

COVERED SOURCE PERMIT NO. 0030-06-C REVIEW
APPLICATION FOR RENEWAL NO. 0030-08

Applicant: Maui Electric Company, Ltd. (MECO)

Equipment:

<u>Unit Nos.</u>	<u>Description</u>
1-6	1.0 MW General Motors Electro-Motive Division (EMD) DEGs (model no. 567-C, serial nos. 51-H-164; 54-C-141; 56-F-135; 56-G-13; 56-H-59; and 62-J-72 respectively), fired on fuel oil no. 2 and spec used oil, maximum 80.1 gal/hr (10.42 MMBtu/hr) each DEG
7,8	2.2 MW Caterpillar DEGs (model no. 3608, serial nos. 6MC00475 and 6MC00476 respectively), fired on fuel oil no. 2 and spec used oil, maximum 167 gal/hr (23.1 MMBtu/hr) each DEG

Air Pollution Controls:

There are no add-on air pollution control devices for any of the diesel engine generators (DEGs). However, the following operational conditions are implemented to decrease emissions:

- NO_x emissions are reduced by maintaining a Fuel Injection Timing Retard (FITR) of 5 and 9 degrees for unit nos. 1-6 and 7,8 respectively. FITR was applied as BACT for all DEGs.
- Sulfur emissions are reduced for all DEGs by burning fuel oil no. 2 with a maximum sulfur content of 0.4% by weight. The sulfur limit was applied as BACT for unit nos. 7 and 8, then MECO had proposed to use this sulfur limit for all DEGs so that monitoring and recordkeeping would be simpler.
- CO, VOC, PM, PM₁₀, and HAPs emissions are reduced by combustion design for unit nos. 7 and 8. This determination was made with the BACT analysis for the PSD review for CSP No. 0030-02-C.
- Overall pollutant emissions are capped with fuel limitations (1,626,100 gal/yr of total fuel oil for unit nos. 1-6, unit nos. 7 and 8 may operate continuously)

Facility Location: Miki Basin Generating Station
 Located at Lanai, HI
 UTM: Zone 4, 714.8 km east, 2300.6 km north, Old Hawaiian Datum

Mailing Address: Miki Basin Generating Station
 P.O. Box 398
 Kahului, HI 96732

Responsible Official:
 Michael P. Ribao
 Manager, Power Supply
 (808) 872-3500

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 Queenie Komori
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 543-4526

Background:

The standard industrial classification code (SICC) is 4911 – Electrical Services.

The Miki Basin Generating Station produces electricity for public use on the island of Lanai through the combustion of fossil fuels and other alternate fuels. The facility houses eight (8) diesel engine generators (DEGs). There are two (2) 15 kW standby DEGs, two (2) fuel storage tanks >40,000 gallons, and (8) fuel storage tanks <40,000 gallons on the facility that are all considered insignificant (as mentioned in **Insignificant Activities** section).

This renewal application includes the existing equipment with no proposed changes:

Six (6) DEGs (unit nos. 1-6):

Unit nos. 1-6 are 1.0 MW General Electric DEGs. The manufacture dates for unit nos. 1-6 (circa 1957). Currently, there is a total fuel limit of 1,626,100 gal/yr and a specification (spec) used oil limit of 2,000 gal/yr. Prior to the installation of unit nos. 7 and 8, the total fuel limitation was increased from 1,291,500 gal/yr (ATC A-793-733) to 1,626,100 gal/yr (CSP 0030-01-C) to meet the increased power usage on Lanai. The calculated net increase in potential NO_x emissions was 39.5 tpy (less than the significant level of 40 tpy) and the overall potential NO_x emissions became 287 tpy. Therefore, unit nos. 1-6 were not subject to PSD review. Any future emission increases for these units may be subject to PSD review.

Three (3) DEGs (unit nos. 7-8):

Unit nos. 7-8 are 2.2 MW Caterpillar DEGs (DEG No. 9 was never installed). Construction of these DEGs commenced on May 20, 1996 and the start up dates for unit nos. 7 and 8 are September 16 and 18, 1996 respectively. There is a spec used oil limit of 8,500 gal/yr, but no limit of fuel oil no. 2. These units were subject to PSD review since the potential increase of NO_x emissions from unit nos. 7 and 8 were major (greater than 250 tpy).

Proposed Changes

MECO stated that the facility continues to operate as previously permitted with no changes. However, in this application, they propose the following changes:

1. increase flexibility for the temporary replacement unit so as long as emissions are not increased;
2. allow the use of fuel additives to improve combustion, control algae, inhibit corrosion, or other reasons;
3. add Method 18 as an additional VOC test method to define the methane fraction of the total organic compounds measured by Method 25A. Method 18 cannot be used by itself since it cannot measure total VOCs.
4. add Method 19 as an alternative NO₂ stack testing procedure for unit nos. 1-6.
5. allow MECO to accept used oil from equipment that are operated and/or maintained by MECO.

All five (5) of the proposed changes should not increase emissions. These changes are discussed further in the **Alternate Operating Scenarios** and **Significant New Permit Conditions** sections.

The facility is located 1 km east of the Lanai airport and has a base elevation of 1230 meters above sea level. The area is a vast pasture with a slight slope.

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

This permit review is based on the application no. 0030-08 dated November 1, 2006 and its revision dated November 21, 2006. A check for \$3,000 was processed for the renewal of a major source CSP application. CSP No. 0030-06-C dated November 19, 2002 will be superseded, in its entirety upon the issuance of this permit.

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

11-60.1-38 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

Subchapter 7, Prevention of Significant Deterioration Review

Consolidated Emissions Reporting Rule (CERR) is applicable because emissions from the facility trigger reporting levels pursuant to 40 CFR 51, Subpart A (see **Table 1**). This facility is subject to CERR as a Type B source.

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	75	≥ 250	≥ 100	≥25
PM	50	n/a	n/a	≥25
PM ₁₀ /PM _{2.5}	50	≥ 250	≥ 100	≥25
NO _x	739	≥ 2,500	≥ 100	≥25
SO _x	139	≥ 2,500	≥ 100	≥25
CO	242	≥ 2,500	≥ 1,000	≥250
HAPs (total)	1.8	n/a	n/a	≥5

Non-Applicable Requirements:

A new Prevention of Significant Deterioration (PSD) review is not applicable since there will be no modifications nor increase in emissions. However, there were previous increases in emissions totaling 39.5 tpy of NO_x for unit nos. 1-6. Therefore, any further increase in emissions may trigger PSD review.

40 CFR Part 60 - New Source Performance Standard (NSPS) Subpart IIII – Standards of

Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable since the diesel engines were constructed prior to the effective dates and the diesel engines have not been modified since. A ‘modification’ or ‘reconstruction’ may trigger NSPS.

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) is not applicable because there is no standard for diesel engines.

40 CFR Part 63 - Maximum Achievable Control Technology (MACT) is not applicable since there is no standard for diesel engines.

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 precontrol emissions that are greater than the major source level [>100 tpy]; and (5) not otherwise be exempt from CAM. CAM is not applicable to the plant since item 3 does not apply.

A Best Available Control Technology (BACT) analysis is not required for this review since this is an existing source and there is no new construction or significant modification. Previous BACT analyses determined that FITR is required for all DEGs and a sulfur content limit is required for unit nos. 7 and 8.

This is not a synthetic minor source since it is a major source (>100 tpy) for NO_x, SO₂, and CO.

Insignificant Activities:

The insignificant activities, as listed by the applicant on the CSP application, are as follows:

<u>Basis for Exemption</u>	<u>Description</u>
§11-60.1-82(f)(1)	There are ‘day tanks’ or individual fuel storage tanks for each DEG with capacities less than 40,000 gallons that are not subject to Section 111 or 112 of the CAA.
§11-60.1-82(f)(2)	There may occasionally be fuel burning equipment with a heat input capacity less than 1 MMBtu/hr used at the facility.
§11-60.1-82(f)(5)	Two (2) 15 kW standby DEGs are used to restart unit nos 7 and 8 during power outage.
§11-60.1-82(f)(7)	Insignificant amounts of fugitive VOCs are emitted from valves, flanges, pump seals, VOC water separators, and solvents.
§11-60.1-82(g)(1)	Intermittent welding is done for maintenance.
§11-60.1-82(g)(2)	Hand held equipment may occasionally be used for maintenance

	purposes.
§11-60.1-82(g)(3)	Chemical and physical analyses are performed periodically.
§11-60.1-82(g)(4)	Containers or tanks are used to coat objects with non-solvent material.
§11-60.1-82(g)(6)	Fire water system pump engines are used on site periodically.
§11-60.1-82(g)(8)	Gasoline fired portable industrial equipment less than 25 HP are used on site.
§11-60.1-82(g)(9)	Various plant maintenance and upkeep activities are conducted on site.
§11-60.1-82(g)(12)	Stacks/vents for sewer gases are on site.
§11-60.1-82(g)(13)	Office equipment and products are on site.

Alternate Operating Scenarios:

The existing two alternate operating scenarios (temporary replacement unit and alternate fuels) remain unchanged except for the change to allow more flexibility when replacing a damaged unit temporarily. This flexibility is consistent with other permit revisions and should not increase air pollutant emissions. Furthermore, new units are becoming more efficient so that larger units may actually emit less air pollutant emissions (please see **Significant New Permit Conditions** section).

The other proposed alternate operating scenarios by MECO were not added to the permit for the following reasons:

1. Startup, shutdown, maintenance, and testing are normal operations that are already defined in the permit.
2. Alternate operating scenarios are temporary and generally require DOH approval prior to each single event. During emergencies and unpredictable equipment failure, it is not feasible to obtain DOH approval prior to such an occurrence.

Project Emissions:

Emission rates remain unchanged from the CSP review for the previous permit application nos. 0030-06 and -07. For details please refer to that CSP review.

As mentioned in the **Background** section, the previous net increase in NO_x emissions for unit nos. 1-6 was just short of triggering a PSD review. Therefore, any further increase in NO_x emissions may trigger a PSD review.

Summaries of the individual unit emissions for the criteria pollutants are given in **TABLES 2 to 7**. NO_x emissions exceeded the PSD major source threshold (250 tpy) and NO_x, SO₂, and CO emissions exceeded the state major source threshold (100 tpy). HAPs emissions are below significant levels.

**TABLE 2
NO_x EMISSIONS**

Unit No.	(lb/hr) ¹	(ton/yr) ²
1	28.52	48.65
2	25.98	45.40
3	28.58	48.78
4	28.62	53.53
5	27.24	46.34
6	25.45	44.72
7	51.56	225.83
8	51.56	225.83
Total		739.08

1. NO_x emission rates for unit nos 1-6 are the maximum potential based on 1993 stack tests and are equipment specific. NO_x emission rates for unit nos 7 and 8 are permit limits.
2. Annual emissions for unit nos 1-6 are based on a fuel limitation of 1,626,100 gallons per year on a rolling twelve (12) month basis. Each DEG was assumed to operate equally. However, the permittee will be required to calculate actual emissions to ensure that NO_x emissions remain below 288 tpy. Annual emissions for unit nos. 7 and 8 are assumed to operate continuously (8,760 hr/yr).

**TABLE 3
SO₂ EMISSIONS**

Unit No.	(lb/hr) ¹	(ton/yr) ²
1	5.63	9.61
2	5.63	9.61
3	5.63	9.61
4	5.63	9.61
5	5.63	9.61
6	5.63	9.61
7	9.34	40.91
8	9.34	40.91
Total		139.48

1. SO₂ emission rates are based on the manufacturer's data from General Motors Electro-Motive Division and the Southwest Research Institute. SO₂ emission rates for unit nos 7 and 8 are permit limits.
2. Annual emissions for unit nos 1-6 are based on a fuel limitation of 1,626,100 gallons per year on a rolling twelve (12) month basis. Each DEG was assumed to operate equally. Annual emissions for unit nos. 7 and 8 are assumed to operate continuously (8,760 hr/yr).

**TABLE 4
CO EMISSIONS**

Unit No.	(lb/hr) ¹	(ton/yr) ²
1	14.91	25.45
2	14.91	25.45
3	14.91	25.45
4	14.91	25.45
5	14.91	25.45
6	14.91	25.45
7	10.19	44.63
8	10.19	44.63
Total		241.96

1. CO emission rates are based on the manufacturer's data from General Motors Electro-Motive Division and the Southwest Research Institute. CO emissions for unit nos 7 and 8 are permit limits.
2. Annual emissions for unit nos 1-6 are based on a fuel limitation of 1,626,100 gallons per year on a rolling twelve (12) month basis. Each DEG was assumed to operate equally. Annual emissions for unit nos. 7 and 8 are assumed to operate continuously (8,760 hr/yr).

**TABLE 5
VOC EMISSIONS**

Unit No.	(lb/hr) ¹	(ton/yr) ²
1	5.40	9.21
2	5.40	9.21
3	5.40	9.21
4	5.40	9.21
5	5.40	9.21
6	5.40	9.21
7	2.23	9.77
8	2.23	9.77
Total		74.80

1. VOC emission rates are based on the manufacturer's data from General Motors Electro-Motive Division and the Southwest Research Institute. VOC emission rates for unit nos 7 and 8 are permit limits.
2. Annual emissions for unit nos 1-6 are based on a fuel limitation of 1,626,100 gallons per year on a rolling twelve (12) month basis. Each DEG was assumed to operate equally. Annual emissions for unit nos. 7 and 8 are assumed to operate continuously (8,760 hr/yr).

TABLE 6
PM/PM₁₀ EMISSIONS

Unit No.	(lb/hr) ¹	(ton/yr) ²
1	2.54	4.35
2	2.54	4.35
3	2.54	4.35
4	2.54	4.35
5	2.54	4.35
6	2.54	4.35
7	2.69	11.78
8	2.69	11.78
Total		49.66

1. PM/PM₁₀ emission rates are based on the manufacturer's data from General Motors Electro-Motive Division and the Southwest Research Institute. PM/PM₁₀ emissions for unit nos 7 and 8 are permit limits.
2. Annual emissions for unit nos 1-6 are based on a fuel limitation of 1,626,100 gallons per year on a rolling twelve (12) month basis. Each DEG was assumed to operate equally. Annual emissions for unit nos. 7 and 8 are assumed to operate continuously (8,760 hr/yr).

**TABLE 7
HAZARDOUS AIR POLLUTANT (HAPs) EMISSIONS ¹**

HAP	Unit No. 1 (tpy)	Unit No. 2 (tpy)	Unit No. 3 (tpy)	Unit No. 4 (tpy)	Unit No. 5 (tpy)	Unit No. 6 (tpy)	Unit No. 7 (tpy)	Unit No. 8 (tpy)	Annual Emissions (tpy)
Acetaldehyde	1.160e-03	1.160e-03	1.160e-03	1.160e-03	2.550e-03	2.550e-03	2.550e-03	2.550e-03	1.484e-02
Acrolein	3.620e-04	3.620e-04	3.620e-04	3.620e-04	7.970e-04	7.970e-04	7.970e-04	7.970e-04	4.636e-03
Benzene	3.570e-02	3.570e-02	3.570e-02	3.570e-02	7.850e-02	7.850e-02	7.850e-02	7.850e-02	4.568e-01
Formaldehyde	2.170e-02	2.170e-02	2.170e-02	2.170e-02	4.770e-02	4.770e-02	4.770e-02	4.770e-02	2.776e-01
Naphthalene	5.980e-03	5.980e-03	5.980e-03	5.980e-03	1.320e-02	1.320e-02	1.320e-02	1.320e-02	7.672e-02
Toluene	1.290e-02	1.290e-02	1.290e-02	1.290e-02	2.840e-02	2.840e-02	2.840e-02	2.840e-02	1.652e-01
Xylene	8.880e-03	8.880e-03	8.880e-03	8.880e-03	1.950e-02	1.950e-02	1.950e-02	1.950e-02	1.135e-01
Arsenic Compounds	5.060e-04	5.060e-04	5.060e-04	5.060e-04	5.060e-04	5.060e-04	4.960e-04	4.960e-04	4.028e-03
Beryllium Compounds	7.000e-06	7.000e-06	7.000e-06	7.000e-06	7.000e-06	7.000e-06	2.560e-10	2.560e-10	4.200e-05
Cadmium Compounds	2.210e-04	2.210e-04	2.210e-04	2.210e-04	2.210e-04	2.210e-04	4.250e-04	4.250e-04	2.176e-03
Chromium Compounds	5.060e-04	5.060e-04	5.060e-04	5.060e-04	5.060e-04	5.060e-04	4.760e-03	4.760e-03	1.256e-02
Lead Compounds	2.500e-03	2.500e-03	2.500e-03	2.500e-03	2.500e-03	2.500e-03	1.400e-03	1.400e-03	1.780e-02
Manganese Compounds	3.630e-02	3.630e-02	3.630e-02	3.630e-02	3.630e-02	3.630e-02	3.440e-02	3.440e-02	2.866e-01
Mercury Compounds	1.000e-03	1.000e-03	1.000e-03	1.000e-03	1.000e-03	1.000e-03	1.200e-04	1.200e-04	6.240e-03
Nickel Compounds	2.160e-04	2.160e-04	2.160e-04	2.160e-04	2.160e-04	2.160e-04	1.210e-01	1.210e-01	2.433e-01
Polycyclic Organic Matter (POM)	9.750e-03	9.750e-03	9.750e-03	9.750e-03	9.750e-03	9.750e-03	2.140e-02	2.140e-02	1.013e-01
Selenium Compounds	1.150e-03	1.150e-03	1.150e-03	1.150e-03	1.150e-03	1.150e-03	5.360e-04	5.360e-04	7.972e-03
Total:									1.791e+00

1. HAPs emission rates are based on HELCO Keahole combustion turbines 4 and 5, EPRI PISCES Air Toxic Database, and AP-42 Sections 3.1 and 3.4, 10/96. The most conservative factors were used. Annual emissions for all DEGs assumed continuous operation (8,760 hr/yr).

Ambient Air Quality Assessment (AAQA):

A new AAQA is not required for this review since there is no increase in emissions. The results of the most recent AAQA for this facility is shown below.

MECO conducted an AAQA in 1993 for CSP/PSD No. 0030-02-C which included all of the permitted point sources located within the Miki Basin Generating Station (including unit no. 9 that was never installed). The AAQA assumed that Unit Nos. 1-9 operated at maximum capacity for 8,760 hr/yr.

The AAQA performed in 1993 used an equivalent model, BEEST-X, to determine source compliance with national and state ambient air quality standards (NAAQS and SAAQS). BEEST-X was an enhanced version of the EPA Industrial Source Complex Short Term 2 (ISCST2) model that includes the COMPLEX1 algorithm. The model, methodology and assumptions employed by MECO in the AAQA have been determined to be consistent with state and federal guidelines. For details, please refer to Ambient Air Quality Impact Report for CSP No. 0030-02-C.

TABLE 8 presents the potential to emit/allowable emission rates and stack parameters of Unit Nos. 1-9 for this permit review. The derivation of SO₂, NO_x, CO, and PM₁₀ emission rates were previously discussed in the **Project Emissions** section.

The predicted concentrations presented in **TABLE 9** assume that Unit Nos. 1-9 operated at maximum capacity for 8,760 hr/yr. Ozone Limiting Method (OLM) was used to estimate NO₂. Based on these assumptions, the facility should comply with NAAQS and SAAQS for SO₂, NO₂, CO, and PM₁₀. Pb emissions are assumed to be negligible.

TABLE 10 presents the PSD Class II air quality increment consumption for this facility. For details, please refer to the PSD review for Unit Nos. 7-9.

TABLE 8
SOURCE EMISSION RATES AND STACK PARAMETERS FOR AIR MODELING

SOURCE		EMISSION RATES ¹					STACK PARAMETERS			
Equipment	Stack Nos.	SO ₂ (g/s)	NO _x (g/s)	CO (g/s)	PM ₁₀ (g/s)	Pb (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
DEG Unit No. 1	1	0.71	3.59	1.88	0.32	--	13.72	611.2	16.2	0.61
DEG Unit No. 2	2	ditto	3.27	ditto	ditto	ditto	ditto	ditto	ditto	ditto
DEG Unit No. 3	3	ditto	3.60	ditto	ditto	ditto	ditto	ditto	ditto	ditto
DEG Unit No. 4	4	ditto	3.60	ditto	ditto	ditto	ditto	ditto	ditto	ditto
DEG Unit No. 5	5	ditto	3.43	ditto	ditto	ditto	ditto	ditto	ditto	ditto
DEG Unit No. 6	6	ditto	3.20	ditto	ditto	ditto	ditto	ditto	ditto	ditto
DEG Unit No. 7	7	1.18	6.49	1.28	0.34	ditto	30.48	686.32	30.30	0.59
DEG Unit No. 8	8	ditto	ditto	ditto	ditto	ditto	ditto	ditto	ditto	ditto

Note:

1. Emission rates in g/s were converted from the maximum emission rate in lb/hr.

**TABLE 9
PREDICTED AMBIENT AIR QUALITY IMPACTS**

AIR POLLUTANT	AVERAGING TIME	IMPACT ¹ ($\mu\text{g}/\text{m}^3$)	BACKGROUND ² ($\mu\text{g}/\text{m}^3$)	TOTAL IMPACT ($\mu\text{g}/\text{m}^3$)	AIR STANDARD ($\mu\text{g}/\text{m}^3$)	PERCENT STANDARD
SO ₂	3-Hour	232.0	89.3	321	1300	25%
	24-Hour	68.5	23.5	92	365	25%
	Annual	24.5	0.4	25	80	31%
NO ₂	Annual ³	33.3	1.3	35	70	49%
CO	1-Hour	855.3	1425.0	2280	10000	23%
	8-Hour	302.7	862.0	1165	5000	23%
PM ₁₀	24-Hour	47.3	34.5	82	150	55%
	Annual	10.9	18.2	29	50	58%
Pb	Calendar Quarter	--	--	--	1.5	0%

Note:

1. The impact concentrations includes emissions from unit nos. 1-9 operating 8,760 hr/yr at maximum potential.
2. The background concentrations were developed from measurements taken near Miki Basin Generating Station from July 1991 to August 1992.
3. NO₂ concentrations were estimated using the Ozone Limiting Method.

TABLE 10
PSD CLASS II AIR QUALITY INCREMENT CONSUMPTION EVALUATION

AIR POLLUTANT	AVERAGING TIME	IMPACT ¹ ($\mu\text{g}/\text{m}^3$)	CLASS II INCREMENT ($\mu\text{g}/\text{m}^3$)	PERCENT INCREMENT CONSUMED	UTM LOCATION (m E,m N)
SO ₂	3-Hour	58.4	512	11.41%	700835,2336090
	24-Hour	21.9	91	24.07%	700810,2336090
	Annual	7.7	20	38.50%	700500,2336035
NO ₂	Annual ²	19.0	25	76.00%	700500,2336035
PM	1-Hour	10.9	37	29.46%	700810,2336090
	8-Hour	3.2	19	16.84%	700000,2334675
PM ₁₀	24-Hour	10.9	30	36.33%	700810,2336090
	Annual	3.2	17	18.82%	699975,2334650

Note:

1. The impact of unit nos. 7-9 at 110% load for all pollutants.

2. NO₂ concentrations were determined by the third level of U.S. EPA approved procedure for application of ozone limiting method (OLM). This analysis involved applying the OLM on an hour-by-hour basis to results of the BEEST-X modeling analysis.

Significant Existing Permit Conditions:

Similar Conditions for Unit Nos. 1-8

1. A maximum sulfur content of 0.4% by weight for fuel oil no. 2. (This limit is required for BACT for unit nos. 7 and 8. Unit nos. 1-6 incorporated this limit to make monitoring easier)
2. Alternate operating scenarios (AOS):
 - a. The temporary replacement of an equal or smaller unit in the event of failure or a major overhaul of an installed unit.
 - b. The ability to switch fuels, excluding used oil. The permittee is required to submit the alternate fuel information for DOH approval.
(These AOS was proposed by the applicant to maintain operation with flexibility)
3. Visible Emissions (VE) and FITR monitoring. (These monitoring requirements are required by EPA to ensure opacity and NO_x emissions will not be exceeded)
4. Annual spec used oil limit of 23,000 gallons in any rolling twelve month period for the DEGs. (The waste-to-energy use of spec used oil was proposed by the applicant and will not change potential air pollutant emissions)

Conditions for Unit Nos. 1-6 Only

1. Annual fuel limit of 1,626,100 gallons in any rolling twelve month period for the DEGs for unit nos. 1-6. (This fuel limit is required to remain below the NO_x annual emission threshold for PSD review)
2. FITR of 5 degrees for each DEG. (This equipment setting is required as BACT)
3. NO_x emission limits for each DEG. (These emission limits are required to ensure that annual NO_x emission limits are not being exceeded and that FITR is being exercised)
4. An annual performance test for NO_x (as NO₂) shall be performed by the permittee on the DEGs. (This testing is required to ensure that the NO_x emission limits for each DEG are not being exceeded)
5. Calculation of total annual emissions of NO_x. (The permittee will show compliance by calculating annual emissions)

Conditions for Unit Nos. 7 and 8 Only

1. FITR of 9 degrees for each DEG. (This equipment setting is required as BACT)
2. NO_x, SO₂, PM, CO, and VOC emission limits for each DEG. (These emission limits were previously proposed as the manufacturer's estimates using FITR with intake air cooling and low sulfur fuel)
3. Minimum 25% load for normal operations. (This limit is required since air pollutant emissions tend to increase at low loads)
4. CEMS to measure for NO_x and CO₂ or O₂. (This monitoring condition is required to ensure that annual NO_x emission limits are not being exceeded and that FITR is being exercised. This is the air pollutant that is subject to PSD)
5. An annual performance test for NO_x (as NO₂), SO₂, PM, CO, and VOC shall be performed by the permittee on the DEGs. (This testing is required to ensure that the emission limits for each DEG are not being exceeded)

Significant New Permit Conditions:

1. The alternate operating scenario for replacement units will be revised to allow any sized

unit with equal or less emissions and similar stack parameters. Newer DEGs are more efficient and may emit less air pollutant emissions than their predecessors.

2. A permit condition for fuel additives will be added as requested by MECO. This is to ensure that the additives do not increase air pollutant emissions.
3. Method 18 will be added as an approved additional method to test for VOCs. Pursuant to source performance test guidelines, this method can separate different VOCs, but cannot determine total VOCs.
4. Method 19 will be added as an approved alternate method to test for NO₂.
5. Accept used oil from equipment that are operated and/or maintained by MECO.

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 MECO Miki Generating Station. Therefore, a renewal of a covered source permit for MECO Miki Generating Station is recommended subject to the following:

1. The above special conditions;
2. 30-day public review period; and
3. 45-day EPA review period.

Other Issues/Conditions:

A site visit was performed on 4/23/07 by Corey Shibata and Gary Wu. All eight (8) DEGs appeared to be operating normally and unchanged from the previous inspection. Ed Oyama/Production Supervisor was present and he did not have any major comment regarding the existing permit conditions. Unit Nos. 1 - 6 were located in individual train cars that were manufactured to house the DEG units. Unit Nos. 7 and 8 were located in a building with horizontal ducts leading to a separate multi-flued stack. There were two (2) unused stacks in the multi-flued stack for future purposes. Overall, the site inspection revealed normal operating conditions. Please refer to **ENCLOSURE 1** for photographs.