 “C”).
    h. One (1) Mikro-Pulsaire baghouse for the coal storage silos and coal conveyor 4 (model no. 100S-8-20 “C”).

3. Limestone processing

    One (1) Limestone storage hopper with Mikro-Pulsaire baghouse (model no. 100S-8-20 “C”) with two (2) complete Micron Powder Systems Limestone Processing Systems each with a maximum feed rate of 22 tph and each consisting of the following equipment:

    a. Limestone feeder.
    b. 4.75 MMBtu/hr limestone dryer (1A and 1B).
    c. Mikro pulverizer (model no. 300 ACM).
    d Mikro-Pulsaire baghouse (model no. 420S-10-50 “C”).
    e. Conveyors.

4. One (1) GEA Integrated Cooling Technologies, Inc. five-cell induced draft cooling tower (model no. 545438-5l-32FCF) - 104,000 gal/min, maximum drift rate 0.002%.

5. Ash handling
   a. Fly Ash Reinjection Surge Hopper
   b. Bed Ash Storage Hopper
   c. One (1) Fly Ash Silo
   d. One (1) Bed Ash Silo
   e. Conditioned Ash Mixer

6. One (1) 60,000 gal fuel oil no. 2 above ground fixed roof storage tank - 18 ft high, 24 ft diameter, cone roof, with white shell (230.7 m^3).

Air Pollution Controls:

CFB Boilers

1. **SNCR with Ammonia Injection (70% NO_x reduction)**
   NO_x emissions are further controlled with SNCR using ammonia injection, or an alternative reducing agent like urea, at the inlet to the hot cyclone. This process breaks down the NO_x into water and atmospheric nitrogen. The SNCR system, Thermal DeNO_x designed and manufactured by Alhstrom Pyropower, is capable of meeting the permitted NO_x emission limits. The optimum combustion temperatures for the efficient use of ammonia injection are 1,400 to 1,900 degrees Fahrenheit. Ammonia injection is typically not used when the temperatures are below 1,400 degrees.

2. **Limestone Injection (75 to 90% SO_2 reduction)**
   SO_2 emissions are controlled with the injection of pulverized limestone into the combustion zone. The SO_2 is absorbed by the limestone and forms gypsum. The heavier particles fall down to a hopper while the lighter particles are carried by the flue gas and then captured by the baghouse. Pursuant to PSD HI 88-02 review, 90% reduction can be met when high sulfur fuel is used.

3. **Good Combustion**
   Proper boiler operation and good combustion practices will help control PM, PM_{10}, CO, and VOC emissions. Also, low temperature-staged combustion design of the boilers reduces NO_x emissions. SO_2 is also controlled by using coal with a maximum sulfur content of 1.5% by weight.

Baghouses (99.99% PM/PM_{10} reduction)
PM/PM_{10} and opacity are controlled by the use of the baghouses shown in the table below:

Emissions Unit	Baghouse (No./Manufacturer/Model)	Operating Pressure
Boilers	2/Asea Brown Boveri/ Flakt Model 2	1-9" H_2O
Limestone Driers/Crushers	2/Mikro-Pulsaire/420S-10-50 “C”	1-7" H_2O
Limestone Feeders *	4/AEROPULSE/SB-9-4-H-N	1-7" H_2O
Limestone Storage Hoppers *	1/Mikro-Pulsaire/100-S-8-20 “C”	1-7" H_2O
Coal Crusher	1/Mikro-Pulsaire/64S-8-40 “C”	1-7" H_2O
Coal Storage Silos and Coal Conveyor 4*	1/Mikro-Pulsaire/100S-8-20 “C”	1-7" H_2O
Fly Ash Silo *	1/Mikro-Pulsaire/64S-8-20 TRH “B”	1-7" H_2O
Fly Ash Reinjection *	1/Mikro-Pulsaire/25S-8-30 “B”	1-7" H_2O
Bed Ash Silo *	1/Mikro-Pulsaire/64S-8-20 TRH “B”	1-7" H_2O
Bed Ash Hopper *	1/Mikro-Pulsaire/25S-8-30 “B”	1-7" H_2O
Ash Mixer *	1/Dalamatic Unimaster/DLMV20F	1-7" H_2O

* Baghouses that are insignificant since estimated emissions are small.

Fugitive Dust Suppression

Fugitive dust is controlled using the methods shown in the table below throughout the facility:

Emissions Unit	Control	Expected Efficiency
Coal Processing:		
Conveyors	covers	70%
Lowering wells	partial enclosures	75%
Active storage piles and mobile equipment	water	50%
Limestone Processing:		
Conveyors	covers	70%
Active storage piles and mobile equipment	water	50%
Ash Handling:		
Fly ash silo	mechanical pre-separator/telescopic chute	97%
Bed ash silo	mechanical pre-separator/telescopic chute	97%
Aggregate ash mixer	partial enclosure	85%
Handling of aggregate ash	water	50-90%

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 Review
  - Subchapter 8, Standards of Performance for Stationary Sources
  - Subchapter 9, Hazardous Air Pollutant Sources
  - 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 63 - National Emission Standard for Hazardous Air Pollutants for Source Categories (NESHAPS)
- Subpart A – General Provisions
- Subpart UUUUU – National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units

40 CFR Part 68 - Accidental Release Prevention Requirements

Non-Applicable Requirements:

40 CFR Part 63 - National Emission Standard for Hazardous Air Pollutants for Source Categories (NESHAPS)
- 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.

40 CFR 52.21 - Prevention of Significant Deterioration of Air Quality (PSD) is applicable to the cogeneration facility according to the previous terms and conditions that were a part of PSD No. HI 88-02. The AES Hawaii cogeneration facility is classified as a *major stationary source,* however, the proposed change to the cooling tower circulating water TDS concentration is not classified as a *major modification* since it does not result in a significant net emissions increase, as defined in HAR §11-60.1-131. Therefore, a PSD review is not applicable.

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is applicable only to new covered sources or significant modifications to covered sources that have the potential to emit or increase emissions above significant levels as defined in HAR §11-60.1-1. The project emissions for the change in the TDS concentration in the cooling tower circulating water are below the significant levels for PM/PM_{10}. Therefore, a BACT analysis is not applicable as shown in the table below.

Pollutant	Proposed Potential Emissions (tpy)	Existing Potential Emissions (tpy)	Net Emissions Change (tpy)	Significant Level (tpy)	Significant?
NO_x	0	0	0	40	no
SO_x	0	0	0	40	no
CO	0	0	0	100	no
TSP	74.0 [1]	62.6 [2]	11.4	25	no
PM_{10}	3.7 [3]	3.1 [3]	0.6	15	no
VOC	0	0	0	40	no
Lead	0	0	0	0.6	no

[1] E_h = 23.6 E6 liters/hr (water circulation rate) x 2 E-5 (drift rate) x 52,000 mg/liter (TDS) x 2.2 E-6 lb/mg x 0.313 (atmospheric dispersion factor) = 16.9 lb/hr
E_a = 16.9 lb/hr x 8760 hr/yr ÷ 2000 lb/ton = 74.0 tpy

[2] E_h = 23.6 E6 liters/hr (water circulation rate) x 2 E-5 (drift rate) x 44,000 mg/liter (TDS) x 2.2 E-6 lb/mg x 0.313 (atmospheric dispersion factor) = 14.3 lb/hr
E_a = 14.3 lb/hr x 8760 hr/yr ÷ 2000 lb/ton = 62.6 tpy

[3] TSP/PM_{10} = 20

[4] 31.3% atmospheric dispersion factor from EPA document: Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift - Volume 1. Technical Report, EPA-600/7-79-251a, November 1979

Compliance Assurance Monitoring (CAM):

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_2, NO_2, and PM since items 1 through 5 above apply. AES has met CAM requirements with the use of CEMS for SO_2, NO_x, and opacity. Monitoring opacity is sufficient since opacity is a direct correlation to PM emissions.

Air Emissions Reporting Requirements (AERR):

40 CFR Part 51, Subpart A – Air Emissions Reporting Requirements, is 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 AERR triggering levels as shown in the table below.

Pollutant	Type A AERR Trigger Level [1] (tpy)	Type B AERR Trigger Level [1] (tpy)	Pollutant	In-house Total Facility Trigger Level [1] (tpy)	Total Facility Emissions (tpy)
NO_x	≥ 2500	≥ 100	NO_x	≥ 25	1040.66
SO_x	≥ 2500	≥ 100	SO_x	≥ 25	2841.53
CO	≥ 2500	≥ 100	CO	≥ 250	1790.75
PM			PM	≥ 25	350.62
PM_{10}	≥ 250	≥ 100	PM_{10}	≥ 25	350.62
$PM_{2.5}$	≥ 250	≥ 100	$PM_{2.5}$		350.62
VOC	≥ 250	≥ 100	VOC	≥ 25	141.13
Pb	≥ 5	≥ 5	Pb	≥ 5	25.00
			HAPS	≥ 5	26.90

[1] Based on potential emissions

This facility emits above the AERR triggering levels. Therefore, AERR 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 or is a covered source. Annual emissions reporting is required for this facility for in-house recordkeeping purposes because it is a covered source.

Insignificant Activities:

The following equipment are insignificant sources:

1. Three (3) 300 gal above ground storage tanks, insignificant per HAR §11-60.1-82(f)(1);
2. Emergency generator and emergency boiler feedwater pump, insignificant per HAR §11-60.1-82(f)(5);
3. Fuel burning equipment with a total heat input of less than 1 million Btu/hr, insignificant per HAR §11-60.1-82(f)(2);
4 Hand held equipment for various purposes, insignificant per HAR §11-60.1-82(g)(2);
5. Laboratory equipment used for chemical and physical analysis, insignificant per HAR §11-60.1-82(g)(3);
6. Mobile generators, air compressors, welders, and pressure washer, insignificant per HAR §11-60.1-82(d)(4);
7. Fire fighting system, insignificant per HAR §11-60.1-82(g)(6);
8. One (1) 17,631 gallon spec used oil tank, insignificant per HAR §11-60.1-82(f)(1);
9. One (1) 25,000 gallon pressurized anhydrous ammonia storage tank, insignificant per HAR §11-60.1-82(f)(1);
10. Four (4) limestone feeders, each is equipped with a baghouse, insignificant per HAR §11-60.1-82(f)(7);
11. One (1) pulverized limestone storage hopper services with a baghouse, insignificant per HAR §11-60.1-82(f)(7);

12. Fabric filter/baghouses associated with solid fuel conveyance, insignificant per HAR §11-60.1-82(f)(7); and
13. Biomass handling operations, insignificant per HAR §11-60.1-82(f)(7).

Alternate Operating Scenarios:

1. Haul trucks may be used to transport coal to the facility in lieu of the covered overland conveyor. Fugitive emissions should be similar for both scenarios since the added paved road will be offset with the subtraction of the overland conveyor, lowering wells, and conveyor 1.

2. The permittee may stockpile a maximum of 10,000 tons of conditioned ash at any given time in the facility's workyard in the event the ash silos reach their maximum capacity.

Synthetic Minor Source:

A synthetic minor source is a source that is potentially major (as defined in HAR §11-60.1-1), but is made nonmajor through federally enforceable permit conditions. This facility is not a synthetic minor source because it is a major source (potential to emit ≥100 tpy).

Project Emissions:

The primary emissions from the boiler consist of particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOC). Lesser amounts of hazardous air pollutants (HAPs) are also emitted from the boiler. PM is also generated from the coal processing, limestone processing, ash handling, and cooling tower.

The potential emissions from the coal combustion in the boilers were derived from source performance test data and continuous emissions monitoring systems (CEMS). All other potential emissions for fuel oil combustion in the boilers and limestone dryers, coal and limestone processing, ash handling, and cooling tower were based on AP-42 emission factors. The coal and ash emissions include metal HAPs that are part of the coal and ash dust. All emissions include air pollutant controls as mentioned in the **Air Pollution Controls** section. The calculations were performed during the PSD HI 88-02 review and addition of the limestone dryers in 1990. There have been no changes in potential emissions except for the change in the cooling tower emissions (see BACT section).

The following table contains the maximum permitted emission rates for the boilers' stack as referenced from PSD HI 88-02 and NSPS Da.

Compound	Maximum Emission Limits [1]			
	lb/hr	lb/mmBtu	ppmvd @ 15%O_2	gr/dscf @ 12% CO_2, dry
SO_2	645.0	1.2	48	--
NO_X baseload [2]	236.5	0.5	25	--
NO_X low load [2,3]	236.5	0.5	59	--
CO	408.4	--	70	--
VOC [4]	32.2	--	3.5	--
Lead (Pb)	5.7	--	--	1.2E-3
PM/PM_{10} [5]	32.2	0.03	--	7.0E-3
Fluorides	0.20	9.3E-5	--	--
Mercury	0.17	8.1E-5 (prior to 4/16/2015) 1.2E-6 (on and after 4/16/2015)	--	--
Beryllium	0.067	3.1E-5	--	--
Sulfuric Acid Mist	4.10	1.9E-3	--	--
Hydrogen Chloride (HCl)	4.30	0.002		

Notes:
1. 3-hour average with standard conditions assumed to be 68^0F and 29.92 inches Hg. Stack concentrations assumed to be 5% H_2O, 6.5% O_2 and 12% CO_2. Stack temperature and pressure at outlet is 265^0F and 29.92 inches Hg respectively.
2. Molecular weight of NO_x taken to be that of NO_2 (46).
3. Low load is an individual boiler heat input of less than 450 mmBtu/hr.
4. Molecular weight of VOC taken to be that of propane (44).
5. PM_{10} emission rate assumed to be 100% of the total particulate matter emission rate.

The following table contains the facility-wide maximum potential annual emissions based on operating 8,760 hr/yr with air pollution controls:

Pollutant	Steam Boilers [1] (tpy)	Coal Processing (tpy)	Limestone Processing (tpy)	Ash Handling (tpy)	Cooling Tower (tpy)	Storage Tanks (tpy)	Total (tpy)
SO_x	2830		10.70				2841.53
NO_x	1038		2.97				1040.66
PM	141	5.39	1.80	1.7	74		223.89
CO	1790		0.74				1790.75
VOC	141		0.03			1.84 E-02	141.13
Mercury	0.745 [2]						0.745
Lead	25.0	1.08 E-05	5.48 E-06	9.62 E-05			25.00
Arsenic	2.07 E-06	1.51 E-05	6.24 E-06	1.47 E-04			0.0002
Beryllium	0.293	5.40 E-07	8.04 E-07	2.72 E-05			0.2935
Cadmium	9.6 E-07	1.08 E-07	8.58 E-07	1.24 E-05			0.000014
Chromium	1.98 E-06	3.24 E-05	1.14 E-05	2.57 E-04			0.0003
Manganese	1.51 E-04	3.78 E-05	1.06 E-04				0.0003
Nickel	3.11 E-06	4.32 E-05	1.32 E-05	6.98 E-04			0.0008
Selenium	4.8 E-06	1.62 E-06	3.84 E-06	2.17 E-05			0.00003
Benzene	3.96		3.3 E-05				3.96
Ethylbenzene	2.92 E-02		9.8 E-06				0.0292
Formaldehyde	4.14		5.1 E-03				4.145
Naphthalene	9.13 E-02		1.7 E-04				0.0915
Toluene	8.66 E-01		9.6 E-04				0.867
Xylenes	2.35 E-02		1.7 E-05				0.0235
Fluorides	0.876						0.87600
Chlorine					0.00456		0.00456
Sulfuric Acid Mist	18.0						18.0
Hydrogen Chloride (HCl)	18.83						18.83
Acetaldehyde	7.82E-01						7.82E-01
Acetophenone	3.01E-06						3.01E-06
Acrolein	3.77E+00						3.77E+00
bis(2-Ethylhexyl)phthalate	4.43E-05						4.43E-05
Bromomethane	1.41E-02						1.41E-02
Carbon tetrachloride	4.24E-02						4.24E-02
Chlorobenzene	3.11E-02						3.11E-02
Chloroform	2.64E-02						2.64E-02
Chloromethane	2.17E-02						2.17E-02
1,2-Dichloroethane	2.73E-02						2.73E-02
Dichloromethane	2.73E-01						2.73E-01
1,2-Dichloropropane	3.11E-02						3.11E-02
2,4-Dinitrophenol	1.70E-04						1.70E-04
4-Nitrophenol	1.04E-04						1.04E-04
Pentachlorophenol	4.80E-05						4.80E-05
Phenol	4.80E-02						4.80E-02
Propionaldehyde	5.74E-02						5.74E-02
Styrene	1.79E+00						1.79E+00
Tetrachlorethane	3.58E-02						3.58E-02
Trichloroethylene	2.83E-02						2.83E-02
2,4,6-Trichlorophenol	2.07E-05						2.07E-05
Vinyl Chloride	1.70E-02						1.70E-02
Antimony	7.44E-07						7.44E-07
Cadmium	3.86E-07						3.86E-07
Chromium (VI)	3.30E-07						3.30E-07
Phosphorus	2.54E-06						2.54E-06
Selenium	2.64E-07						2.64E-07
Acenaphthene	8.57E-04						8.57E-04
Acenaphthylene	4.71E-03						4.71E-03
Anthracene	2.83E-03						2.83E-03
Benzo(a)anthracene	6.12E-05						6.12E-05
Benzo(a)pyrene	2.45E-03						2.45E-03
Benzo(b)fluoranthene	9.42E-05						9.42E-05

Benzo(e)pyrene	2.45E-06						2.45E-06
Benzo(g,h,i)perylene	8.76E-06						8.76E-06
Benzo(j,k)fluoranthene	1.51E-04						1.51E-04
Benzo(k)fluoranthene	3.39E-05						3.39E-05
Chrysene	3.58E-05						3.58E-05
Dibenzo(a,h)anthracene	8.57E-06						8.57E-06
Fluoranthene	1.51E-03						1.51E-03
Fluorene	3.20E-03						3.20E-03
Indeno(1,2,3-cd)pyrene	8.19E-05						8.19E-05
2-Methlnaphthalene	1.51E-04						1.51E-04
Naphthalene	9.13E-02						9.13E-02
Perylene	4.90E-07						4.90E-07
Phenanthrene	6.59E-30						6.59E-03
Pyrene	3.48E-03						3.48E-03
Monochlorobiphenyl	2.07E-07						2.07E-07
Dichlorobiphenyl	6.97E-07						6.97E-07
Trichlorobiphenyl	2.45E-06						2.45E-06
Tetrachlorobiphenyl	2.35E-06						2.35E-06
Pentachlorobiphenyl	1.13E-06						1.13E-06
Hexachlorobiphenyl	5.18E-07						5.18E-07
Heptachlorobiphenyl	6.22E-08						6.22E-08
Decachlorobiphenyl	2.54E-07						2.54E-07
Tetrachlorodibenzo-p-dioxins	2.78E-07						2.78E-07
Pentachlorodibenzo-p-dioxins	3.38E-07						3.38E-07
Hexachlorodibenzo-p-dioxins	3.06E-07						3.06E-07
Heptachlorodibenzo-p-dioxins	5.02E-07						5.02E-07
Octachlorodibenzo-p-dioxins	1.03E-06						1.03E-06
Tetrachlorodibenzo-p-furans	7.74E-07						7.74E-07
Pentachlorodibenzo-p-furans	1.67E-06						1.67E-06
Hexachlorodibenzo-p-furans	1.27E-06						1.27E-06
Heptachlorodibenzo-p-furans	6.81E-07						6.81E-07
Octachlorodibenzo-p-furans	2.72E-07						2.72E-07
Greenhouse Gas (GHG)							
CO_2							2,965,609
CH_4							29.80
N_2O							1649

[1] Potential to emit from burning coal and wood.

[2] Based on emissions prior to 4/16/2015.

Ambient Air Quality Impact Assessment (AAQIA):

An ambient air quality impact assessment (AAQIA) was performed as part of the initial covered source permit application to show compliance with the ambient air quality standards and is still applicable since the PM/PM_{10} emissions increase resulting from the increase in the TDS concentration in the cooling tower are considered fugitive emissions. An ambient air quality impact assessment was not performed since the Department of Health's air modeling guidance generally exempts an applicant from performing an ambient air quality impact assessment for fugitive sources.

Significant Permit Conditions:

The current permit was reviewed for errors and updated as necessary. New significant permit conditions consisted of the following:

1. Added 40 CFR Part 63, Subpart UUUUU as an applicable requirement to Attachment IIA – Special Conditions for the CFB Boilers. The permittee must comply with Subpart UUUUU no later than 4/16/2015. The mercury emission rate will be reduced to 1.2 E-6 lb/MMBtu from 8.1 E-5 lb/MMBtu on and after 4/16/2015.

2. The total dissolved solids (TDS) in the cooling tower recirculating water was raised from 44,000 mg/l to 52,000 mg/l in Attachment IID, Special Condition No. B.4.a. Also, the TDS concentration limit was clarified to be based on a calendar year annual average.

Conclusion and Recommendations:

The facility complies with all State and Federal laws, rules, regulations, and standards with regards to air pollution. Therefore, a renewal of Covered Source Permit (CSP) No. 0087-02-C for AES Hawaii, Inc. is recommended based on the information provided in the air permit application and subject to a 30-day public review period and 45-day EPA review period.

Reviewer: Darin Lum
Date: 1/2014