

**PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT NO. 0236-01-C
Application for Renewal No. 0236-03**

Company: Hawaiian Electric Light Company, Inc. (HELCO)

Mailing Address: P.O. Box 1027
Hilo, Hawaii 96721

Facility: Shipman Generating Station
Two Boilers

Location: 20 Banyan Drive
Hilo, Hawaii 96721
UTM: Zone 5, 282,853 m E, 2,182,613 m N (Old Hawaiian)

SIC Code: 4911 (Electric Services)

Responsible Official: Mr. Norman Verbanic
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Equipment:

HELCO

<u>Unit No.</u>	<u>Description</u>
S-3	7.5 MW (nominal), 115.9 MMBtu/hr, Babcock and Wilcox Boiler, contract I.D. no. FP2417. Manufactured 1954.
S-4	7.7 MW (nominal), 117.5 MMBtu/hr, Babcock and Wilcox Boiler, contract I.D. no. FP2632. Manufactured 1957.

BACKGROUND

Hawaiian Electric Light Company, Inc. (HELCO) has submitted an application to renew its covered source permit. No modifications are proposed for this permit renewal.

This facility operates two (2) ‘Babcock and Wilcox’ boilers: a 7.5 MW (S-3) and a 7.7 MW (S-4) boiler that burns fuel oil no. 6 and no. 2 for the production of electricity for sale. The boilers create steam which provides the power to generate electricity. The fuel is stored in several on-site petroleum storage tanks. The storage tanks are considered an insignificant activity because of the insignificant air emissions due to the fuel’s low vapor pressure.

This facility is located near Hilo Bay (adjacent to the golf course), on the island of Hawaii, and has a base elevation of approximately 12' above sea level. The terrain is flat in the surrounding area of the facility.

This facility is a major covered source based on the annual emissions of criteria pollutants (specifically NO_x, SO₂, and PM) exceeding 100 tons per year for each individual pollutant. Cumulative Hazardous Air Pollutant (HAP) emissions are less than 25 tons per year and no single HAP exceeds 10 tons per year.

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)

Title 11 Chapter 59, Ambient Air Quality Standards

Title 11 Chapter 60.1, Air Pollution Control

 Subchapter 1, General Requirements

 Subchapter 2, General Prohibitions

 11-60.1-31, Applicability

 11-60.1-32, Visible Emissions

 11-60.1-38, Sulfur Oxides from Fuel Combustion

 Subchapter 5, Covered Sources

 Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning

 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

 11-60.1-115, Basis of Annual Fees for Covered Sources

 Subchapter 9, Hazardous Air Pollutant Sources

Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60

Subpart D - Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971 is not applicable because the boilers were constructed prior to August 17, 1971 and the heat input capacities are less than 250 MMBtu/hr.

Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978 is not applicable because the boilers were constructed prior to September 18, 1978 and the heat input capacities are less than 250 MMBtu/hr.

Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units is not applicable because the boilers were constructed prior to June 19, 1984.

Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units is not applicable because the boilers were constructed prior to June 9, 1989 and the heat input capacities are greater than 100 MMBtu/hr.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61

This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP) (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

This source is not subject to MACT because it is not a major source of hazardous air pollutants and there are no standards in 40 CFR Part 63 applicable to this facility.

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21

This source is not subject to PSD requirements because the boilers were installed prior to promulgation of PSD and there are no new major sources or major modifications. PSD applies to new major stationary sources and major modifications of existing major stationary sources.

Compliance Assurance Monitoring (CAM), 40 CFR 64

This source is not subject to CAM because the facility is not subject to an emissions limit or standard. The purpose of 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 pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.

Consolidated Emissions Reporting Rule (CERR), 40 CFR Part 51, Subpart A

CERR is applicable because emissions from the facility exceed CERR triggering levels.

DOH Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting levels and for all covered sources. Internal annual emissions reporting will be required because this is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because this is an existing source with no proposed modifications.. BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §11-60.1-1.

Synthetic Minor Source

A synthetic minor source is a facility that is potentially major as defined in HAR, §11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is not a synthetic minor source because the facility is classified as a major source.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Insignificant activities based on size, emission level, or production rate, are as follows (taken from the CSP application):

<u>Basis for Exemption</u>	<u>Description</u>
HAR §11-60.1-82(f)(1)	There are two (2) fuel oil and one (1) propane storage tanks which are exempt due to the size of the tanks and low vapor pressure of the fuel they store.
HAR §11-60.1-82(f)(2)	There may occasionally be fuel burning equipment with heat input capacities less than one MMBtu/hr.
HAR §11-60.1-82(f)(6)	Paint is used occasionally for maintenance purposes.
HAR §11-60.1-82(f)(7)	There are fugitive equipment leaks from valves, flanges, pump seals and oil/water separators; and solvents are used for maintenance purposes.

Insignificant activities in addition to those listed in subsection (f) are:

<u>Basis for Exemption</u>	<u>Description</u>
HAR §11-60.1-82(g)(1)	There is occasional welding for maintenance purposes.
HAR §11-60.1-82(g)(2)	Several types of hand held equipment are used for maintenance and testing purposes.
HAR §11-60.1-82(g)(3)	Laboratory equipment are used for chemical and physical analyses.
HAR §11-60.1-82(g)(8)	Industrial equipment less than 25 hp are used for maintenance.
HAR §11-60.1-82(g)(9)	There are many maintenance activities that fall under this category.
HAR §11-60.1-82(g)(12)	There are stacks and vents for plumbing purposes.
HAR §11-60.1-82(g)(13)	Office equipment and products are used at this facility.
HAR §11-60.1-82(g)(14)	There are minor wood working activities at this facility

ALTERNATIVE OPERATING SCENERIOS

The permittee may fire the boilers on alternate fuels provided the permittee demonstrates compliance with all applicable state and federal requirements and conditions of this permit. The alternate fuel shall not result in an increase in emissions of any air pollutant or in the emission of an air pollutant not previously emitted.

AIR POLLUTION CONTROLS

None of the equipment at this facility use “add-on” air pollution control devices.

Sulfur emissions are controlled by limiting the maximum fuel sulfur content to 2% by weight for fuel oil no. 6 and 0.5% by weight for fuel oil no. 2. CO, NO_x, PM, and VOC emissions are controlled by combustion design and good combustion practices.

PROJECT EMISSIONS

Boilers

The boilers are fired on fuel oil no. 6 with a maximum sulfur content of 0.5% by weight and fuel oil no. 2 with a maximum sulfur content of 0.5% by weight. Propane will also be used for ignition and pre-heating of the boilers. Emissions were based on fuel oil no. 6 emission factors from AP-42 Section 1.3 (9/98), Errata (4/00) - Fuel Oil Combustion, which were increased by a factor of safety. SO₂ emission factors based on mass balance method assuming 2% sulfur content, fuel oil no. 6 heat content of 18,161 Btu/lb, and all sulfur converted to SO₂.

Unit S-3, 7.5 MW Boiler (115.9 MMBtu/hr)				
Pollutant	AP-42 EF (lb/MMBtu)	CSP Application EF (lb/MMbtu)	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
CO	0.033	0.066	7.65	33.50
NO _x	0.313	0.444	51.46	225.39
SO ₂	2.093	2.203	255.33	1118.34
PM	0.144	0.144	16.69	73.10
PM-10	0.102	0.102	11.82	51.78
PM-2.5	0.075	0.075	8.69	38.07
VOC	0.005	0.02	2.32	10.15
HAPs	-	-	0.14	0.62

Unit S-4, 7.7 MW Boiler (117.5 MMBtu/hr)				
Pollutant	AP-42 EF (lb/MMBtu)	CSP Application EF (lb/MMbtu)	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
CO	0.033	0.066	7.76	33.97
NO _x	0.313	0.444	52.17	228.50
SO ₂	2.093	2.203	258.85	1133.77
PM	0.144	0.144	16.92	74.11
PM-10	0.102	0.102	11.99	52.49
PM-2.5	0.075	0.075	8.81	38.60
VOC	0.005	0.02	2.35	10.29
HAPs	-	-	0.14	0.63

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)				
Pollutant	Emissions (No Limits 8,760 hr/yr)	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
CO	67.5	100	2,500 / 1000	250
NO _x	453.9	40	2,500 / 100	25
SO ₂	2252.1	40	2,500 / 100	25
PM	147.2	25	-	25
PM-10	104.3	15	250 / 100	25
PM-2.5	76.7	-	250 / 100	-
VOC	20.4	40	250 / 100	25
HAPs	1.25	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact assessment (AAQIA) is generally required for new or modified sources to demonstrate compliance with State and National ambient air quality standards. An ambient air quality impact assessment is not required for this permit renewal because there are no modifications proposed.

SIGNIFICANT PERMIT CONDITIONS

There are no new significant permit conditions.

CONCLUSION

HELCO submitted an application for permit renewal with no modifications proposed. Based on the information submitted, it is the determination of the Department of Health that the proposed project will be in compliance with Hawaii Administrative Rules, Chapter 11-60.1, and State and National ambient air quality standards. Recommend issuance of the covered source permit subject to the 30-day public comment period and 45-day Environmental Protection Agency review period.

Mark Saewong
October 14, 2010