PROPOSED

Minor Modification to a Covered Source
Review Summary

Application No.: 0097-10 (Minor Modification)

Permit No.: 0097-01-C

Applicant: Kauai Island Utility Cooperative (KIUC)

Facility: Port Allen Generating Station
261 Akaula Street
UTM Coordinates: 2,422,222 N, 439,251.6 E
Eleele, Kauai, Hawaii 96705

Mailing Address: Kauai Island Utility Cooperative
4463 Pahee Street, Suite 1
Lihue, Hawaii 96766-2032

Responsible Official: Mr. David Bissell
Chief Executive Officer
Kauai Island Utility Cooperative
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Point of Contact: Richard Vetter
Port Allen Station Manager
Kauai Island Utility Cooperative
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Application Dates: July 24, 2014

Proposed Project:

The Standard Industrial Classification (SIC) Code is 4911 under *Electric Services*.

This application is for a minor modification of Covered Source Permit (CSP) No. 0097-01-C, issued on December 11, 2012. A check for $200.00 was submitted by the applicant for a minor modification of a covered source (PSD source) and processed.

KIUC is requesting an amendment to the covered source permit. The amendment adds definitions for startup and shutdown; and clarifies that the hourly NO_x emission limits do not apply during startup and shutdown for diesel engine generators D-6, D-7, D-8, and D-9.

Attachment II(C), Section C of the CSP includes emission limits for NO_x, SO_2, CO, VOC, and particulate matter from diesel engine generators D-6, D-7, D-8, and D-9, as well as

requirements to operate and maintain a continuous emissions monitoring system to measure and record NO_x and CO_2 or O_2 concentrations in the stack gas. Attachment II(C), Section C requires KIUC to use a selective catalytic reduction (SCR) system for NO_x control on diesel engine generator D-9. SCR systems operate by injecting ammonia or urea reagent into the exhaust gas stream upstream of the catalyst grid. The catalyst grid catalyzes the reaction between the NO and NO_2 in the exhaust gas and the injected reagent; however, ammonia cannot be injected and the catalyst is not effective in reducing NO_x emissions during startup until the catalyst meets its minimum operating temperature. This can take up to sixty (60) minutes under some operating conditions, and until the SCR is active, NO_x emissions are not fully controlled. Although compliance with the NO_x mass emission for diesel engine generator D-9 is determined on a three-hour (3-hour) average basis, emissions during the startup period are occasionally high enough to cause three-hour average emissions to exceed the limit. These would be considered excess emissions.

Attachment II(C), Section E of the CSP contains conditions indicating that excess emissions of NO_x from diesel engine generators D-6, D-7, D-8, and D-9, that occur during startup and shutdown periods are not considered violations of the permitted emission limits. However, the permit does not include definitions of startup and shutdown periods. Furthermore, the addition of CO-related permit limits to Attachment II(C), Section C of the CSP, under the RICE NESHAP could be erroneously interpreted to limit the startup period for NO_x emissions to thirty (30) minutes. The addition of the proposed definitions will enhance the clarity and enforceability of the emission limits and other conditions.

This modification is considered a minor modification since it:

1. Does not increase the emissions of any air pollutant above the permitted emission limits;
2. Does not result in or increase the emissions of any air pollutant not limited by permit to levels equal to or above:

    a. 500 pounds per year of a hazardous air pollutant, except lead;
    b. 300 pounds per year of lead;
    c. twenty-five (25) percent of significant amounts of emission as defined in section 11-60.1-1, paragraph (1) in the definition of “significant”; or
    d. two (2) tons per year of each regulated air pollutant not already identified above;

3. Does not violate any applicable requirement;
4. Does not involve significant changes to existing monitoring requirements or any relaxation or significant change to existing reporting or recordkeeping requirements in the permit. Any change to the existing monitoring, reporting, or recordkeeping requirements that reduces the enforceability of the permit is considered a significant change;
5. Does not require or change a case-by-case determination of an emission limitation or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
6. Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement, and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:

    a. A federally enforceable emissions cap assumed to avoid classification as a modification pursuant to any provision of Title I of the Act or subchapter 7; and

b. An alternative emissions limit approved pursuant to regulations promulgated pursuant to Section 112(i)(5) of the Act or Subchapter 9; and

7. Is not a modification pursuant to any provision of Title I of the Act.

Equipment:

Unit Number	Manufacturer	Model/ Serial Number	Rated Capacity		
			MW	MMBtu/hr	gal/hr
D-6 through D-9	Stork-Wartsila Diesel Generator	6TM620/ 60600, 60700, 60800, 60900	7.86 each	69.5 each	505 each

The large diesel engine generators (D-6 through D-9) are used for baseload generation, along with the steam boiler and steam turbine generator.

Air Pollution Controls:

1. Diesel engine generators D-6 through D-8 are equipped with Variable Fuel Injection Timing Retard (FITR).
2. Diesel engine generator D-9 is equipped with a Selective Catalytic Reduction (SCR) System as part of a NO_x control technology demonstration project. This project was deemed successful and shows the *technical* feasibility of a SCR system. The economic feasibility was not shown, however.
3. Low sulfur fuel (0.4%) fuel oil no. 2, and/or biodiesel is used for diesel engine generators D-1 through D-9.
4. Diesel engine generators D-1 thru D-5 are equipped with Miratech V-Cat oxidation catalyst systems and EMD lube oil separators and will utilize ultra-low sulfur (0.0015%) fuel oil to comply with 40 CFR Part 63, Subpart ZZZZ, effective May 3, 2013 (August 1, 2013 for the ultra-low sulfur fuel oil).
5. Diesel engine generators D-6 thru D-9 are equipped with oxidation catalyst systems and crankcase controls to comply with 40 CFR Part 63, Subpart ZZZZ, and effective May 3, 2013 (comply by May 3, 2014).

Alternate Operating Scenarios:

No change from the previous covered source renewal application regarding any alternate operating scenarios.

Applicable Requirements:

<u>Hawaii Administrative Rules (HAR)</u>

Title 11, Chapter 59	Ambient Air Quality Standards
Title 11, Chapter 60.1	Air Pollution Control
Subchapter 1	General Requirements
Subchapter 2	General Prohibitions

HAR 11-60.1-31	Applicability
HAR 11-60.1-32	Visible Emissions
HAR 11-60.1-38	Sulfur Dioxides from Fuel Combustion
Subchapter 5	Covered Sources
Subchapter 6	Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
HAR 11-60.1-111	Definitions
HAR 11-60.1-112	General Fee Provisions for Covered Sources
HAR 11-60.1-113	Application Fees for Covered Sources
HAR 11-60.1-114	Annual Fees for Covered Sources
Subchapter 9	Hazardous Air Pollutant Sources

Federal Requirements

40 Code of Federal Regulations (CFR) Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards):

Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. (RICE NESHAP) - applicable to stationary RICE located at major or area sources of HAP emissions. This site is an area source of HAP emissions.

Non-applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1	Air Pollution Control
Subchapter 7	Prevention of Significant Deterioration Review
Subchapter 8	Standards of Performance for New Stationary Sources (NSPS)
Subchapter 9	Hazardous Air Pollutant Sources

Federal Requirements

40 CFR Part 52.21 - Prevention of Significant Deterioration of Air Quality

40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)

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

Prevention of Significant Deterioration (PSD):

PSD is not applicable because this facility is not a *new* major stationary source nor does this application propose any modifications that by itself constitute a major stationary source that is subject to PSD review. Therefore, PSD is not applicable.

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is required for new covered sources or significant modifications to covered sources that have the potential to emit or increase

emissions above significant levels as defined in HAR §11-60.1-1. Since this is not a new source nor are any modifications proposed that will cause a significant net increase in emissions, a BACT analysis is not required.

Air Emissions Reporting Requirements (AERR):

40 CFR Part 51, Subpart A – Air Emissions Reporting Requirements, is based on the emissions of criteria air pollutants from Type A or Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the AERR triggering levels as shown in the table below.

Pollutant	Type A AERR Triggering Levels [1] (tpy)	Type B AERR Triggering Levels [1] (tpy)	Pollutant	In-house Total Facility Triggering Levels [1] (tpy)	Total Facility Emissions (tpy)
NO_x	≥2500	≥100	NO_x	≥25	6683.7
SO_2	≥2500	≥100	SO_2	≥25	1874.2
CO	≥2500	≥1000	CO	≥250	370.6
$PM_{10}/PM_{2.5}$	≥250/≥250	≥100/100	PM/PM_{10}	≥25/25	PM = 203.6 PM_{10} = 203.6 $PM_{2.5}$ = 203.6
VOC	≥250	≥100	VOC	≥25	447.2
			HAPS	≥5	18.67

[1] Based on potential emissions

This facility emits above the AERR triggering levels. Therefore, AERR requirements are applicable.

The Clean Air Branch also requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels or is a covered source. Annual emissions reporting is required for this facility for in-house recordkeeping purposes since it is a covered source.

Compliance Assurance Monitoring CAM):

40 CFR Part 64

Applicability of the CAM rule is determined on a pollutant specific basis for each affected emission unit. Each determination is based upon a series of evaluation criteria. In order for a source to be subject to CAM, each source must:

- Be located at a major source per Title V of the Clean Air Act Amendments of 1990;
- Be subject to federally enforceable applicable requirements;
- Have pre-control device potential emissions that exceed applicable major source thresholds;
- Be fitted with an “active” air pollution control device; and
- Not be subject to certain regulations that specifically exempt it from CAM.

Emission units are any part or activity of a stationary source that emits or has the potential to emit any air pollutant.

Synthetic Minor Source:

Not applicable, this facility is a major source.

Project Emissions:

There is no change in emissions from the previous applications.

Ambient Air Quality Impact Analysis:

An ambient air quality impact analysis is not required for a minor modification.

Significant Permit Conditions and Discussion:

The following permit conditions in the covered source permit were modified or added. As is custom when modifying regulatory language, new language is underlined, while [deleted language is shown in brackets].

1. Revise Attachment II(C), Special Condition No. C.5.

5. Maximum Emission Limits

The permittee shall not discharge or cause the discharge into the atmosphere from each of diesel engine generators D-6, D-7, D-8, and D-9, nitrogen oxides, sulfur dioxide, carbon monoxide, volatile organic compounds, and particulate matter in excess of the following specified limits:

Compound	Maximum Emission Limits* (lbs/hr)
Sulfur Dioxide	33.14
Nitrogen Oxides (as NO_2)(above 50% of rated load)	
Units D-6, D-7, and D-8 (except during startup and shutdown, as defined in Special Condition Nos. C.9.a and C.9.c of this Attachment)	185.22
Unit D-9 (except during NO_x startup and shutdown, as defined in Special Condition Nos. C.9.b and C.9.c of this Attachment)	68.28
Nitrogen Oxides (as NO_2)(at 50% of rated load)	
Units D-6, D-7, and D-8 (except during startup and shutdown, as defined in Special Condition Nos. C.9.a and C.9.c of this Attachment)	125
Unit D-9 (except during NO_x startup and shutdown, as defined in Special Condition Nos. C.9.b and C.9.c of this Attachment)	61.76
Nitrogen Oxides (as NO_2)(below 50% of rated load)	
Units D-6, D-7, and D-8 (except during startup and shutdown, as defined in Special Condition Nos. C.9.a and C.9.c of this Attachment)	110
Unit D-9 (except during NO_x startup and shutdown, as defined in Special Condition Nos. C.9.b and C.9.c of this Attachment)	40.55
Carbon Monoxide (prior to May 3, 2014)	
Units D-6, D-7, and D-8	23.90
Unit D-9	45.00
Carbon Monoxide (on and after May 3, 2014, except during startup, as defined in Special Condition No. C.9.a of this Attachment)	
Units D-6, D-7, and D-8	7.2
Unit D-9	13.5
Volatile Organic Compounds as Carbon	22.80
Particulate Matter (at or above 50% of rated load)	7.85
Particulate Matter (below 50% of rated load)	5.23

*Three-hour (3-hour) averages.

(Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-132; 40 CFR §52.21, 40 CFR §63.6603)[1]

2. Revise Attachment II(C), Special Condition No. C.6

6. Emission Limitations for Generator Loads

The permittee shall not discharge or cause the discharge into the atmosphere from each of diesel engine generators D-6, D-7, D-8, and D-9, nitrogen oxides, sulfur dioxide, carbon monoxide, volatile organic compounds and particulate matter in excess of the following specified limits at full load:

Compound	**Emission Limits for Each Diesel Engine Generator* at Full Load (@ 15% O_2)**
	100-110%
Sulfur Dioxide (ppmvd)	97
Nitrogen Oxides (ppmvd) as NO_2	
Units D-6, D-7, and D-8 (except during startup and shutdown, as defined in Special Condition Nos. C.9.a and C.9.c of this Attachment)	590
Unit D-9 (except during NO_x startup and shutdown, as defined in Special Condition Nos. C.9.b and C.9.c of this Attachment)	290
Carbon Monoxide (ppmvd) (prior to May 3, 2014)	
Units D-6, D-7, and D-8	160
Unit D-9	302
Carbon Monoxide (ppmvd) (on and after May 3, 2014, except during startup, as defined in Special Condition No. C.9.a of this Attachment)	
Units D-6, D-7, and D-8	48
Unit D-9,	91
Volatile Organic Compounds (ppmvd) as Carbon	267
Particulate Matter (lb/MMBtu)	
Units D-6, D-7, and D-8	0.11
Unit D-9	0.11

*Three-hour (3-hour) averages.

If any emission limit is lowered, the difference between the existing emission limit and the revised lower emission limit shall not be allowed as an emission offset for future construction or modification.

(Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-132; 40 CFR §52.21, 40 CFR §63.6603)[1]

3. Add to Attachment II(C), Special Condition No. C.9

9. Definitions of Startup and Shutdown

a. "Startup" shall be defined as the time from initial start until applied load and engine and associated equipment, including the catalyst, reaches steady state or normal operation.

(Auth.: HAR §11-60.1-3; §11-60.1-90)

b. "NO_x startup" shall be defined as the lesser of the first 60 minutes of continuous fuel flow to the diesel engine generator after fuel flow is initiated or the period of time from diesel engine generator fuel flow initiation until the diesel engine generator achieves two consecutive CEM data points in compliance with the NO_x emission concentration limits of Special Condition No. C.6 of this Attachment.

(Auth.: HAR §11-60.1-3; §11-60.1-90)

c. "Shutdown" shall be defined as the lesser of the thirty (30) minute period immediately prior to the termination of fuel flow to the diesel engine generator or the period of time from non-compliance with the NO_x emission concentration limits of Special Condition No. C.6 of this Attachment until termination of fuel flow to the diesel engine generator.

(Auth.: HAR §11-60.1-3; 40 CFR §63.6675)[1]

Conclusion:

Recommend issuing the minor modification to Covered Source Permit No. 0097-01-C, issued on December 11, 2012, and amended on April 10, 2013, May 2, 2013, July 17, 2013, January 3, 2014, and March 20, 2014. There are no increases in emissions with the proposed change and the diesel engines would remain in compliance with the State and Federal ambient air quality standards. The permit would incorporate the significant permit conditions listed above and be subject to a 45-day EPA review period.

Reviewer: Darin Lum
Date: 10/2014