PROPOSED

Reviewed by: CBS
April 10, 2007

Covered Source Permit (CSP) No. 0031-04-C Review
Application for Renewal No. 0031-06

Applicant: Maui Electric Company, Ltd. (MECO) – Palaau Generating Station

Equipment Description:

Unit	Description
3,4,6	1 MW Cummins DEGs (model no. KTA50, serial nos. 33112906, 33108992, and 33120964), max. 64.9 gal/hr (9.09 MMBtu/hr);
5	1 MW Cummins DEG (model no. KTTA50, serial no. 33110779), max. 68 gal/hr (9.52 MMBtu/hr);
7,8,9	2.2 MW Caterpillar DEGs (model no. 3608, serial nos. 6MC00452, 6MC00453, and 6MC00454), max. 167 gal/hr (23.38 MMBtu/hr);
CAT1,CAT2	1.25 MW Caterpillar DEGs (model no. 3516, serial nos. 25Z00574, 25Z00575), max. 12.62 MMBtu/hr (90.14 gal/hr); and
CT-1	2.0 MW Solar International Combustion Turbine (model no. T4001), fired on fuel oil no. 2, maximum 34 MMBtu/hr (243 gal/hr).

- Units 3 - 9 can be fired on fired on fuel oil no. 2 and specification (spec) used oil.
- Serial nos. for Units 3 and 5 were corrected by MECO email sent 10/5/05.

Air Pollution Controls:

There are no add-on air pollution control devices for any of these equipment. However, nitrogen dioxide emissions are reduced for all DEGs as they currently use fuel injection timing retard (FITR). Unit 7-9 also uses air intake cooling to further reduce nitrogen dioxide emissions.

Equipment Location:

Palaau Generating Station, located at: 32A Ulili Street, Kaunakakai, HI 96748 (Molokai)
UTM Coordinates: Zone 4; 700,800m E; 2,335,500m N (Old Hawaiian)

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Responsible Official:

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Point of Contact:

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Proposed Project:

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

The Palaau Generating Station produces electricity for public use through the combustion of fossil fuels. The facility houses nine (9) diesel engine generators (DEGs), and one (1) Combustion Turbine (CT).

Units 3-9

Units 3-6 are 1 MW Cummins DEGs that were originally installed (circa 1990) and owned by Cummins Hawaii, Inc. On 3/17/92, Palaau Corporation became the new owner and replaced unit no. 6 with an identical unit on 11/4/92 because it was damaged beyond repair. MECO subsequently became the new owner circa 1993. These units became part of the PSD review with new Unit 7-9 for Class II increment review. Unit 3-5 and 6 were permitted by ATC Nos. A-578-800 and A-998-886 respectively. The stack extensions of these units were authorized by PSD/CSP No. 0031-01-C dated 11/8/95.

Units 7-9 are 2.2 MW Caterpillar DEGs that were installed in 1996 by MECO. PSD/CSP No. 0031-01-C dated 11/8/95 authorized the installation and current operation of these units. As mentioned above, the addition of Unit 3-9 triggered PSD review because of significant increase in emissions.

CAT1 & 2 and CT-1

CAT1 and CAT2 are 1.25 MW Caterpillar DEGs that were installed in 1990 by MECO.

CT-1 is a 2.0 MW Solar International Combustion Turbine that was installed circa 1981 by Molokai Electric. MECO subsequently became the new owner in 1989.

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. define the submittal deadline of the quarterly accuracy audits and daily calibration drift test reports;
4. add Method 18 as an optional/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; and

5. add Method 3a as an option to Method 3 and add Method 19 as an option to Methods 1-4. previous source performance tests allowed these optional methods.

All four of the proposed changes should not increase emissions nor relax any permit conditions. These changes are discussed further in the **Alternate Operating Scenarios** and **New Permit Conditions** sections.

This facility is a major covered source based on criteria pollutants NO_X, SO_2, CO, PM/PM_{10}, and VOC each have the potential to exceed 100 tons per year. This is also an existing PSD source since NO_X, SO_2 and CO each have the potential to exceed 250 tons-per-year. Potential 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 dated May 12, 2006 and its revision dated March 27, and April 3, 2007. The check for the application fee of $3,000.00 for the renewal of a covered source permit (subject to PSD) will be processed and the receipt will be enclosed with the issued permit.

Applicable Requirements:

Hawaii Administrative Rules (HAR) Title 11 Chapter 59
Hawaii Administrative Rules (HAR) Title 11 Chapter 60.1
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 (11-60.1-111 to 115)
Subchapter 7, Prevention of Significant Deterioration Review
Subchapter 8 - Standards of Performance for Stationary Sources
11-60.1-161 New Source Performance Standards

40 CFR Part 60 - New Source Performance Standard (NSPS) Subpart GG - Standards of Performance for Stationary Gas Turbines because the capacity is greater than 10 MMBtu/hr and it was constructed after 1977. Pursuant to §60.332(e), standards for nitrogen dioxide to not apply since the heat input load is ≥10 MMBtu/hr and ≤100 MMBtu/hr and commenced construction prior to 10/3/82. Pursuant to §60.333(b) and §60.334(b)(1) and (c)(2), standards for sulfur dioxide can be met by burning fuel oil with a sulfur content ≤0.8% by weight, verifying the sulfur content by supplier's invoice, and reporting any fuel burned that exceeded the 0.8% sulfur content.

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	104	≥ 250	≥ 100	≥25
PM	103	n/a	n/a	≥25
$PM_{10}/PM_{2.5}$	103	≥ 250	≥ 100	≥25
NO_x	1284	≥ 2,500	≥ 100	≥25
SO_x	272	≥ 2,500	≥ 100	≥25
CO	457	≥ 2,500	≥ 1,000	≥250
HAPs (total)	2.21	n/a	n/a	≥5

Non-Applicable Requirements:

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 the facility is not a major source of hazardous air pollutants (HAPS) emissions (10 tpy of individual or 25 tpy of a combination of HAPs) and there is no standard for diesel engines.

A new Prevention of Significant Deterioration (PSD) review is not applicable for this review since there are no significant increase in emissions. However, the existing PSD conditions for unit 7-9 will carry over to the renewed permit and PSD permit no. HI 85-02 will still apply.

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 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 BACT analysis is not required.

Synthetic Minor is not applicable because this facility is a major source (>100 tpy) (see **Tables 2 - 7**).

Insignificant Activities/Exemptions:

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

Basis for Exemption	Description
§11-60.1-82(f)(1)	The Palaau Generating Station contains nine (9) VOC storage tanks with a capacity less than 40,000 gallons that are not subject to Section 111 or 112 of the CAA.
§11-60.1-82(f)(5)	Three (3) 15 kW black start DEGs (unit B7, B8, and B9; Generac Olympian, model no. CD015; serial nos. 2014936, 2014937, and 2014938) to be only used to start up DEGs unit 7-9 respectively and as recommended by the manufacturer.

§11-60.1-82(f)(7)	Two (2) 120,000 gal fixed roof storage tanks store fuel with low vapor pressure. Also, there may be fugitive equipment leaks from valves, flanges, pump seals and oil/water separators. Solvents are used for maintenance purposes.
§11-60.1-82(g)(6)	A 265 HP dedicated diesel engine fire pump is located in the Palaau Generating station. It is operated for approximately 20 minutes per week for maintenance purposes. A 100 HP diesel engine fire pump is used as a back-up.
§11-60.1-82(g)(11)	The station contains stacks and vents to prevent escape of sewer gases through plumbing traps.

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 **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.
3. Spec used oil conditions are listed in the permit as normal operating conditions. DOH approval prior to each event is not necessary.
4. The use of fuel additives is continuous and not temporary. Pursuant to previous email between Queenie Komori/MECO and Corey Shibata/DOH, the fuel additives will be continuously blended with the normal fuel. Previously, fuel additives were left out of the permit entirely since it was considered maintenance. However, MECO requested to include fuel additive conditions in the permit.

Project Emissions:

None of the proposed changes should increase air pollutant emissions from the previous permit review. Therefore, the same emission factors were used from the previous review and are explained below. The AP-42 emission factors are shown for information only because some permit limits have lower emission rates. The AP-42 emission factor for combustion turbines were updated.

Criteria Pollutants

Emission rates for NO_X, SO_2, CO, $PM/PM_{10}/PM_{2.5}$, VOC, and HAPs were based on an evaluation of AP-42 calculations, stack test data, and permit limits. Because of the uncertainties associated with AP-42 emission factors, compliance factors (based on stack test data) greater than the AP-42 emission factors were used by MECO to determine certain emission rates. NOx permit limits were required for all DEGs to ensure continuing compliance using FITR. Permit limits were required for all criteria pollutants for unit 7, 8, 9 to ensure continuing compliance using the DEG's combustion technology.

Some SO_2 emission limits were calculated using the following mass sulfur balance equation:

gal/hr(fuel) x lb(fuel)/gal(fuel) x weight%sulfur/fuel x 2lb SO_2/ 1lb S = lb SO_2/hr

To be conservative, the applicant assumed that PM_{10} emissions were equal to all PM emissions.

The DOH adjusted the hourly PM_{10} emissions to include the burning of spec used oil as permitted for unit nos 3-6 (unit 7, 8, 9 may also burn spec used oil, but they have PM/PM_{10} emission limits). VOC emissions tend to increase while burning spec used oil also, but since VOC is not required to be modeled, the short term emissions were not adjusted.

Potential annual emissions included the following applicable fuel consumption limits: unit 3-6 (1,650,000 gal/yr) and CT-1 (1,230,000 gal/yr). Unit 7-9, CAT1, CAT2 have no annual limitations.

HAPs

Some of the HAPs emission rates were determined by using EPRI PISCES Air Toxic Database while others were calculated using AP-42 data. None of the HAPs emissions were at levels exceeding the HAP thresholds of 10 tpy for any single HAP and 25 tpy for a combination of HAPs. To be conservative, all HAPs emissions were calculated assuming 8,760 hr/yr of operation.

A summary of the individual unit emissions are shown in **Tables 2** through **7**.

Table 2
Nitrogen Oxides (NO_X) Emissions

Unit No.	AP-42 EF (lb/MMBtu) [1]	Assumed EF (lb/MMBtu) [2]	Heat Input (MMBtu/hr)	Emission Rate (lb/hr) [3]	Annual Emissions (ton/yr) [4]
3	3.2	1.86	10.5	19.51	62.38
4	3.2	1.86	10.5	19.51	62.38
5	3.2	1.85	10.5	19.39	62.00
6	3.2	1.86	10.5	19.51	62.38
7	3.2	2.23	23.1	51.56	225.83
8	3.2	2.23	23.1	51.56	225.83
9	3.2	2.23	23.1	51.56	225.83
CT-1	0.88	1.39	34	47.46	120.11
CAT1	3.2	2.15	12.6	27.10	118.70
CAT2	3.2	2.15	12.6	27.10	118.70
				Total:	1284.14

1. AP-42 EF for CT-1 taken from Table 3.1-1, 4/00; others from Table 3.4-1, 10/96, for uncontrolled NOx.
2. Assumed EF for CT-1 was proposed by the applicant. Others were back calculated from permit limits.
3. Emission rates for DEG units 3-9, CAT1, and CAT2 were taken from permit limits.
4. Annual emissions were based on the following fuel limitations: units 3-6 (1,650,000 gal/yr) and CT-1 (1,230,000 gal/yr). Units 7-9, CAT1, CAT2 have no annual limitations.

Table 3
Sulfur Dioxide (SO_2) Emissions

Unit No.	AP-42 EF (lb/MMBtu) [1]	Assumed EF (lb/MMBtu) [2]	Heat Input (MMBtu/hr)	Emission Rate (lb/hr)	Annual Emissions (ton/yr) [3]
3	0.404	mass balance	10.5	3.68	11.77
4	0.404	mass balance	10.5	3.68	11.77
5	0.404	mass balance	10.5	3.86	12.34
6	0.404	mass balance	10.5	3.68	11.77
7	0.404	0.404	23.1	9.34	40.91
8	0.404	0.404	23.1	9.34	40.91
9	0.404	0.404	23.1	9.34	40.91
CT-1	0.505	mass balance	34	17.55	44.25
CAT1	0.505	mass balance	12.6	6.51	28.51
CAT2	0.505	mass balance	12.6	6.51	28.51
				Total:	271.65

1. AP-42 EF for CT-1 taken from Table 3.1-2a, 4/00; others from Table 3.4-1, 10/96.
   EF = 1.01 x 0.4% sulfur by weight for unit nos. 3-9.
   EF = 1.01 x 0.5% sulfur by weight for all others.
2. Assumed EF for unit nos. 3-6, CT-1, CAT1, CAT2 were calculated using mass balance and EF for unit nos. 7-9 were taken from permit limits.
3. Annual emissions were based on the following fuel limitations: unit nos. 3-6 (1,650,000 gal/yr) and CT-1 (1,230,000 gal/yr). Unit nos. 7-9, CAT1, CAT2 have no annual limitations.

Table 4
Carbon Monoxide (CO) Emissions

Unit No.	AP-42 EF (lb/MMBtu) [1]	Assumed EF (lb/MMBtu) [2]	Heat Input (MMBtu/hr)	Emission Rate (lb/hr)	Annual Emissions (ton/yr) [3]
3	0.85	0.85	10.5	8.93	28.55
4	0.85	0.85	10.5	8.93	28.55
5	0.85	0.85	10.5	8.93	28.55
6	0.85	0.85	10.5	8.93	28.55
7	0.85	0.44	23.1	10.19	44.63
8	0.85	0.44	23.1	10.19	44.63
9	0.85	0.44	23.1	10.19	44.63
CT-1	0.0033	0.14	34	4.90	12.25
CAT1	0.85	1.78	12.6	22.49	98.51
CAT2	0.85	1.78	12.6	22.49	98.51
				Total:	457.36

1. AP-42 EF for CT-1 taken from Table 3.1-1, 4/00; others from Table 3.4-1, 10/96.
2. EF for unit nos. 7-9 back calculated from permit limits and EF for CT-1, CAT1, CAT2 were proposed by the applicant and are conservative.
3. Annual emissions were based on the following fuel limitations: unit nos. 3-6 (1,650,000 gal/yr) and CT-1 (1,230,000 gal/yr). Unit nos. 7-9, CAT1, CAT2 have no annual limitations.

Table 5
$PM/PM_{10}/PM_{2.5}$ Emissions

Unit No.	Assumed EF (lb/MMBtu) [1]	DOH EF (lb/MMBtu) [2]	Heat Input (MMBtu/hr)	Emission Rate [3] (lb/hr)	Annual Emissions (ton/yr) [4]
3	0.2	0.25	10.5	2.6	6.76
4	0.2	0.25	10.5	2.6	6.76
5	0.2	0.25	10.5	2.6	7.07
6	0.2	0.25	10.5	2.6	6.76
7	0.1	0.1	23.1	2.69	11.78
8	0.1	0.1	23.1	2.69	11.78
9	0.1	0.1	23.1	2.69	11.78
CT-1	0.122	0.122	34	4.15	10.38
CAT1	0.270	0.270	12.6	3.40	14.89
CAT2	0.270	0.270	12.6	3.40	14.89
				Total:	102.85

1. Assumed EFs unit nos. 7-9 were back calculated from permit limits, all others were proposed by the applicant and are conservative. For information only, AP-42 EF for CT-1 from Table 3.1-2a, 4/00 is 0.012; others from Table 3.4-1, 10/96 is 0.1.
2. DOH EFs for unit nos. 3-6 assumed burning spec used oil.
3. Short term emission rates for unit nos. 3-6 assumed burning spec used oil, unit nos. 7-9 were taken from permit limits.
4. Annual emissions were based on fuel oil no. 2 with the following fuel limitations: unit nos. 3-6 (1,650,000 gal/yr) and CT-1 (1,230,000 gal/yr). Unit nos. 7-9, CAT1, CAT2 have no annual limitations. The total annual increase in PM10 emissions when using the permit limit of 10,000 gal of spec used oil is 0.035 ton/yr (insignificant).

Table 6
Volatile Organic Compounds (VOC) Emissions

Unit No.	AP-42 EF (lb/MMBtu) [1]	Assumed EF (lb/MMBtu) [2]	Heat Input (MMBtu/hr)	Emission Rate (lb/hr)	Annual Emissions (ton/yr) [3]
3	0.0819	0.0819	10.5	0.86	2.75
4	0.0819	0.0819	10.5	0.86	2.75
5	0.0819	0.0819	10.5	0.86	2.75
6	0.0819	0.0819	10.5	0.86	2.75
7	0.0819	0.0965	23.1	2.23	9.77
8	0.0819	0.0965	23.1	2.23	9.77
9	0.0819	0.0965	23.1	2.23	9.77
CT-1	0.00041	0.102	34	3.47	8.68
CAT1	0.0819	0.50	12.6	6.31	27.64
CAT2	0.0819	0.50	12.6	6.31	27.64
				Total:	104.27

1. AP-42 EF for CT-1 taken from Table 3.1-2a, 4/00; others from Table 3.4-1, 10/96 (as 91% methane).
2. Assumed EF for unit nos. 7-9 were back calculated from permit limits, all others were proposed by the applicant and are conservative.
3. Annual emissions were based on the following fuel limitations: unit nos. 3-6 (1,650,000 gal/yr) and CT-1 (1,230,000 gal/yr). Unit nos. 7-9, CAT1, CAT2 have no annual limitations.

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Table 7
Hazardous Air Pollutant (HAPs) Emissions

HAP	Unit No. 3 (tpy)	Unit No. 4 (tpy)	Unit No. 5 (tpy)	Unit No. 6 (tpy)	Unit No. 7 (tpy)	Unit No. 8 (tpy)	Unit No. 9 (tpy)	Unit No. CT-1 (tpy)	Unit No. CAT1 (tpy)	Unit No. CAT2 (tpy)	Annual Emissions (tpy) [1]
Acetaldehyde	0.00116	0.00116	0.00116	0.00116	0.00255	0.00255	0.00255	0.00375	0.00139	0.00139	0.01882
Acrolein	0.000362	0.000362	0.000362	0.000362	0.000797	0.000797	0.000797	0.00117	0.000436	0.000436	0.005881
Benzene	0.0357	0.0357	0.0357	0.0357	0.0785	0.0785	0.0785	0.116	0.0429	0.0429	0.5801
Formaldehyde	0.0217	0.0217	0.0217	0.0217	0.0477	0.0477	0.0477	0.0701	0.0260	0.0260	0.352
Naphthalene	0.00598	0.00598	0.00598	0.00598	0.0132	0.0132	0.0132	0.0194	0.00719	0.00719	0.0973
Toluene	0.0129	0.0129	0.0129	0.0129	0.0284	0.0284	0.0284	0.0418	0.0155	0.0155	0.2096
Xylene	0.00888	0.00888	0.00888	0.00888	0.0195	0.0195	0.0195	0.0287	0.0107	0.0107	0.14412
Arsenic Compounds	0.00051	0.00051	0.00051	0.00051	0.0011	0.0011	0.0011	0.0016	0.00061	0.00061	0.00816
Beryllium Compounds	0.000014	0.000014	0.000014	0.000014	0.000031	0.000031	0.000031	0.000046	0.000017	0.000017	0.000229
Cadmium Compounds	0.00022	0.00022	0.00022	0.00022	0.00049	0.00049	0.00049	0.00071	0.00027	0.00027	0.0036
Chromium Compounds	0.00051	0.00051	0.00051	0.00051	0.0011	0.0011	0.0011	0.0016	0.00061	0.00061	0.00816
Lead Compounds	0.00064	0.00064	0.00064	0.00064	0.0014	0.0014	0.0014	0.0021	0.00077	0.00077	0.0104
Manganese Compounds	0.036	0.036	0.036	0.036	0.080	0.080	0.080	0.12	0.044	0.044	0.592
Mercury Compounds	0.000055	0.000055	0.000055	0.000055	0.00012	0.00012	0.00012	0.00018	0.000066	0.000066	0.000892
Nickel Compounds	0.00021	0.00021	0.00021	0.00021	0.00047	0.00047	0.00047	0.00069	0.00025	0.00025	0.00344
Polycyclic Organic Matter (POM)	0.00975	0.00975	0.00975	0.00975	0.0215	0.0215	0.0215	0.0316	0.0117	0.0117	0.1585
Selenium Compounds	0.0011	0.0011	0.0011	0.0011	0.0025	0.0025	0.0025	0.0037	0.0014	0.0014	0.0184
											0
										Total:	2.211602

1. All HAPs emissions assumed 8,760 hr/yr of operation.

Ambient Air Quality Analysis:

A new ambient air quality analysis (AAQA) is not required since there is no proposed change to the equipment or operations. Therefore, the previous AAQA still apply. The summary of the AAQA are shown in **Tables 8 and 9**.

Table 8
Source Emission Rates and Stack Parameters for Air Modeling

Source		Emission Rates [1]					Stack Parameters			
Equipment	Stack No.	SO_2 (g/s)	NO_x [2] (g/s)	CO (g/s)	PM_{10} [3] (g/s)	Pb [4] (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
DEG Unit No. 3	3	0.46	1.80	1.12	0.33	0.00	30.48	651.7	11.10	0.61
DEG Unit No. 4	4	0.46	1.80	1.12	0.33	0.00	30.48	651.7	11.10	0.61
DEG Unit No. 5	5	0.49	1.78	1.12	0.33	0.00	30.48	651.7	11.10	0.61
DEG Unit No. 6	6	0.46	1.80	1.12	0.33	0.00	30.48	651.7	11.10	0.61
DEG Unit No. 7	7	1.18	6.89	1.89	0.49	0.00	30.48	686.3	30.30	0.59
DEG Unit No. 8	8	1.18	6.89	1.89	0.49	0.00	30.48	686.3	30.30	0.59
DEG Unit No. 9	9	1.18	6.89	1.89	0.49	0.00	30.48	686.3	30.30	0.59
DEG (CAT1)	CAT1	0.82	3.41	3.86	0.43	0.00	9.85	793.0	36.30	0.36
DEG (CAT2)	CAT2	0.82	3.41	3.86	0.43	0.00	9.85	793.0	36.30	0.36
Combustion Turbine (CT-1)	CT	2.21	5.98	0.62	0.52	0.00	7.32	655.4	40.66	1.01
DEG (black start 7) [5]	BS_7	0.005	0.028	0.017	0.007	0.00	5.35	677.6	33.78	0.05
DEG (black start 8) [5]	BS_8	0.005	0.028	0.017	0.007	0.00	5.35	793.0	36.30	0.36
DEG (black start 9) [5]	BS_9	0.005	0.028	0.017	0.007	0.00	5.35	793.0	36.30	0.36

Note:
1. The modeled CO for CAT1/CAT2 and PM_{10}, NO_x, CO for unit nos. 7,8,9 are greater than the emission rates listed in the **Project Emissions** section.
2. The NO_x emission rates for unit nos. 3-6 include fuel limitations (annual factor). All others emission rates are maximum potential.
3. The PM_{10} emissions for unit nos. 3-6 include burning spec used oil.
4. Lead emissions were insignificant and therefore, not modeled.
5. The black start DEGs (exempt equipment) were included with the AAQA to be conservative.

Table 9
Predicted Ambient Air Quality Impacts

AIR POLLUTANT	AVERAGING TIME	IMPACT ($\mu g/m^3$)	BACKGROUND [1] ($\mu g/m^3$)	TOTAL IMPACT ($\mu g/m^3$)	AIR STANDARD ($\mu g/m^3$)	PERCENT STANDARD	IMPACT [2] LOCATION (X,Y)
SO_2	3-Hour	267.0	--	267.0	1300	21%	700925, 2335975
	24-Hour	180.0	--	180.0	365	49%	700684, 2335353
	Annual [3]	24.9	--	24.9	80	31%	700684,2335353
NO_2	Annual [3, 4]	53.7	--	53.7	70	77%	700684, 2335353
CO	1-Hour	1291.0	--	1291.0	10000	13%	700741, 2335339
	8-Hour	1058.0	--	1058.0	5000	21%	700692, 2335351
PM_{10}	24-Hour [5]	119.6	--	119.6	150	80%	700684, 2335353
	Annual [3, 5]	17.6	--	17.6	50	35%	700684, 2335353
Pb	Calendar Quarter [6]	0.0	--	0.0	1.5	0%	n/a
H_2S	1-Hour [6]	0.0	--	0.0	35	0%	n/a

Note:
1. The background concentrations are not required since this is an existing source with no increase in emissions.
2. The impact location of the highest concentrations are shown in X(m), Y(m) coordinates.
3. The annual concentrations are based on fuel limitations of 1,650,000 gal/yr for unit nos. 3-6 and 1,230,000 gal/yr for CT-1.
4. NO_2 concentrations were estimated using the Ozone Limiting Method (ozone annual average of 45.1 $\mu g/m^3$).
5. PM_{10} concentrations were increased by a factor of 1.25 for all sources to be conservative (EF increase for unit nos. 3-6 while burning spec used oil).
6. Pb and H_2S concentrations were assumed to be negligible at this facility.

Other Issues:

None.

Existing Permit Conditions:

DEGs Units 3-6

a. NO_x emission limits for each DEG;
b. FITR for each DEG;
c. Total combined fuel oil limit of 1,650,000 gal/yr for Units 3 - 6; and
d. Source performance testing (SPT) for each DEG for NO_x.

DEGs Units 7-9

a. FITR and air intake cooling for each DEG;
b. DEGs shall not operate below 25% load except during start-up, shut-down, maintenance, or testing;
c. SO_2, NO_x, CO, VOC, and PM_{10} emission limits for each DEG;
d. CEMS for each DEG; and
e. Source performance testing (SPT) for each DEG for SO_2, NO_x, CO, VOC, and PM_{10}.

DEGs Units CAT1 and CAT2

a. FITR for each DEG;
b. NO_x emission limits for each DEG; and
c. SPT for each DEG for NO_x.

CT-1

a. 40 CFR 60 NSPS Subpart GG requirements;
b. CT-1 shall not operate below 25% load except during start-up, shut-down, maintenance, or testing; and
c. Annual fuel limit of 1,230,000 gallons in any rolling twelve month period.

All Units

a. Fuel oil no. 2 with a maximum sulfur content of 0.4%;
b. Alternate operating scenarios for replacement units and alternate fuels; and
c. 10,000 gal/yr limit for spec used oil for Units 3 - 9.

Most of these permit conditions are existing requirements to comply with SAAQS and emissions thresholds. The alternate operating scenarios and spec used oil conditions were provided to allow operational flexibility.

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. The submittal deadline of the quarterly accuracy audits and daily calibration drift test reports will be defined as the thirtieth day following the end of the semi-annual period. This is for clarification.

4. Method 18 will be added as an approved alternate method to test for VOCs. Pursuant to source performance test guidelines, this method can separate different VOCs and may be more accurate than Method 25A.

5. Methods 3a and 19 will be added as option for Methods 3 and 1-4 respectively.

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 Palaau Generating Station. Therefore, a renewal of a covered source permit for MECO Palaau 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.