Covered Source Permit (CSP) No. 0255-01-C Review
Application for Renewal No. 0255-03

Facility Title: Honolulu Resource Recovery Venture (HRRV) or
Honolulu Program of Waste Energy Recovery (HPOWER)

Applicant: Honolulu Resource Recovery Venture

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UTM Coordinates: Zone 4, 592,390 m east; 2,356,470 m north (NAD-83)

Proposed Project:

General Information

The Honolulu Resource Recovery Venture Facility (HPOWER) is a waste-to-energy facility that officially initiated operations of the two boilers on 12/6/89 (pursuant to City & County letter dated 12/14/89). The facility is located at Campbell Industrial Park on the southwest corner of Oahu, approximately 3,000 feet north of Barbers Point. It is bounded by the Chevron Oil Refinery and Hawaiian Electric Company, Inc. to the north, Hanua Street to the east, AES Barbers Point and Kaomi Loop to the south, and vacant land to the west. The terrain is flat and is approximately 10 feet above mean sea level. HPOWER receives municipal solid waste (MSW) and processes it into refuse-derived fuel (RDF). The RDF is burned in two spreader-stoker boilers ("municipal waste combustors" or "MWCs") to produce steam which is used to drive a steam turbine to generate electricity. The production capacity is 58 Megawatts (MW) of electricity, 87% of which is sold to the Hawaiian Electric Company (HECO), and the remainder used at the facility. Therefore, the Standard Industrial Classification Code (SICC) is 4953 - Refuse Systems.

Modifications

1. The permittee is requesting to add flexibility to the emissions limits for sulfur dioxide (SO_2) and hydrogen chloride (HCl). These additional limits are pursuant to NSPS Cb and were not included in the previous permit because the permit was more simplified when left out. The emissions limits should not be exceeded because they will be monitored by a continuous emissions monitoring system (CEMS) and annual source tests.
2. The permittee is also requesting to remove the reporting requirement of the summary of changes to the ESP (recordkeeping will be maintained). This is a prevention of significant deterioration (PSD) permit condition.

See the **New Permit Conditions** section for details and explanation.

MSW Processing

MSW is received via truck in a receiving area and transferred into the MSW feed and storage building. There, the MSW undergoes a series of shredding and classification steps, including metals separation. The processed MSW (RDF) is transferred via conveyor to the RDF storage area, while undesirable material is collected for off-site disposal. Ventilation air flow from the primary shredding processes is controlled by two primary baghouses, and ventilation air from secondary shredding and metals separation steps is controlled by two secondary baghouses. RDF is then transferred by a series of conveyor belts, into the boiler house, where the RDF is sent through two parallel metering bins. From the metering bins, the RDF travels through feed chutes to the two MWCs.

Combustion Process

The primary fuel of the two MWCs is RDF, but they also burn fuel oil no. 2, spec used oil, used cooking oil, and other MSW in bulk quantities (see **Alternate Operating Scenarios**). The maximum potential fuel use per MWC is approximately: 36 tph RDF and 1,984 gph fuel oil. However, the fuel oil will be limited to 1,770 gph in order to remain below 250 MMBtu/hr per MWC while firing fuel oil (see **Non-Applicable Requirements** 40 CFR Part 60 Subpart Da). The maximum heat input is 370 MMBtu/hr per MWC when firing RDF. The flue gases from each MWC have separate air pollution control trains consisting of a spray dryer absorber (SDA) and an electrostatic precipitator (ESP). The SDA sprays a lime slurry which absorbs sulfur dioxide (SO_2) and other acid gases. The ESP then removes the lime slurry precipitate and particulate matter (PM). Furnace bottom ash is dumped into a submerged scraper conveyor while spent adsorbent and flyash from the SDA and ESP are collected in separate hoppers.

Operating Schedule

The superheated steam produced by the boilers is delivered to the boiler/generator building to generate electricity for sale to HECO and for internal use. The operating schedule for the two boilers is continuous, 24 hours per day, 7 days per week except for maintenance takes place for approximately three weeks per year. For air modeling purposes, continuous operation (8,760 hours per year) is assumed.

Air Pollutant Emissions

The primary emissions from the MWCs consist of PM, SO_2, nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOC). Minor amounts of hazardous air pollutants (HAPs) and dioxin-furans; and more significant quantities of hydrochloric acid (HCl) and hydrofluoric acid (HF) are also emitted from the MWC stacks. PM is also generated as dissolved solids from the cooling tower and minor amounts of PM are created during the RDF stage (see **Table No. 6**).

Compliance With Air Quality

Pursuant to HPOWER's letter dated 10/20/97, CEMS for opacity, SO_2, NO_X, CO, and O_2 were installed on the two MWC flue gas discharge stacks. The CEMS for opacity (COMS) were relocated from the vertical stack to the horizontal stack at ground level for easier maintenance (see DOH approval letter dated 2/6/04). Source testing for PM, VOC, lead, beryllium, mercury, HF, HCl, dioxin/furan, cadmium, and fugitive ash will be performed annually.

Cooling Tower Operation

A wet cooling tower is used to dissipate heat loads. The cooling tower is an induced draft type. The circulating water rate is 50,500 gallons per minute, and the operating hours are 24 hours per day year-round (8,760 hours per year). HPOWER submitted a letter to the Clean Air Branch on 6/17/97, presenting PM_{10} emission calculations for the cooling tower. These calculations assume a drift elimination efficiency of 0.002% and a total dissolved solids (TDS) of 28,600 ppm entering the tower in make-up water as follows:

$(0.002/100) \times (28600/10^6) \times (50{,}500 \text{ gal/min}) \times (8.3452 \text{ lb/gal}) \times (60 \text{ min/hour}) = \underline{14.46 \text{ lb/hr } PM_{10}}$

$(14.46 \text{ lb } PM_{10}\text{/hour}) \times (8{,}760 \text{ hour/year}) \times (1 \text{ ton}/2000 \text{ lb}) = \underline{63.33 \text{ tpy } PM_{10}}$

Pursuant to telephone conversation dated 9/4/98 between Glenn Murata of HPOWER and Corey Shibata of the Department of Health (DOH), the facility houses a 1-ton cylinder of chlorine (2,000 pounds) at a time for the cooling tower activity. The chlorine is locally available and HPOWER is able to operate normally if the chlorine supply is depleted for a day. The final EPA 112(r) regulations have promulgated an applicability threshold of 2,500 pounds for chlorine. Therefore, 40 CFR Part 68 - Chemical Accident Prevention Provisions is not applicable.

Fugitive Emissions

Fugitive particulate emissions are minimized from truck travel by paved access roads, from material transport on- and off-site by enclosed truck transport, and from flyash transfer from hoppers to trucks because the material is wet. Thus, fugitive particulate emissions are estimated to be negligible.

Facility Status

The facility is a major covered source since annual emissions for SO_2, NO_x, CO, and PM (criteria pollutants) are each well over 100 tpy and HCl and HF (HAPs) are each over 10 tpy. The facility is also subject to PSD and is currently permitted by PSD No. HI 84-01.

Permit Status

This review is based on the application dated 1/11/05. The application fee of $3,000 for a renewal of a PSD source has been processed and the receipt will be issued with the permit renewal. Upon issuance of this permit, the CSP No. 0255-01-C dated 1/3/01 and its amendments dated 12/21/01, 11/1/02, and 3/24/04 will be superseded in its entirety.

Equipment:

Unit No.	Description
1,2	Two (2) Combustion Engineering (C-E) VU-40 MWC boilers specifically designed to combust solid waste or fuel oil (C-E Contract 28185). The primary fuel is RDF, but the MWCs also burn fuel oil no. 2, spec used oil, used cooking oil, and other MSW in bulk quantities. The maximum potential fuel use per MWC is: 36 tph RDF and 1,984 gph fuel oil (fuel oil will be limited to 1,770 gph). Each MWC has a steam production capacity of 244,000 lb/hr of 900 psig superheated steam (830°F) fired on average RDF and 214,800 lb/hr of 900 psig steam (705°F) fired on fuel oil no. 2. The design operating steam pressure is 1175 psig. The superheated steam is delivered to the boiler/generator building to generate electricity for sale to HECO and for internal use.
3,4	Two (2) C-E spray dryer absorbers (SDAs), with 14,000 rpm spray nozzles.
5,6	Two (2) Electrostatic Precipitators (ESPs), model no. 1P1C33D5F/12x35.5x64 (5 at 12.8) type devices with 5-fields each. 1P = number of precipitators per furnace 1C = number of electrical cells per precipitator 33D = number of gas ducts per cell 5F = number of electrical fields per precipitator 12x35.5x64 = duct spacing (inches) x effective collecting electrode height (feet) x effective treatment length (feet) 5 at 12.8 = number and length (feet) of individual electrical fields
7,8	Two (2) Ray-Jet Fabric Filter Baghouses, model no. 696-8 SWIP, 4,500 ACFM, primary baghouse.
9,10	Two (2) Ray-Jet Fabric Filter Baghouses, model no. 61214-20, 40,000 ACFM, secondary baghouse.
11	Twelve (12) roof vents located at the RDF processing and storage building. Each vent has an electric fan and filter.
12	Cooling Tower, 5 cells, induced draft, 50,500 gallons/minute.

Air Pollution Controls:

PSD Permit HI 84-01 and EPA New Source Performance Standards (NSPS) 40 CFR 60, Subpart Cb specify the emission limits for MWC air pollution control trains for opacity, NO_x, VOC, SO_2, CO, PM, lead (Pb), beryllium (Be), mercury (Hg), hydrofluoric acid (HF), hydrochloric acid (HCl), cadmium (Cd), and MSW organics measured as dioxin/furan. These emissions are listed in the **Project Emissions** section.

Spray Dryer Absorbers (SDAs)/Electrostatic Precipitators (ESPs). Both MWCs each have separate air pollution control trains. Each train begins with a spray dryer absorber (SDA), a semi-dry scrubber that utilizes a hydrated lime reagent sprayed into the flue gas to absorb acid gases. This conditioned gas stream then is pulled into an electrostatic precipitator (ESP) to collect dried adsorbent and flyash prior to discharge from the stacks. The SDA/ESP train are C-E ESD Precipitators (Contract 31485) associated with the C-E VU-40 Type Boilers (Contract 28185). The maximum design capacity of each SDA/ESP system is 189,500 ACFM at 380°F.

A slurry of calcium hydroxide (hydrated lime) is atomized in the SDAs by spray nozzles spinning at a high rate of speed (14,000 rpm). The atomized slurry forms a fine cloud in the path of the flue gas, causing acid gases (i.e., SO_2 and HCl) to contact the fine slurry droplets and be absorbed. The reaction takes place on the droplets as they are carried out into the exit ductwork. As the reactions are taking place, the water contained in the droplets is vaporized into the gas stream. The flue gas containing the ash and dry calcium precipitate enters a 5-field ESP where this particulate matter is collected in the ESP hoppers in the form of flyash.

The design inlet SO_2 loading to the SDA/ESP train is 365 lb/hr and has a SO_2 control efficiency range from 80 to 90%. A DOH BACT Determination dated January 18, 1988, estimated the control efficiency at 84%. This permit will limit SO_2 emissions to 29 ppmdv @ 7% O_2 over a 24-hour daily period geometric average and 70 ppmdv @ 7% O_2 over an 8-hour block period (see **Table No. 5**).

The design particulate loading to the ESP is 5,540 lb/hr with a design particulate removal efficiency of 98.2%. The flue gas temperature at the inlet of the ESP cannot exceed 157°C (314°F) in any 4-hr block average. The ESP outlet is rated by the manufacturer at 0.015 grains per dry standard cubic foot (gr/dscf) @ 7% O_2. The overall particulate removal efficiency of the SDA/ESP train was estimated in a DOH BACT Determination dated January 18, 1988 at 99%. This permit will limit PM emission limit to 27 mg/dscm @ 7% O_2 (see **Table No. 5**).

Primary Baghouses. The two primary baghouses collect dust generated by each of two primary shredders. Each primary baghouse are Ray-Jet Fabric Filters, Model 696-8 SWIP, designed to operate at 4,500 ACFM at ambient temperature, a 5-7 in. H_2O pressure drop, and a filter ratio of 6.54:1.

Secondary Baghouses. The two secondary baghouses collect dust generated by each of two secondary shredders, as well as the primary and secondary trommels. Each secondary baghouse are Ray-Jet Fabric Filters, Model 61214-20, designed to operate at 40,000 ACFM at ambient temperature, a 5-7 in. H_2O pressure drop, and a filter ratio of 7.48:1.

The combined permitted particulate emissions from the four baghouses described below is assumed to be a maximum of 1.02 lb/hr from PSD Permit HI 84-01. In the **Project Emissions** section, 25% of the total emissions are assumed to be emitted from the primary baghouses, and 75% assumed to be emitted from the secondary baghouses.

Roof Vents. The MSW receiving and storage buildings and the RDF storage building have a total of twelve (12) rooftop vents. On all vents, reusable and replaceable filter elements are installed upstream of the exhaust fans, as required by PSD Permit HI 84-01. The size of these buildings, the moisture content of the incoming refuse, and the coarse size of the RDF effectively minimizes the amount of dust generated.

The remaining air pollution control device is associated with insignificant sources (see **Insignificant Activities/Exemptions**):

Lime Silo Baghouse. The lime silo is used to store pebble lime that is mixed with water to form the slurry used in the SDAs. The silo is equipped with a Micro Pul baghouse consisting of 25 polyester untreated 12-foot-bags. Particulate emissions are controlled by this baghouse located on top of the silo during delivery and transfer of the lime into the silo, and are estimated to be negligible.

Applicable Requirements:

Hawaii Administrative Rules (HAR)
Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-33 Fugitive Dust
  - 11-60.1-35 Incineration
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources
- Subchapter 8, Standards of Performance for Stationary Sources

Code of Federal Regulations (CFR)

Prevention of Significant Deterioration (PSD) of Air Quality is applicable to the waste-to-energy facility according to the previous terms and conditions that were a part of PSD No. HI 84-01. However, a new PSD review is not applicable as there is no modification to increase air emissions.

40 CFR Part 60 - New Source Performance Standard (NSPS)
- Subpart A - General Provisions
- Subpart Cb - Emission Guidelines and Compliance Times for Municipal Waste Combustors Constructed on or Before September 20, 1994.
- Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. The SO_2 standard is met with the use of a SDA and fuel limitation since the potential reduction rate is greater than 90% (ref. §60.42b(a) and (c)). The PM standard in Subpart Cb is more stringent and therefore shall be used instead of Subpart Db (ref. §60.43b(b) and (d)). The NO_x standard is not applicable since the fuel oil restriction is equal to 10% of the maximum potential rate (ref. §60.44b(c)).
- Subpart E - Standards of Performance for Incinerators. The PM standard in Subpart Cb is more stringent and therefore shall be used instead of Subpart E (ref. §60.52).
- Subpart Eb - Standards of Performance for Large Municipal Waste Combustors for which Construction is Commenced after September 20, 1994 or for which Modifications or Reconstructions is Commenced after June 19, 1996 (as referenced by Subpart Cb only).

Consolidated Emissions Reporting Rule (CERR) is applicable because PM_{10}, NO_x, SO_x, and CO emissions from the facility are greater than reporting levels pursuant to 40 CFR 51, Subpart A (see **Table 1**).

Table 1 - CERR

Pollutant	Facility Emissions (tpy)	CERR Triggering Levels (tpy)		Internal Reporting Threshold (tpy)
		1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)	
VOC	76.21	≥ 250	≥ 100	≥25
PM	146.23	n/a	n/a	≥25
PM_{10}	146.23	≥ 250	≥ 100	≥25
$PM_{2.5}$	146.23	≥ 250	≥ 100	≥25
NO_x	1390.51	≥ 2,500	≥ 100	≥25
SO_x	224.3	≥ 2,500	≥ 100	≥25
CO	677.14	≥ 2,500	≥ 1,000	≥250
HAPs (total)	142.00	n/a	n/a	≥5

Note: The facility emissions are taken from **TABLE 6** for the continuous (8,760 hr/yr) operation of the MWC facility.

Also, the DOH's internal policy is to sum the individual emissions sources and if the sum of an individual pollutant exceeds the threshold limits, then annual emissions reporting is required. Internal reporting does also apply as shown in **Table 1**. Furthermore, pursuant to HRS 342B-38, all covered sources in CIP are required to submit annual emissions reports to the DOH for the compilation of an annual report.

Non-Applicable Requirements:

Code of Federal Regulations (CFR)

40 CFR Part 60 - New Source Performance Standard (NSPS)

Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978. Requirements do not apply since the fuel oil no. 2 input is restricted to a maximum of 1,770 gph which is less than 250 MMBtu/hr.

Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels. Requirements do not apply based on their capacities.

40 CFR Parts 61 and 63 - National Emission Standard for Hazardous Air Pollutants (NESHAPS)

The only equipment at the facility in a maximum achievable control technology (MACT) source category is the industrial process cooling tower. 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 HPOWER use this chemical at the present time.

Compliance Assurance Monitoring (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 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 [>100 tpy]; and (5) not otherwise be exempt from CAM. Although items 1 - 4 apply, CAM is not applicable to this facility due to item 5. This facility is exempt from CAM since it is subject to post-11/15/90 emission limitations and standards (40 CFR 60 Subpart Cb/Eb). See Covanta's letter dated 12/30/04, as a part of the permit application, for a detailed explanation.

Synthetic Minor is a facility with operational limitations in order to keep potential emissions lower than major source levels. This is a major source, therefore, synthetic minor does not apply.

A Best Available Control Technology (BACT) analysis is required for new sources or modifications to existing sources that would result in a net significant emissions increase as defined in HAR, Section 11-60.1-1. This is an existing source with no increase in emissions, therefore a new BACT review does not apply. BACT requirements implemented by PSD Permit HI 84-01, include the following:

1. Baghouses for the primary and secondary shredders to reduce PM;
2. Building vents on the roofs of the MSW receiving and storage buildings and RDF storage building to reduce PM;
3. The removal of metals while processing RDF to reduce heavy metals;
4. The shredding and blending of MSW and combustion control system to reduce CO and VOC;
5. The lowering of the inlet temperature to the ESP to reduce certain metals;
6. 5-Field ESP for each MWC to reduce PM; and
7. SDA for each MWC to reduce SO_2 and other acid gases.

Insignificant Activities/Exemptions:

The three organic liquid storage tanks, presented in **Table 2** are insignificant sources pursuant to HAR 11-60.1-82(f)(1) - storage tank capacity less than or equal to 40,000 gallons.

Table 2
Fuel Storage Tanks

Tank No.	Fuel Use	Tank Size (gal)	Product Stored
1	Boiler / Generator	25,000	Diesel
2	Boiler / Generator	25,000	Diesel
3	On-Site Internal Combustion Engines	120	Gasoline

The emergency generator, emergency fire pump, and three internal combustion engines associated with power washing, an air compressor, and a welder, listed in **Table 3** are insignificant pursuant to HAR 11-60.1-82(g)(2) - portable equipment less than 200 HP in size.

Table 3
On-Site Combustion Equipment

Facility Operation	Make / Model	Capacity	Fuel Type
Emergency Generator	Caterpillar 3304B	80-HP	Diesel
Emergency Fire Pump	Caterpillar 3208-175	121-HP	Diesel
Power Washing	N/A	11-HP	Gasoline
Air Compressor	N/A	10.1-HP	Gasoline
Diesel Welder	N/A	11.1-HP	Diesel

Other facility operations listed in **Table 4** are insignificant based on estimated emissions pursuant to HAR 11-60.1-82(f)(7) - other activities determined insignificant by the director.

Table 4
Other Insignificant Sources

Facility Operation	Description
Degreaser Operations	30-gallon mineral spirits tank for metal parts cleaning; covered when not in use.
Lime Silo	Lime silo equipped with baghouse.
Fugitive Dust	Wet flyash transferred from storage hoppers to trucks, then trucks covered prior to transport.

Alternate Operating Scenarios:

The emissions presented in the **Project Emissions** section apply to normal steady-state maximum firing conditions. There are four (4) alternate operating scenarios that apply to the facility:

1. Processing of supplemental waste;
2. Boiler warm-up;
3. Boiler start-up; and
4. Boiler shut-down.

1. Processing of Supplemental Waste. Supplemental waste is generally defined as discrete deliveries of waste components normally found in typical garbage or municipal solid waste (MSW), but delivered to the facility in quantities greater than those normally found in MSW. Supplemental waste deliveries include a variety of commodity wastes, pharmaceutical wastes, oily wastes, used cooking oil, manufacturing wastes, and triple-rinsed containers. In addition, there are "special wastes," as defined in the Hawaii Administrative Rules (11-58.1) - DOH (Title 11, Subchapter 5), which are handled at the HPOWER facility as supplemental wastes. Although some of the supplemental wastes are not defined as MSW, they are not prohibited to be used as fuel for MWCs (see definitions in Subpart Eb). Furthermore, the supplemental wastes will be mixed with the MSW in order to maintain consistent stack emissions.

   Each type of supplemental waste is described below. More details can be found in Attachment S-2 I.Ba of Permit Application Number 0255-01 for the HPOWER Covered Source Permit.

   Commodity Waste - Generated by commercial operations or retail outlets, and are accumulated as a result of the material being off-specification, outdated, or deemed no longer fit for distribution, sale, or consumption. Includes but not limited to: food products, health care products, cosmetics, and other retail store products.

   Pharmaceutical Waste - Include prescription and non-prescription pharmaceuticals, controlled substances and pharmaceutical waste regulated by the US Drug Enforcement Agency (DEA). The waste will be accumulated by pharmaceutical manufacturers, wholesalers, retailers and hospitals, or confiscated by law enforcement officers.

Manufacturing Waste - Generated as the result of industrial and manufacturing processes. This category would include floor sweepings, non-hazardous sludge, industrial filters (paint filters, air filters, etc.), adhesives, paints, and inks. No bulk liquids are accepted.

Oily Waste - Include any of the following three categories: (1) filters, (2) solid wastes containing "virgin oil", and (3) solid wastes containing used oil. The oily waste streams include, but are not limited to rags, paper towels, granular or fiber absorbents, fabric pads and booms. Booms and pads would be prepared as needed for processing. Commercial businesses such as spill clean-up companies, automobile repair shops or others may generate these types of wastes.

Filters will only be accepted if classified as non-hazardous, punctured and drained of free liquids (40 CFR Part 261). Solid waste containing "virgin oil" will only be accepted if certified as non-hazardous solid waste and if it contains no free liquid. Solid wastes containing used oil is considered a Hawaii Special Waste and will be managed as such. The used oil waste will also be managed in accordance with Federal standards outlined in 40 CFR Part 279 (EPA Standards for the Management of Used Oil). Waste oil products containing > 2 ppm polychlorinated biphenyls (PCBs) will not be accepted in any form by the HPOWER facility.

Used Cooking Oil - Generated mainly by restaurants. The used cooking oil will be transported and decanted by contractors to remove water and unwanted particles.

Triple-Rinsed Containers - These containers will mainly be comprised of high density polyethylene plastic (HDPE). Polystyrene and polyurethane containers may also be included in waste deliveries. Containers that were initially used to store pesticides are the major component of this waste type. Prior to delivery, the containers must be cut into halves. Also, they must be triple-rinsed according to Federal Regulation 40 CFR Part 261.7 or the definition set forth in the Hawaii Solid Waste Management Control Regulations (Title 11), whichever is more stringent. The generator is required to provide a statement certifying that the containers were triple-rinsed according to acceptable rinsing methods.

Shredded Tires and Automobile Shredder Residue - Tires and automobile shredder residue are both considered Hawaii Special Wastes and will be managed as such. Shredded tires will be blended with other MSW prior to charging to the combustors. If the sulfur content of the tires is high, mitigation will be accomplished by materials management and blending. Automobile shredder residue consists of items such as foam rubber, seat covers, gaskets, plastics, etc. Prior to acceptance, the generator must analyze representative samples of automobile shredder residue for hazardous constituents, such as PCBs and heavy metals. After being determined acceptable for processing, it will be blended with other MSW prior to combustion.

Treated Medical Wastes - Includes sterilized waste generated from medical, veterinary or other health care facilities and considered a Special Waste in Hawaii. Components include bandages, dressings, syringes, cultures, injectables, infectious or pathological wastes that has been subjected to sterilization (i.e., autoclave).

Treated Foreign Wastes - Includes sterilized solid waste generated by carriers leaving foreign ports and entering Hawaii. Considered a Special Waste in Hawaii. Components include airline carrier garbage or solid waste from sea-going vessels. Foreign waste received at HPOWER must comply with regulations set forth by the U.S. Department of Agriculture. In addition, foreign waste would be processed in a manner similar to that for the management and processing of medical wastes, in accordance with Hawaii regulations.

2. Boiler Warm-Up - This period is when fuel oil is being fired for the purpose of warming up the combustor temperature to the point where the air pollution control systems may be fully placed into service and the RDF feed can commence. PSD Permit HI 84-01 refers to this period as the "cold start-up" period under Special Condition IX.C.5 and limits this period to 12 hours. Under PSD Permit HI 84-01 Special Condition IX.F., SO_2 emissions during this period are limited to an average of 63 lb/hr per boiler.

3. Boiler Start-Up - After boiler warm-up, the boiler start-up period commences once the continuous burning of RDF begins. RDF is added gradually to the fuel stream and the fuel oil is decreased at a rate which insures the boiler temperatures remain in the normal operating condition range until full-load, steady-state conditions can be reached. The federal NSPS regulations at 40 CFR 60.38(b), which incorporates by reference the compliance and performance testing provisions at 40 CFR 60.58(b), limits this start-up period to 3 hours.

4. Boiler Shut-Down - The shut-down sequence involves halting the RDF feed and fuel oil no. 2 until the grates are clear. Federal NSPS regulations at 40 CFR 60.38(b), which incorporates by reference the compliance and performance testing provisions at 40 CFR Part 60.58(b), limits this shut down period to 3 hours.

Project Emissions:

The following **Table 5** contains the permitted emission rates per MWC (bold lettering) which are the most stringent of either the existing PSD conditions or new NSPS requirements:

Table 5
Analysis of Permitted Emission Rates (total of two MWCs)

Pollutant		PSD[1] Factor	NSPS[2] Factor	Emission Limit [3] (lb/hr)
SO_2	24-hr [4]	30 ppmv	**29 ppmv**	51.21
	8-hr [4]	**70 ppmv**		123.61
PM		0.015 gr/dscf[5]	**27 mg/dscm[5]**	17.91
NO_2	24-hr [6]	260 ppmv	**250 ppmv**	317.47
CO	24-hr [6]	377 ppmv	**200 ppmv**	154.60
VOC		**21 ppmv**		17.40
Pb		**0.0028 lb/ton RDF[7]**	0.44 mg/dscm[7]	0.20
Be		**0.000013 lb/ton RDF**		0.0009
Hg		0.0022 lb/ton RDF[8]	**0.080 mg/dscm[8]**	0.05
HF		**0.036 lb/ton RDF**		2.6
HCl			**29 ppmv**	29.62
Dioxin/Furan			**60 ng/dscm**	0.0000398
Cd			**0.040 mg/dscm**	0.02

Notes:
1. PSD Factors are taken from PSD Permit HI 84-01.
2. NSPS Factors are taken from 40 CFR 60 Subpart Cb (effective 10/24/97, including revised MACT).
3. The most stringent of the two (2) factors are in bold and shall be used as the permitted emission limits. For information only, the most stringent emission limits were converted to lb/hr.
4. 24-hr daily and 8-hr block geometric average.
5. 0.015 gr/dscf = 22.8 lb/hr and 27 mg/dscm = 17.91 lb/hr.
6. 24-hr daily arithmetic average.
7. 0.0028 lb/ton RDF = 0.20 lb/hr and 0.44 mg/dscm = 0.28 lb/hr.
8. 0.0022 lb/ton RDF = 0.16 lb/hr and 0.080 mg/dscm = 0.05 lb/hr.

Conversions Used:
A. Q = 58.9 dscm/s per stack at 140°C = 41.8 dscm/s at 20°C = 150,480 dscm/hr = 5,314,201 dscf/hr.
B. milligrams x 0.01543 = grains.
C. milligrams x (2.2046×10^{-6}) = pounds.
D. dscmx 35.315 = dscf
E. ppmv x MW/(385.2×10^{6}) = lb/dscf.
F. MW (molecular weight) used: SO_2 = 64, NO_2 = 46, CO = 28, VOC = 30, and HCl = 37.

The following **Table 6** contains the facility-wide maximum potential annual emissions based on operating 8,760 hr/yr:

Table 6
Facility Wide Annual Emissions

Pollutant	MWC Stacks (tpy)	Baghouses (tpy)	Cooling Tower (tpy)	Total Emissions (tpy)
SO_2	224.30			224.3
$PM/PM_{10}/PM_{2.5}$	78.44	4.46	63.33	146.23
NO_2	1390.51			1390.51
CO	677.14			677.14
VOC	76.21			76.21
HAPs Pb	0.88			0.88
Be	0.0039			0.0039
Hg	0.21			0.21
HF	11.21			11.21
HCl	129.62			129.62
Dioxin/Furan	0.00017			0.00017
Cd	0.08			0.08
			Total HAPs:	142.00

Note: Assumed $PM_{2.5} = PM_{10} = PM$

For the purposes of this permit review, the maximum emissions used for air modeling were calculated using emission factors taken from 40 CFR Subpart Ca (superseded by Cb) or existing PSD permit HI 84-01. These factors are equal to or greater (conservative) in comparison to the permitted emission limits previously mentioned in **Table 5**.

The MWC Boilers 1 & 2 are the primary emission points within the facility. These boilers are capable of burning a maximum of 36 tph RDF and 1,984 gph fuel oil (fuel oil will be limited to 1,770 gph). According to Combustion Engineering, the firing of fuel oil no. 2 with 0.5% sulfur by weight at the maximum rate is expected to have lower emissions than the firing of RDF at the maximum rate (November 15, 1985 letter to Mr. Melvin Lee of the City and County of Honolulu Division of Refuse Collection).[1] This is true for all pollutants except SO_2. However, the **Air Quality Assessment** presented below demonstrates that the SO_2 ambient air quality standards would not be violated (even while firing 1,984 gph of fuel oil no. 2). Other emission sources include the primary and secondary baghouses, roof vents, and the cooling tower all of which emit PM.

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[1] The November 15, 1985 letter stated a maximum diesel oil firing rate of 1,845 gallons/hour, but the September 1994 HPOWER Covered Source Permit Application states 1,984 gallons/hour. The latter value is used in the emissions calculations.

The permitted emission factors, their sources, and the emission factors used in this review for the **Air Quality Assessment** are presented in **Table 7**. The maximum allowable (permitted) emission rates presented in **Table 7** (and previously shown in **Table 5**) are based on the most stringent of the following sources:

PSD Permit HI 84-01 (existing permit conditions); and
NSPS 40 CFR Part 60, Subpart Cb (new federal guidelines, effective 10/97)

The following equations describe how the emission factors presented in **Tables 5** and **7** for the MWC combustors were calculated. The baghouse particulate matter emission limits were taken directly from PSD Permit HI 84-01. The emission factors presented in **Tables 5** and **7** were derived using the following conversions:

Equation 1. For emission limits expressed as ppmv (dry, @ % O_2):

lb pollutant per dscf = $(ppmv/10^6)(MW/385.2)$

where ppmv = emission limit (21 ppm for VOC)
MW = molecular weight of pollutant (use MW=30 for VOC)
dscf = dry standard cubic foot (68°F, 1 atm, 12% CO_2)

example: $(21/10^6)*(30/385.2)*(88{,}540dscfm)*(60min/hr)*(2\ MWCs)$ = 17.40 lb/hr

Equation 2. For the PM emission limit, 0.015 gr/dscf at 68°F, 1 atm, 7% O_2:

lb PM per dscf = (0.015 gr/dscf)(lb/7000 gr)

example: $(0.015)*(1/7000)*(88{,}540dscfm)*(60min/hr)*(2\ MWCs)$ = 22.8 lb/hr

Equation 3. For the PM emission limit expressed as 27 (mg/dscm) at 68°F, 1 atm, 7% O_2:

lb pollutant per dscf = $(g/dscm)(lb/453.6g)(m^3/35.3147\ ft^3)$

where g/dscm = emission limit (0.027 g/dscm for PM)

example: $(0.027)*(1/453.6)*(1/35.3147)*(88{,}540dscfm)*(60min/hr)*(2\ MWCs)$ = 17.91 lb/hr

Finally, for some pollutants, PSD Permit HI 84-01 provides emission factors directly in lb/ton-RDF.

Note that for the **Table 7** calculations, the RDF firing rate is assumed at the maximum of 36 tph and/or the fuel oil firing rate is assumed at the maximum of 1,984 gph per boiler, and the exhaust flow rate is 58.9 dscm per second at 140°C per boiler, which equates to 41.8 dscm per second or 88,540 dry standard cubic feet per minute (dscfm) at 68°F. The emission rates used for this review for air quality assessment are presented in *(parenthesis)* beneath the permit limit calculations in the "Emissions" column. The comments in the "Reference" column pertain to the permit limit calculations.

Table 7

Facility-Wide Emission Rates

Source	Fuel	Pollutant	Emission Factor	Emissions (lb/hr)	Reference
MWC Boilers 1 & 2	fuel oil	SO_2	29 ppmv, 24-hr	51.21	Subpart Cb
			70 ppmv, 8-hr	123.61	PSD HI 84-01
			142*S lb/1000 gal	*(140.9)*	AP-42, Table 1.3-1(10/96)
	RDF	PM	27 mg/dscm	17.91	Subpart Cb
				(27.7)	Subpart Ca
	RDF	NO_2	250 ppmv, 24-hr	317.47	Subpart Cb
			260 ppmv	*(340)*	PSD HI 84-01
	RDF	CO	200 ppmv, 24-hr	154.60	Subpart Cb
				(184.8)	Subpart Ca
	RDF	VOC	21 ppmv	17.40	PSD HI 84-01
				(18.00)	Subpart Ca
	RDF	Pb	0.0028 lb/ton-RDF	0.20	PSD HI 84-01
				(0.20)	same
	RDF	Be	0.000013 lb/ton-RDF	0.0009	PSD HI 84-01
				(0.0009)	same
	RDF	Hg	0.080 mg/dscm	0.05	Subpart Cb
				(0.16)	PSD HI 84-01
	RDF	HF	0.036 lb/ton-RDF	2.6	PSD HI 84-01
				(2.6)	same
	RDF	HCl	29 ppmv	29.62	Subpart Cb
				(29.7)	same
	RDF	Dioxin-Furan	60 ng/dscm	3.98E-05	Subpart Cb
				(1.71E-03)	Subpart Ca
	RDF	Cd	0.040 mg/dscm	0.02	Subpart Cb
Primary Baghouses	n/a	PM	Total limit of 1.02 lb/hr from all baghouses	0.255	25% of total baghouse limit in PSD HI 84-01
Secondary Baghouses	n/a	PM	Total limit of 1.02 lb/hr from all baghouses	0.765	75% of total baghouse limit in PSD HI 84-01

Notes: The emission rates are given for two (2) MWCs. The emission rates in parenthesis are used for the model and are more conservative than the permitted emission limits.

Ambient Air Quality Assessment:

A new ambient air quality assessment (AAQA) was not conducted for this permit renewal since there is no proposed increase in emissions. The previous AAQA (from the initial CSP) is briefly described as follows. Impacts from emissions of NO_X, PM_{10}, SO_2, and CO were predicted for point sources using atmospheric dispersion modeling. Concentrations were predicted for emissions from the MWCs as well as particulate emissions from the baghouses. The cooling tower is not a point source and therefore was not modeled. All of the particulate emissions from the point sources are considered PM_{10} because the ESPs and baghouses have controls to remove the larger particles. Therefore, for this review,

PM = PM_{10}. Emissions for each source analyzed in the modeling analysis are summarized in **Table 8** below.

For modeling purposes, the two MWC stacks were combined into one stack and the four baghouse stacks were combined into two stacks (primary and secondary). The atmospheric dispersion modeling was performed using the EPA-approved SCREEN3 dispersion model. The modeling for each stack used regulatory default options, rural dispersion coefficients, the simple elevated terrain routine for distances up to 5,000 meters, and the complex (24-hour valley) routine for distances beyond 5,000 meters. Full meteorological data with a temperature of 298°K was assumed for the modeling analysis. The effects of aerodynamic downwash were calculated by inputting building dimensions into the model. The SCREEN3 model locates the stack in the center of the building. The SCREEN3 model is only capable of modeling impacts from a single stack. Therefore, each stack was modeled separately. For the common pollutant, PM_{10}, impacts were calculated by summing the predicted impacts for each source at constant distances from the source and selecting the highest sum calculated for any distance. Source specific data used as input to the atmospheric dispersion model are summarized in **Table 8**. The emissions presented in **Table 8** are those provided by HPOWER in the September 1994 Covered Source Permit Application and correspond with the emissions in (parenthesis) in **Table 7**.

Table 8

Modeling Input Parameters

Source Description	MWC Stack	Primary Baghouse	Secondary Baghouse
UTM Coordinate (m)	592240, 2356470	592420, 2356580	592360, 2356570
Physical Height (m)	88.4	24.1	26.42
Exit Temperature °K	413	299.67	299.67
Inside Diameter (m)	1.91	0.30	1.22
Exit Velocity (m/sec)	20.68	29.12	16.18
Building Dimensions	Boiler/Generator	Boiler/Generator	Boiler/Generator
Height	43.053	43.053	43.053
Width (m)	39.472	39.472	39.472
Length (m)	61.874	61.874	61.874
NO_x Emissions (g/s)	42.88	----	----
CO Emissions (g/s)	23.31	----	----
PM Emissions (g/s)	3.5	0.03	0.10
SO_2 Emissions (g/s)	17.7	----	----

Note: The emission rates are the combined total from two (2) boilers.

Note that HPOWER's January 16, 1997 letter to the Department of Health states that the dimensions of the combined Boiler/Generator Building were used for all SCREEN3 runs, yet only the boiler run is presented in that letter and the baghouse results summarized in the letter matched those of the previous SCREEN2 run submitted with the November 1994 application, which used different building dimensions. The dimensions presented in the January 16, 1997 letter were verified, therefore, a SCREEN3 analysis was made for the baghouses with the same building dimensions and model options used in HPOWER's January 16, 1997 model run. Horizontal dimensions were scaled off of the facility plot plan, while reasonably conservative estimates were made for vertical dimensions, exit velocity, and plume temperature.

Because the SCREEN3 model estimates 1-hour concentrations for simple terrain and 24-hour average concentrations for complex terrain, adjustment factors were used to estimate various averaging times. These adjustment factors were multiplied by modeling results as follows:

From 1 hour average to:
- 3-hr average - 0.9
- 8-hr average - 0.7
- 24-hr average - 0.4
- Annual average - 0.2

From 24-hr average to:
- 1-hr average - 4.0 (24-hr average doesn't need converting)

Table 9 presents the modeling results compared to ambient air quality standards. All of the emission rates provided by HPOWER in the Covered Source Application were the same or more stringent than applicable emission limitations, including the scenario of burning 100% fuel oil which allows potential hourly SO_2 emissions release of 140.9 lb/hr. Even with these conservative assumptions, the HPOWER operations are predicted to comply with ambient air quality standards.

Table 9
Predicted Source Impacts

Pollutant	Averaging Time	MWCs (g/m^3)	Baghouses (g/m^3)	Total (g/m^3)	Air Standard (g/m^3)	Percent Standard (%)
NO_X	Annual	64.32		64.32	70	91
CO	1 Hr	174.81		174.81	10,000	1
	8 Hr	122.37		122.37	5,000	2
PM_{10}	24 Hr	6.56	11.05	17.61	150	11
	Annual	5.25	5.52	10.77	50	21
SO_2	3 Hr	119.95		119.95	1,300	9
	24 Hr	33.31		33.31	365	9
	Annual	26.66		26.66	80	33

Existing Permit Conditions:

The following PSD HI 84-01/ PTO No. P-598-1475 conditions were carried over as federal requirements except as noted in (parenthesis):

1. Telephone notification to the Department of Health within 48 hours.
2. Right to entry by EPA/DOH.
3. CFR Parts 52, 60, and 61 including NSPS Subpart A, Db, and E.
4. Requirement of the following air pollution control equipments: five field ESPs, flue gas scrubbers, baghouses for the RDF processing and storage, and twelve building vents.
5. The combustion temperature shall be continuously maintained at or above 1800ºF (was revised to 4-hr block averages to be consistent with Cb).

6. The emergency generator and pump shall not exceed 64 hours per unit per year (were removed since the equipments are insignificant pursuant to HAR).
7. Each boiler, when firing of fuel oil, shall not exceed a heat input rate of 249 MMBtu/hr nor exceed 1,738,500 gpy (heat input limit was converted from 249 MMBtu/hr to 1,770 gph fuel oil flow rate since it is easier to monitor).
8. The flue gas scrubber need not be operated until the scrubber inlet temperature reaches 250ºF.
9. Annual performance tests shall be conducted for: TSP, SO_2, NO_x, CO, VOC, Pb, Hg, HF, Be, and Dioxin/Furan (SO_2, NO_x, and CO testing was revised similar to NSPS guideline, see below)
10. Emission limits for the MWCs (unless noted otherwise) for the following air pollutants:
    a. 0.015 gr/dscf for PM (was replaced with 27 mg/dscm per NSPS Subpart Cb which is more stringent).
    b. 1.02 lbs/hr for PM for the RDF baghouses (was removed because previous source tests showed concentrations well below the limit and the moving equipment in that area is dangerous for the testers).
    c. 0.39 lbs/hr for PM for the sum of all twelve building vents (was removed since there are no testing requirements and they are not point sources).
    d. 30 ppm average in any 24-hr period for SO_2 (was replaced with 29 ppm per NSPS Subpart Cb which is more stringent).
    e. 70 ppm average in any 8-hr period for SO_2.
    f. During cold start-up periods, each boiler shall not exceed 63 lb/hr of SO_2.
    g. 260 ppm average in any 3-hr average for NO_x (was replaced with 250 ppm average in any 24-hr period per NSPS Subpart Cb which is more stringent).
    h. 377 ppm average in any 3-hr average for CO (was replaced with 200 ppm average in any 24-hr period per NSPS Subpart Cb which is more stringent).
    i. 21 ppm average in any 3-hr average for VOC.
    j. 0.20 lb/hr average for Pb in any 3-hr period.
    k. 0.0022 lbs/ton-RDF average for Hg in any 3-hr period (was replaced with 0.080 mg/dscm per NSPS Subpart Cb which is more stringent).
    l. 2.6 lb/hr average for HF in any 3-hr period.
    m. 0.0009 lb/hr average for Be in any 3-hr period.
11. Operate and maintain CEMS to measure opacity, flue gas temperatures downstream of the MWCs superheaters and inlet of the ESPs, NO_x, SO_2, and CO_2 (CO_2 was removed and CO and O_2 were added per NSPS Subpart Cb).
12. Report of all excess emissions for every calendar quarter (was changed to semi-annual reporting pursuant to changes in 40 CFR 60 Subpart A, dated 2/12/99).
13. Excess emissions as indicated by the CEMS shall be considered potential violations subject to DOH review for potential enforcement.
14. Operate and maintain hour meters for the emergency diesel engines (were removed as these equipment are insignificant as stated in no. 6 above).
15. Monitor and maintain records on the rapping sequence and the current and voltage for each field of the ESP during each 12 hour shift (reporting requirements were removed - see **New Permit Conditions** section).

The following permit conditions ensure compliance with federal risk management plan (RMP, 40 CFR 68 - Chemical Accident Prevention Provision) requirements, HPOWER's previously proposed alternate operating scenarios (AOS), and NSPS municipal waste combustor guidelines (40 CFR 60 Subpart Cb, effective 10/24/97):

1. The storage of chlorine shall be less than 2,500 lb on site (RMP).
2. The pressure drop for the primary and secondary baghouses shall be maintained at 1-7 in. H_2O (needed for DOH monitoring, 12/7/99 source performance report show that compliance was maintained when the baghouses operated down to 1 in. H_2O).
3. Alternate operating scenarios for the following (AOS):
    a. Processing of supplemental wastes (wastes that are normally found in MSW, but in bulk quantities).
    b. Boiler warm-up, start-up, and shut-down operation requirements.
4. Spec used oil limit of 430,000 gal/yr.
5. Emission limits for the MWCs for the following air pollutants (Cb §60.33b):
    a. 29 ppm average in any 24-hr daily period for SO_2, geometric average.
    b. 27 mg/dscm average in any 3-hr period for PM.
    c. 250 ppm average in any 24-hr daily period for NO_x, arithmetic average.
    d. 200 ppm average in any 24-hr daily period for CO, arithmetic average.
    e. 0.44 mg/dscm average for Pb is less stringent than the existing PSD limit and therefore not used.
    f. 0.080 mg/dscm average in any 3-hr period for Hg.
    g. 29 ppm average in any 3-hr period for HCl.
    h. 60 ng/dscm average in any 3-hr period for Dioxin-Furan.
    i. 0.040 mg/dscm average in any 3-hr period for Cd.
6. Visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) into the ambient air in excess of 5% of the observation period shall not be allowed (Eb §60.55b via Cb §60.36b).
7. The facility shall not operate at a load based on steam (or feedwater) flow rate greater than 110% of the maximum demonstrated MWC unit load, except during and 2 weeks preceding the annual dioxin/furan performance test. Condition may be waived by the DOH (Eb §60.53b via Cb §60.34b).
8. The facility shall not operate at a temperature, measured at the PM control device inlet, exceeding 17ºC above the maximum demonstrated PM control device temperature, except during and 2 weeks preceding the annual dioxin/furan performance test. Condition may be waived by the DOH (Eb §60.53b via Cb §60.34b).
9. Operator training and certification requirements as follows (Eb §60.54b via Cb §60.35b and pursuant to EPA "Stand-in" Provisions - letter dated 5/14/98):
    a. Each chief facility operator and shift supervisor shall obtain and maintain a current provisional operator certification.
    b. Each chief facility operator and shift supervisor shall have completed full certification or have scheduled a full certification exam.
    c. One of the following must always be on duty: a fully certified chief facility operator, a provisionally certified chief facility operator who has scheduled a full certification exam, a fully certified shift supervisor, or a provisionally certified shift supervisor who has scheduled a full certification exam.

If one of the above must leave during a shift, a provisionally certified control room operator may fulfill the requirement for 5.c. using the following guidelines ("Stand-in" Provisions):

1) No notification is required if a control room operator is "standing-in" for eight hours or less.
2) If a control room operator is "standing-in" between 8 hours and 2 weeks, then HPOWER shall notify the Department of Health by phone within the first 24 hours and notify the EPA and the Department of Health in writing within the first five working days. At a minimum, the notification shall include date and time of the expected "stand-in", the person who is "standing-in", person's qualifications, and the reason for the "stand-in".
3) If a control room operator is "standing-in" for 2 weeks or more, then HPOWER shall fulfill the requirements of 2) plus provide corrective actions and expected date of return of a fully certified operator. HPOWER shall submit the written status summary every two weeks up until the return of a fully certified operator.

d. All chief facility operators, shift supervisors, and control room operators must complete the EPA training course. This condition does not apply to those who have obtained full certification from ASME as of January 3, 2002. The EPA training course is not required for those who have obtained provisional certification from ASME.
e. The owner shall develop and update on an annual basis an operating manual.
f. The owner shall establish an annual training program to review the operating manual and conduct the initial training program.
g. The operating manual shall be kept in a readily accessible location.

10. The following are compliance and performance requirements (Eb §60.58b via Cb §60.38b):
    a. Compliance and performance testing shall apply at all times except during periods of warm-up, start-up, or shut-down (duration of 3 hours per occurrence).
    b. The owner/operator shall install, calibrate, maintain, and operate a continuous emission monitoring system for measuring the oxygen content.
    c. Compliance with the emission limits for particulate matter and opacity shall be determined using EPA Method 5 and 9, respectively. The owner/operator shall install, calibrate, maintain, and operate a continuous opacity monitoring system. The owner/operator shall conduct annual performance tests for opacity and particulate matter.
    d. Compliance with the emission limits for cadmium, lead, and mercury shall be determined using EPA Method 29. The owner/operator shall conduct annual performance tests for cadmium, lead, and mercury.
    e. Compliance with the emission limit for sulfur dioxide shall be determined using EPA Method 6, 6A, 6C. The owner/operator shall install, calibrate, maintain, and operate a continuous emission monitoring system and conduct quarterly accuracy audits.
    f. Compliance with the emission limit for hydrogen chloride shall be determined using EPA Method 26 or 26A. The owner/operator shall conduct annual performance tests for hydrogen chloride.

g. Compliance with the emission limit for dioxin/furan shall be determined using EPA Method 23. The owner/operator shall conduct annual performance tests for dioxin/furan according to Cb - 60.38b(b) below.
h. Compliance with the emission limit for nitrogen oxide shall be determined using EPA Methods 7, 7A, 7C, 7D, or 7E. The owner/operator shall install, calibrate, maintain, and operate a continuous emission monitoring system and conduct quarterly accuracy audits.
i. Compliance with the emission limit for carbon monoxide shall be determined using EPA Method 10, 10A, or 10B. The owner/operator shall install, calibrate, maintain, and operate a continuous emission monitoring system and conduct quarterly accuracy audits.
j. The owner/operator shall install, calibrate, maintain, and operate a steam (or feedwater) flow meter to monitor and record the steam (or feedwater) flow rate for each MWC.
k. Compliance with the emission limit for fugitive ash shall be determined using EPA Method 22. The owner/operator shall conduct an initial and annual performance tests for fugitive ash.
l. Alternate EPA approved test methods may be used also.
m. If all performance tests over a 2-year period indicate that dioxin/furan emissions are less than or equal to 15 ng/dscm for both MWCs, then the owner/operator may conduct annual performance tests for one MWC instead (each year a different MWC shall be tested). If any annual performance test indicates dioxin/furan emissions greater than 15 ng/dscm, then performance tests thereafter shall be conducted annually on all MWCs until they meet the 2-year period qualifications again.

11. The following records shall be dated and maintained onsite as paper copy for 5 years for review by an EPA or Department of Health representative (Eb §60.59b via Cb §60.39b):
    a. All 6-minute average opacity levels as recorded by CEMS.
    b. All 1-hour average SO_2, NO_x, and CO emission concentrations as recorded by CEMS.
    c. All 24-hour daily average SO_2, NO_x, and CO emission concentrations as recorded by annual performance tests.
    d. 4-hour block average for steam (or feedwater) flow rate for the MWC load level.
    e. 4-hour block average for ESP inlet temperatures.
    f. All exceedances of any applicable emission limits and a description of corrective actions taken.
    g. Identification of time periods when data was not obtainable for the minimum hours of SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures. Also provide reasons for not obtaining sufficient data and a description of corrective actions taken.
    h. Identification of occurrences when any data was excluded from the calculation of SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures.
    i. The results of daily drift tests and quarterly accuracy determinations for the CEMS.

j. All test reports documenting the results of the initial performance test and all annual performance tests conducted to determine compliance with the PM, opacity, Cd, Pb, Hg, dioxin/furan, HCl, and fugitive ash emission limits. Also, for all dioxin/furan performance tests, the maximum RDF load and ESP inlet temperature shall be recorded.
k. Records showing the names of the MWC chief facility operator, shift supervisors, and control room operators who have been provisionally certified by ASME and the dates of initial and renewal certifications and documentation of the current certification.
l. Records showing the names of the MWC chief facility operator, shift supervisors, and control room operators who have been fully certified by ASME and the dates of initial and renewal certifications and documentation of the current certification.
m. Records showing the names of the MWC chief facility operator, shift supervisors, and control room operators who have completed the EPA MWC operator training course and documentation of training completion.
n. Records showing the names of persons who have completed a review of the operating manual including the date of the initial review and subsequent annual reviews.

12. 10% opacity limit for the MWCs (Cb §60.33b).
13. The following reports shall be submitted as paper copy and postmarked on or before the date required and kept onsite as paper copy for 5 years (Eb §60.59b via Cb §60.39b):
    a. The initial performance test data for SO_2, NO_x, CO, PM, opacity, Cd, Pb, Hg, dioxin/furan, HCl, and fugitive ash emissions concentrations, MWC unit capacity in tpd.
    b. The performance evaluation of the CEMS.
    c. The maximum demonstrated MWC load and ESP inlet temperature established during the initial dioxin/furan performance test.
    d. After the initial performance test, the owner or operator shall submit an annual report which includes the following no later than February 1 of each year following the calendar year in which the data were collected:
        1) A summary of data collected for PM, opacity, Cd, Pb, Hg, dioxin/furan, HCl, and fugitive ash emissions concentrations achieved during the annual performance tests.
        2) A list of the highest results recorded for opacity, SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures achieved during the annual performance tests.
        3) The total number of days that the minimum number of hours of data for SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures were not obtained.
        4) The total number of hours that data for SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures were excluded from the calculation of average emission concentrations or parameters.
        5) A summary of the data (as submitted for d.1 through d.4 above) for the previous year in order to have a summary of performance over a 2-year period.

6) A separate summary shall identify all emission and/or parameter levels that did not achieve the specified limits over the 2-year period.
7) A notification of the intent to begin the waiving of an annual performance test for dioxin/furan for the following year.

e. The owner or operator shall submit a semi-annual report (submitted by August 1 and February 1 following the first calendar half and second calendar half respectively) which includes the following:
1) Any recorded emission and/or parameter that did not comply with the specified limit for opacity, SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures.
2) The date of exceedance, the corrective actions taken, and the concurrent data recorded for opacity, SO_2, NO_x, and CO emissions concentrations, MWC unit load levels, and ESP inlet temperatures.
3) A copy of the test report and the corrective actions taken if there were any exceedances during the annual performance tests for PM, opacity, Cd, Pb, Hg, dioxin/furan, HCl, and fugitive ash.

The following existing conditions were incorporated into the CSP via permit amendments:
1. Added warm-up as a period when MWC stack opacity and emission limitations do not apply (this is consistent to the intent for start-up scenarios).
2. Added warm-up, start-up, shut-down, and malfunction as periods when the ESP inlet temperature requirement does not apply (pursuant to 40 CFR 60.58b, standards do not apply during these periods).
3. Specified that used cooking oil may be used as an auxiliary fuel (no increase in potential emissions).

New Permit Conditions:
1. Add the following wording (in **bold**) to show compliance with emission limits that are consistent with 40 CFR §60.33b(b)(3)(i) and (ii) respectively (Attachment IIA, D.2):

a. SO_2 emission limit 29 ppmv (7% O_2) **or 75% reduction by weight or volume**.
b. HCl emission limit 29 ppmv (7% O_2) or 95% reduction by weight **or volume**.

2. Remove the requirement to submit summary reports for any changes to the rapping sequence and current/voltage for each field of the ESP (Attachment IIA, F.4.a.10). The rapping sequence is rarely adjusted and the current/voltage automatically adjusts while in operation. In lieu of this data, the CEMS is a better monitor for air pollution control. The permit condition to maintain records of any changes to the ESP will not be removed from the permit (therefore ESP data will still be available if needed). Since this is also a PSD permit condition, the CSP cover letter will announce the change to PSD.

Other Issues/Conditions:

1. The emission limits and requirements for operating practices, operating training, performance testing, recordkeeping, and reporting are pursuant to 40 CFR Part 60, Subpart Cb - Emission Guidelines for Large Municipal Waste Combustors that are Constructed on or Before September 20, 1994 (effective 10/24/97). This guideline will be implemented pursuant to HAR 11-60.1-163, which includes 40 CFR Part 62 Subpart FFF - Federal Plan Requirements for Large Municipal Waste Combustors Constructed on or Before September 20, 1994.

2. Periodic visible emissions monitoring is not necessary since opacity will be continuously monitored by CEMS.

Conclusion and Recommendation:

In conclusion, it is the Department of Health's preliminary determination that the facility will comply with all State and Federal laws, rules, regulations, and standards with regards to air pollution. This determination is based on the application submitted by HPOWER. This review is conservative because of the following assumptions:

1. The emission rates used in the air quality assessment is greater than the permitted emission rates;
2. The air quality assessment assumed that the boilers operated at maximum capacity for 8,760 hr/yr; and
3. The sulfur emissions were calculated using fuel oil for 8,760 hr/yr when RDF will be used as fuel most of the time.

Therefore, a CSP renewal for HPOWER is recommended subject to the following:

1. Above permit conditions;
2. 30-day public review period; and
3. 45-day EPA review period.