PROPOSED

PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT (CSP) NO. 0548-01-C
APPLICATION FOR MODIFICATION NO. 0548-05

Company: Hawaiian Electric Company, Inc. (HECO)
Facility: Campbell Industrial Park Generating Station
Located at: 91-196 Hanua Street, Kapolei, Oahu

Mailing Address: P.O. Box 2750
Honolulu, Hawaii 96840-0001

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Equipment:

Equipment	Manufacturer	Model No.	Serial No.	Capacity
Combustion Turbine Generator (CIP1)	Siemens Westinghouse Power Corporation	SGT6-3000E W501D5A	37A7724	135 MW
Black Start Diesel Engine Generator (BSG1)	Kohler Power Systems Detroit Diesel/MTU	2250REOZDC 16V4000G83	5272003082	2,250 kW
Black Start Diesel Engine Generator (BSG2)	Kohler Power Systems Detroit Diesel/MTU	2250REOZDC 16V4000G83	5272003325	2,250 kW
Internal Floating Roof Storage Tank (Tank No. 1)	----------	----------	----------	1,880,000 gallons
Internal Floating Roof Storage Tank (Tank No. 2)	----------	----------	----------	1,880,000 gallons

1. Background.

1.1 HECO has submitted a permit application for a significant modification to CSP No. 0548-01-C for Campbell Industrial Park Generating Station to add an alternate operating scenario for unplanned maintenance and testing of its combustion turbine generator. Permitted equipment at the facility includes a 135 MW Siemens Westinghouse Power Corporation simple cycle combustion turbine generator (CIP1), two 2,250 kW Kohler Power Systems black start diesel engine generators (BSG1 and BSG2), and two internal floating roof storage tanks. The Standard Industrial Classification Code for this facility is 4911 (Electrical Power Generation Through Combustion of Fossil Fuels). Changes incorporated into the permit pursuant to HECO's application for modification include:

a. Adding an alternate operating scenario for operating CIP1 at ten (10) megawatts above minimum operating load and below minimum operating load for unplanned maintenance and testing.
b. Updating alternate operating scenario for temporary replacement units to incorporate maximum time limit for operating replacement units at the source.
c. Removing combustion turbine generator CIP2 from the permit because HECO did not installed this unit.
d. Removing the total combined combustion turbine generator firing rate limit of 24.8 MMBtu/yr. This condition was incorporated to prevent an exceedance of the major source threshold for hazardous air pollutants (HAPs) if operating two combustion turbine generators at maximum capacity. Because only one combustion turbine generator operates at the plant, maximum turbine generator firing rate cannot exceed 24.8 MMBtu/yr and no limit is required to prevent an exceedance of the major source threshold of 10 tons per year (TPY) for manganese.

1.2 Fuels fired at the generating station will be boidiesel as primary fuel for CIP1 and fuel oil No. 2 for BSG1 and BSG2. The sulfur content of the primary fuels fired by CIP1 will be limited to 0.05%. The sulfur content of fuel fired by BSG1 and BSG2 will be a low sulfur fuel in accordance with 40 CFR, Part 60, Subpart IIII.

1.3 Operating limits include a 500 hr/yr operating restriction for BSG1 and BSG2.

1.4 Pictures from a February 4, 2010 site inspection of Campbell Industrial Park Generating Station are shown in Enclosure (1).

2. <u>Applicable Requirements</u>.

2.1 Hawaii Administrative Rules (HAR)
Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1, Subchapter 1, General Requirements
Chapter 11-60.1, Subchapter 2, General Prohibitions
11-60.1-31, Applicability
11-60.1-32, Visible emissions
11-60.1-38, Sulfur Oxides from Fuel Combustion
11-60.1-39, Storage of Volatile Organic Compounds
Chapter 11-60.1, Subchapter 5, Covered Sources
Chapter 11-60.1, 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
Chapter 11-60.1, Subchapter 8, Standards of Performance for Stationary Sources
11-60.1-161, New Source Performance Standards
Chapter 11-60.1, Subchapter 9, Hazardous Air Pollutant Sources

2.2 40 CFR Part 60 - NSPS, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines is applicable to CIP1 because the heat input rate of the unit at peak load is greater than 10 MMBtu/hr. Maximum heat input at peak load is 1,482.4 MMBtu/hr based on ISO standard day conditions (59 ^{O}F, 60% relative humidity, and 1 atm) and the HHV for fuel oil No. 2 as worst-case.

2.3 40 CFR Part 60 - NSPS, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, is applicable to two tanks storing fuel for the combustion turbine generator because the tanks are greater than 151 m^3 (greater than 40,000 gallons) and will be storing naphtha (whole straight run gasoline) worst-case with a true vapor pressure greater than 0.507 psi. The working volume of each fuel storage tank is 1,880,000 gallons. Per AP-42, Section 7.1 (9/97), the true vapor pressure of gasoline with Reid vapor pressure of 10, representative of naphtha, is 7.4 psi at 80 ^oF.

2.4 40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart YYYY - National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines is not applicable to this project because worst-case facility- wide HAP emissions are less than 10 TPY single HAP and 25 TPY combined HAP.

2.5 40 CFR Part 60 - NSPS, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is applicable to BSG1 and BSG2 pursuant to Subpart IIII §60.4200(a)(2)(i) because the units commenced construction after July 11, 2005 and were manufactured after April 1, 2006. For purposes of Subpart IIII, the date that construction commences is the date the engine is ordered. As indicated by HECO, BSG1 and BSG2 were ordered on September 22, 2008 and the manufacturing date for the engines is March 2008.

2.6 40 CFR Part 63 - (NESHAP), Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is applicable to BSG1 and BSG2. Pursuant to Subpart ZZZZ, §63.6590(a)(2)(iii), a stationary reciprocating internal combustion engines (RICE) is new if it is located at an area source of HAP emissions and commenced construction after June 12, 2006. Black start diesel engine generators BSG1 and BSG2 were manufactured on March 2008 and installation began after July 6, 2009. Pursuant to 40 CFR §63.6590 (c), new RICE operating at area sources must meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart IIII.

2.7 The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emission units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR, 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 greater than the major source level; and (5) not otherwise be exempt from CAM. Although the combustion turbine generator relies on a water injection system to achieve compliance with the federal NO_X standard required by 40 CFR 60, Subpart KKKK and has potential pre-control emissions greater than the major source level for NO_X, CAM is not applicable because a continuous emission monitoring system (CEMS) is used to determine compliance with the NO_X emissions standard. As such, the combustion turbine generator is exempt from CAM.

2.8 A best available control technology (BACT) analysis is not required because potential emissions from changes incorporated for the permit modification decrease emissions. The second combustion turbine generator was not installed. Removing the second combustion turbine generator significantly decreases maximum potential emissions from the project.

2.9 The Consolidated Emissions Reporting Rule (CERR) is applicable because potential emissions from the generating station exceed reporting levels pursuant to 40 CFR 51, Subpart A for Type A sources (see table below).

CERR APPLICABILITY[a]			
Pollutant	Potential Emissions (TPY)[a]	CERR Triggering Levels (TPY)	
		1 year cycle (Type A sources)	3 year cycle (Type B sources)
PM-10	353.4	≥250	≥100
PM-2.5	328.5	≥250	≥100
SO_2	2,305.0	≥2,500	≥100
NO_x	1,081.0	≥2,500	≥100
VOC	167.8	≥250	≥100
CO	1,759.4	≥2,500	≥1,000

a: See Paragraph 6.4 total emissions [limited] for emission rates.

2.10 Prevention of Significant Deterioration (PSD) review does not apply to this modification because changes proposed do not increase emissions above significant levels as defined in HAR, Section 11- 60.1.

2.11 Annual emissions reporting is required because this facility is a covered source.

2.12 There is no physical change in the method of operation from the modification that would cause a significant increase of a regulated new source review (NSR) pollutant and a significant net emissions increase of that pollutant from this major stationary source. As such, the Tailoring Rule for green house gas emissions does not apply to the permit modification.

3. Insignificant Activities and Exemptions

3.1 The following are a list of insignificant activities identified by the applicant that meet the exemption criteria specified in HAR, §11-60.1-82(f):

a. Three (3) 345,000 barrel fixed roof storage tanks storing fuel oil No. 6 for HECO's Kahe Generating Station are considered exempt pursuant to HAR, §11-60.1-82(f)(7).
b. One 5,000 gallon fuel oil No. 2 storage tank and other tanks less than 40,000 gallons in capacity are considered exempt pursuant to HAR, §11-60.1-82(f)(1).
c. A vapor mitigation system is considered exempt in accordance with HAR, §11-60.1-82(f)(7).
d. Fuel burning equipment less than 1 MMBtu/hr, other than smoke house generators and gasoline fired industrial equipment, are exempt in accordance with HAR, §11-60.1-82(f)(2).
e. Standby emergency generators are exempt in accordance with HAR, §11-60.1-82(f)(5).
f. Paint spray booths that emit less than two tons per year of any regulated air pollutant are exempt pursuant to HAR, §11-60.1-82(f)(6).
g. Activities that emit less than 500 lb/yr of HAP, 25% of the significant amount of emissions as defined in HAR §11-60.1-1, 5 TPY CO, and 2 TPY of each regulated air pollutant other than CO, and which are determined on a case by case basis to be insignificant activities are exempt pursuant to HAR, §11-60.1-82(f)(7).

4. Alternate Operating Scenarios

4.1 The following are alternate operating scenarios proposed by the applicant:

a. Upon receiving written approval from the Department of Health, the permittee may temporarily operate CIP1 greater than ten (10) MW of the minimum operating load or below minimum operating load for maintenance and testing activities. The time period for operating under this alternate operating scenario shall be in accordance with that approved by the Department of Health.

b. The permittee may temporarily operate CIP1 at loads greater than ten (10) megawatts above minimum operating load or at loads below the minimum operating load for unplanned maintenance and testing activities. Unplanned maintenance and testing activities are emergency activities that must be completed to ensure unit availability before written approval can be obtained by the Department of Health during office closures for the evenings, weekends, State Holidays, and State Furlough days. Operation of CIP1 under this alternate operating scenario shall not exceed four (4) days.

c. The permittee may operate CIP1 up to 110% of peak load for emergency load conditions, if equipment malfunction such as a sudden loss of a unit occurs. The time period of this operation shall not exceed 30 minutes in duration, and shall not exceed the maximum permitted emission limits. The reason for operating above peak load shall be clearly documented, with the event's date, time, duration, operating load, and resulting emission rates.

d. Upon receiving written approval from the Department of Health, CIP1 may be fired on fuel oil No. 2 with a maximum 0.35% by weight sulfur content for a designated length of time if it is demonstrated that fuels with 0.05% by weight or lower maximum sulfur content can be eliminated as BACT for the unit based on fuel availability and/or economic impacts.

e. Upon receiving written approval from the Department of Health, CIP1 may be fired on alternate fuels (e.g., but not limited to, biodiesel, jet fuel, hydrogen, or ethanol instead of naphtha and fuel oil No. 2).

f. Upon receiving written approval from the Department of Health, the permittee may use specific fuel additives to control algae, lubricity, improve combustion, inhibit corrosion or other reasons.

g. Upon receiving written approval from the Department of Health, the permittee may replace CIP1, BSG1, or BSG2 with an equivalent temporary replacement unit with equal or lesser emissions in the event of a failure or major overhaul of the equipment. The installation and operation of the temporary replacement unit shall not exceed twelve (12) consecutive months.

5. Air Pollution Control

5.1 Water injection will be used to control NO_X emissions from the combustion turbine generators. The air pollution control system injects demineralized water into the turbine generator's combustion chamber. The moisture acts as a heat sink, reducing the peak flame temperature and in turn reducing the formation of thermal NO_X. Thermal NO_X results during combustion from atmospheric air, consisting mostly of nitrogen, reacting with oxygen in the air to form NO_X.

5.2 Tanks storing fuel for the combustion turbine generators will be equipped with tank seal systems and internal floating roofs to control VOC and HAP emissions for storing volatile organic liquid with high vapor pressure (e.g., naphtha) as worst-case scenario. These tanks, however, will be storing boidiesel with a low vapor pressure because HECO intends to fire the combustion turbine generators on biodiesel as the primary fuel.

6. Project Emissions

6.1.1 Emissions of NO_X, CO, VOC, PM, PM_{10}, and $PM_{2.5}$ from the combustion turbine were based on the lb/hr emission rates from manufacturer's specifications for firing fuel oil No. 2 with 0.35% sulfur content as worst-case. A mass balance calculation was used to determine SO_2 emissions from information on fuel sulfur content in percent by weight and fuel flow rate in lb/hr. For H_2SO_4, it was assumed that 6.5% fuel sulfur converts to sulfuric acid mist based on information from General Electric. For fluorides, emissions were based on the April 11, 1985 test results from an analysis of fuel oil No. 2 that indicated a 0.2 ppm fluoride concentration. Worst-case emission rates were based on ISO standard day conditions (59 ^oF and 60% relative humidity). It was assumed that 96% of the total particulate was PM-10 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines. It was assumed that 90% of the total particulate was PM-2.5 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines. Minimum load with water injection for the turbine is 25% of peak load. Emissions were also based on operating conditions at 86 ^oF ambient temperature and 70% relative humidity for information that may be more representative of conditions in Hawaii. Emission estimates for the combustion turbine generator are shown in Enclosure (2).

6.1.2 Emission factors from AP-42, Section 3.1 (4/00), Stationary Gas Turbines were used to determine HAP emissions from the combustion turbine generator. Emission factors from AP-42, Section 3.4 (10/96), Large Stationary Diesel and All Stationary Dual-Fuel Engines were used to determine HAP emissions not listed in AP-42, Section 3.1. Emission factors for fuel oil No. 2 were used as worst-case because there are no emission factors for naphtha. For beryllium, emissions were based on the April 11, 1985 test results from an analysis of fuel oil No. 2 that indicated a 0.003 ppm beryllium concentration. The g/s and lb/hr HAP emissions were based on a worst-case firing rate of 1,482.4 MMBtu/hr for firing fuel oil No. 2 at ISO standard day conditions. Worst-case HAP emissions are shown in Enclosure (3).

6.1.3 Maximum potential emissions are shown in the table below for operation between 25% to peak load with application of water injection for controlling NO_X.

COMBUSTION TURBINE EMISSIONS				
Pollutant	Fuel Fired	Emission Rate		Emission TPY (8,760 hr/yr)
		lb/hr	g/s	
SO_2	fuel oil #2	526.3	66.4	2,305.0[a]
NO_X	fuel oil #2	246.8	31.2	1,081.0[a]
CO	fuel oil #2	401.7	50.7	1,759.4[b]
VOC	fuel oil #2	38.3	4.8	167.8[b]
PM (see note c)	fuel oil #2	83.3	10.5	365.0[b,c]
PM_{10}	fuel oil #2	80	10.1	350.4[b]
$PM_{2.5}$ (see note d)	fuel oil #2	75.0	9.5	328.5[b,d]
H_2SO_4	fuel oil #2	52.4	6.6	229.4[a]
Fluorides	fuel oil #2	0.015	1.90E-03	0.066[a]
Arsenic	fuel oil #2	0.016	0.002	0.071[a]
Benzene	fuel oil #2	0.082	0.010	0.357[a]
Beryllium	fuel oil #2	2.26E-04	2.85E-05	0.001[a]
Mercury	fuel oil #2	1.78E-03	2.25E-04	0.008[a]
Lead	fuel oil #2	2.08E-02	2.62E-03	0.091[a]
Manganese	fuel oil #2	1.171	0.148	5.129[a]
Total Haps	fuel oil #2	--------	--------	11.7[a]

a: Based on operating the unit at peak load, 59 ^{o}F, 60% relative humidity, and firing fuel oil No. 2.
Also, a 24.8 x10^{6} MMBtu/yr total combined firing limit was applied to determine the emissions with operation limit.
b: Based on operating each unit at 25% load, 59 ^{o}F, 60% relative humidity, and firing fuel oil No. 2.
c: It was assumed that 96% of the total particulate was PM-10 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines.
d: It was assumed that 90% of the total particulate was PM-2.5 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines.

6.2.1 Emissions of NO_X, CO, VOC, PM, PM_{10}, and $PM_{2.5}$ from the black start diesel engine generators were based on the gram per second emission rates from manufacturer's specifications. A mass balance calculation was used to determine SO_2 emissions based on the maximum 0.05%

fuel sulfur content and a 163.7 gal/hr fuel consumption for each diesel engine generator at maximum standby power rating. A fuel heating value of 140,000 Btu/gal and a fuel oil No. 2 density of 7.05 lb/gal (from AP-42, Appendix A) were used to determine worst-case emissions. For H_2SO_4, it was assumed that 13.83% of the SO_2 converts to sulfuric acid mist based on information from SCEC report from Maalaea M3. For fluorides, emissions were based on April 11, 1985 test results from an analysis of fuel oil No. 2 that indicated a 0.2 ppm fluoride concentration. It was assumed that 96% of the total particulate was PM-10 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines. It was assumed that 90% of the total particulate was PM-2.5 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines. Emission estimates are shown in Enclosure (4).

6.2.2 Emission factors from AP-42, Section 3.4 (10/96), Large Stationary Diesel and All Stationary Duel-Fuel Engines were used to determine HAP emissions from the black start diesel engine generators. Emission factors from AP-42, Section 3.1 (4/00), Stationary Gas Turbines were used to determine HAP emissions not listed in AP-42, Section 3.4. Emission factors for fuel oil No. 2 were used as worst-case because there are no emission factors for naphtha. Beryllium emissions were based on April 11, 1985 test results from a fuel oil No. 2 analysis that indicated 0.003 ppm beryllium concentration. The g/s and lb/hr emissions were based on a worst case firing rate of 22.9 MMBtu/hr for each diesel engine generator. Calculations are shown in Enclosure (5).

6.2.3 Maximum potential emissions for the black start diesel engine generators are shown in the table below.

BLACK START DIESEL ENGINE GENERATOR EMISSIONS				
Pollutant	Emission Rate Each Unit		Emission TPY (2 units)	
	lb/hr	g/s	Limited	No Limits
			500 hr/yr per generator	8,760 hr/yr per generator
SO_2	1.153	0.146	0.6	10.5
NO_X	39.457	4.982	19.7	345.1
CO	5.187	0.655	2.6	45.6
VOC	0.660	0.083	0.3	5.3
PM	0.358	0.045	0.2	3.5
PM_{10} (see note a)	0.344	0.043	0.2	3.0
$PM_{2.5}$ (see note b)	0.322	0.040	0.2	2.8
H_2SO_4	0.159	0.201	0.1	1.4
Fluorides	2.00E-04	2.53E-05	1.00E-04	1.75E-03
Arsenic	2.52E-04	3.18E-05	1.26E-04	2.21E-03
Benzene	1.78E-02	2.24E-03	8.89E-03	0.156
Beryllium	3.46E-06	4.37E-07	1.73E-06	3.03E-05
Lead	3.21E-04	4.05E-05	1.60E-04	2.80E-03
Mercury	2.75E-05	3.47E-06	1.37E-05	2.40E-04
Manganese (max. single HAP)	1.81E-02	2.28E-03	9.05E-03	0.159
Total Haps	--------	--------	0.030	0.526

a: It was assumed that 96% of the total particulate was PM-10 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines.

b: It was assumed that 90% of the total particulate was PM-2.5 based on AP-42 Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines.

6.3 Potential emissions from the internal floating roof storage tanks were estimated with a TANKS 4.0.9d program. Emissions were based on storing naphtha (whole straight run gasoline) as worst-case with a Reid vapor pressure of 11 psi. A 118,021,090 gallon per year total combined tank throughput correlating to about 31 tank turnovers per year per storage tank was used for estimating emissions. Each tank has a 1,880,000 gallon capacity. The

total combined gallon per year throughput is based on a 1,482 MMBtu/hr rated combustion turbine capacity, 8,760 hr/yr operation, and a 110,000 Btu/gallon heating value for naphtha. Vapor mass fractions of components for naphtha were multiplied by the total VOC emissions from the tanks to determine maximum potential HAP emissions. The vapor mass fraction data was obtained from Chevron Products Company's permit application submittal for its Port Allen Terminal processed under permit application No. 0080-06. The tanks are painted a dull yellow color; therefore a medium gray tank shell color shade was selected in the tanks program to represent dull yellow because no color option was provided in the program for dull yellow. Potential emissions from the tanks are shown in Enclosure (5) and summarized below.

TANK EMISSIONS			
Pollutant	Tank No. 1	Tank No. 2	Emissions (TPY)
VOC	6.1	6.1	12.2
HAPs	0.232	0.232	0.464

6.4 Worst-case yearly emissions of criteria pollutant and HAPs from operating permitted equipment are as follows (see tables from Paragraphs 6.1.3, 6.2.3, and 6.3 for emission rates):

FACILITY-WIDE EMISSIONS						
Pollutant	Emissions (TPY)					
	Combustion Turbine	Black Start Diesel Engine Generators		Tanks	Total Emissions [limited]	Total Emissions [no limits]
		limited	no limits			
SO_2	2,305.0	0.6	10.5	-------	2,305.6	2,315.5
NO_X	1,081.0	19.7	345.1	-------	1,100.7	1,426.1
CO	1,759.4	2.6	45.6	-------	1,762.0	1,805.0
VOC	167.8	0.3	5.3	10.2	168.1	173.1
PM	365.0	0.2	3.5	-------	365.2	368.5
PM_{10}	350.4	0.2	3.0	-------	350.6	353.4
$PM_{2.5}$	328.5	0.2	2.8	-------	328.7	331.3
Total Haps	11.7	0.030	0.526	0.464	12.2	12.7

7. Air Quality Assessment

7.1 An ambient air modeling impact analysis is not required because there are no changes proposed for the permit modification that increase emissions.

8. Significant Permit Conditions

8.1 CIP1 is intended to provide spinning reserve by being online and dispatched within 10 MW of the minimum operating load. Except during source performance tests and activities specified in Condition Nos. 8.2 and 8.3, CIP1 may be dispatched at higher loads only when the steam units at other plants are not reasonably able to serve system needs. Steam units

at other plants are HECO boilers: Kahe Generating Station Units 1, 2, 3, 4, 5, and 6, Honolulu Generating Station Units 8 and 9, and Waiau Generating Station Units 3, 4, 5, 6, 7, and 8. The Department of Health reserves the right to review dispatch records to determine compliance with this condition.

8.2 Upon receiving written approval from the Department of Health, the permittee may operate CIP1 greater than 10 megawatts above the minimum operating load or below minimum operating load for maintenance and testing activities. The time period for operating under this alternate operating scenario shall be in accordance with that approved by the Department of Health.

8.3 The permittee may temporarily operate CIP1 at loads greater than ten (10) megawatts above minimum operating load or at loads below the minimum operating load for unplanned maintenance and testing activities. Unplanned testing and maintenance activities are emergency activities that must be completed to ensure unit availability before written approval can be obtained by the Department of Health during office closures for the evenings, weekends, State Holidays, and State Furlough days. Operation of CIP1 under this alternate operating scenario shall not exceed four (4) days.

Reason for 8.1 through 8.3: Existing permit conditions were updated to allow the combustion turbine generator to operate above 10 MW of the minimum operating load or below minimum operating load during unplanned maintenance and testing. The purpose of Condition 8.1 is ensure the combustion turbine generator is operated in accordance with HECO's proposal from the initial permit application. The BACT analysis determined installation of a heat recovery steam generator for allowing NO_X control with selective catalytic reduction (SCR) to be economically infeasible. Operation at higher loads would provide a greater economic benefit to promote use of a heat recovery steam generator and SCR as BACT. The economic analysis was based on operating the combustion turbine generator as a standby unit running at minimum operating load until higher loads are necessary if electric generating units from other plants could not serve system needs. Condition 8.2 specifies requirements for operating CIP1 outside load ranges specified in Condition 8.1 during maintenance and testing. Condition 8.3 specifies requirements for operating CIP1 outside load ranges specified in Condition 8.1 during unplanned testing and maintenance that occur when the Department of Health is closed. Operating under Condition 8.3 was restricted to four (4) days because four (4) days is the maximum number of days the Department of Health is closed if a State Holiday, State Furlough Day, and weekend occur together.

8.4 Upon receiving written approval from the Department of Health, the permittee may replace CIP1, BSG1, or BSG2 with an equivalent temporary replacement unit with equal or lesser emissions in the event of a failure or major overhaul of the equipment. The installation and operation of the temporary replacement unit shall not exceed twelve (12) consecutive months.

Reason for 8.4: This condition was updated to specify a maximum amount of time that a temporary replacement unit can remain at the covered source to ensure that the emission unit is not considered a permanent part of the stationary source.

8.5 Remove combustion turbine generator CIP2 from the permit.

Reason for 8.5: The applicant did not install combustion turbine generator CIP2.

9. Conclusion and Recommendation

9.1 Actual emissions from the proposed Campbell Industrial Park Generating Station should be less than those estimated. Maximum potential emissions were based on operating the combustion turbine generator at ISO standard day conditions (59 ^{o}F and 60% relative humidity). Emissions determined for operation at 86 ^{o}F and 70% relative humidity, that may be more representative of conditions in Hawaii, are lower than those for ISO standard day conditions due to a lower combustion turbine generator fuel burning capacity at the higher ambient temperature and relative humidity. Conservatively, emissions from the black start diesel engine generators were based on operation at maximum rated capacity. Recommend issuance of the covered source permit modification subject to the significant permit conditions and forty-five day EPA review period.

Mike Madsen
2-15-2011