April 15, 2022

Washington State Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205

Attn: Karin Baldwin and Jenny Filipy

Transmitted via email to: *kbal461@ecy.wa.gov* and *jfil461@ecy.wa.gov*

Re: Approval Order Amendment Request
Microsoft MWH Data Center
Quincy, Washington
Landau Project No. 1409014.010

Dear Ms. Baldwin and Ms. Filipy:

Microsoft Corporation (Microsoft) operates a data center campus at 1515 NW Port Industrial Parkway in Quincy, Washington (MWH Data Center) under an Approval Order from the Washington State Department of Ecology (Ecology). This letter and its attachments comprise an Approval Order amendment request prepared by Landau Associates, Inc. on behalf of Microsoft. The MWH Data Center currently operates under Ecology Approval Order No. 20AQ-E005 (MWH Approval Order).

Operating limitation 3.a of the MWH Approval Order requires that all generators consume diesel fuel equivalent to on-road specification No. 2 distillate fuel oil (less than 0.00150 weight percent [15 parts per million] sulfur). Microsoft requests permission from Ecology to use renewable diesel fuel to power the generators at the MWH Data Center in place of petroleum-based diesel fuel. A certificate of analysis for REG-9000 renewable hydrocarbon diesel (RHD) fuel is provided as Attachment 1. The terms RHD and hydro-treated vegetable oil (HVO) fuel are used in this application interchangeably.

All permitted generators at the MWH Data Center are Caterpillar (CAT) models. CAT has indicated that HVO fuel is considered a "drop in" replacement for petroleum-based diesel fuel and is approved for use in CAT engines. CAT provided a letter (Attachment 2) indicating that HVO renewable fuel can be used to fuel CAT engines with comparable or lower emissions than that of the same engine model running on petroleum-based diesel fuel. CAT has stated that no change is required to potential site variation (PSV) emissions data based on the use of HVO.

Microsoft has tested RHD fuel at a data center facility outside of Washington state. Emissions were tested in a side-by-side comparison of petroleum-based ultra-low sulfur diesel (ULSD) and RHD. The results of that test show that emissions associated with RHD are similar and in some cases lower than emissions associated with ULSD. Due to the use of test methods that are not comparable to methods used by CAT to develop PSV data in a factory setting, the results of this study are not directly

applicable to emission rates associated with the MWH facility. The study is provided for informational purposes only in Attachment 3.

Microsoft plans to begin using RHD fuel at the MWH facility as soon as approval is granted, or as early as June 2022. A Notice of Construction Application Form is provided in Attachment 4.

Please contact me if you have any comments or questions about this request. Thank you for your time and consideration of this request.

Respectfully submitted,

LANDAU ASSOCIATES, INC.

Mark Brunner
Senior Associate

AEM/MWB/ccy
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cc: Sid Janga, Microsoft

Attachments:

1: Caterpillar Certificate of Analysis for REG-9000 Renewable Hydrocarbon Diesel Fuel
2: Caterpillar Letter re: Engine Emissions from Renewable/Alternative Fuels
3: Results of Microsoft Renewable Hydrocarbon Diesel Study
4: Notice of Construction Application Form

ATTACHMENT 1

Caterpillar Certificate of Analysis for REG-9000 Renewable Hydrocarbon Diesel Fuel

Renewable Hydrocarbon Diesel Certificate of Analysis

202009256022 COA

Lot Number:	750-200925-T6022	Product Type:	Renewable Hydrocarbon Diesel

Analysis of REG-9000/RHD

Property	Value	ASTM D975 No. 2-D Limit	REG-9000® Limit*	Units	Test Method (current revision)
Cloud point:	-11	Report	Report	**°C**	D5771
Water & Sediment:	<0.05	0.05, max	0.05, max	**% volume**	D2709
Conductivity:	60	25, min	25, min	**pS/m**	D2624
Appearance:	Clear & Bright	Clear & Bright	Clear & Bright	**N/A**	D4176, Procedure 1
API Gravity @ 60°F:	49.3	N/A	Report	**N/A**	D4052
Specific gravity @ 60°F:	0.7827	N/A	Report	**N/A**	D4052
Flash point:	65.1	52, min	52, min	**°C**	D93A
Total Sulfur:	<1	15, max	2, max	**ppm (mg/kg)**	D5453
Ramsbottom Carbon:	0.05	0.35, max	0.35, max	**% mass**	D524
Ash:	<0.001	0.01	0.01	**% mass**	D482
Kinematic Viscosity at 40 °C:	3.2	1.9 – 4.1	1.9 – 4.1	**mm^2/sec**	D445
Copper Corrosion (3 hrs at 50 °C):	1a	No. 3	No. 1b	**N/A**	D130
Distillation Temperature, at 90%:	301	282 – 338	282 – 338	**°C**	D86
Cetane Index:	94	40, min	65, min	**N/A**	D4737, Procedure A

Notes:

1. ASTM D1319 test detection limits for Aromatics is 5-99 % volume, since REG Geismar's renewable diesel is lower than 5 % volume, this testing was discontinued in the REG Geismar lab
2. Based on a customer's purchase requirements, an optional lubricity additive may be injected into the RHD at the time of shipment to bring the lubricity to < 520 microns
3. This product conforms to the most recent version of ASTM D975

Prepared by:	Keith Gill	Lab Supervisor	Geismar, LA	09/25/2020
	Name	Title	Location	Date

Please contact Inside Sales at Renewable Energy Group, Inc. at (888)734-8686 with any questions or comments about this product.

ATTACHMENT 2

Caterpillar Letter re: Engine Emissions from Renewable/Alternative Fuels

CATERPILLAR®

Electric Power Division
P.O. Box 610- AC6109
Mossville, IL 61552

6/28/2021

Mycah Gambrell-Ermak
Energy & Sustainability Division,

RE: **Regarding Caterpillar engine emissions from renewable/alternative fuels**

Ms. Gambrell-Ermak,

This letter conveys our emissions experience with Hydrotreated Vegetable Oil (HVO) renewable fuel. Based on our scientific judgment, the chemical attributes of HVO as a fuel, general experience, and available test data, emissions from Caterpillar engines running on a HVO fuel should be comparable, if not lower, to that of the same engine model running on a petroleum diesel. Any given HVO fuel would be expected to meet the fuel specifications prescribed in Caterpillar Commercial Engine Fluid Recommendations (SEBU6251).

Based on the above, HVO fuel-fired Caterpillar engine emissions are expected to be the same or lower than diesel fuel-fired Caterpillar engine emissions provided in Caterpillar's "rated speed potential site variation emissions data (PSV)." PSV data should be used for onsite performance testing validation.

Sincerely,

Evan Hodgen
Electric Power Technical Sales Support Manager
Caterpillar Inc.
(765)448-2645
Hodgen_Evan@cat.com

ATTACHMENT 3

Results of Microsoft Renewable Hydrocarbon Diesel Study

HVO RD99 Testing on Caterpillar C175-16

HVO (RD99) fuel testing on Caterpillar C175-16 Operational and Performance Test

Engine Emissions and Load Comparisons

Test Date: November 5 & 6, 2020
Type of Test: Transient Response Test / Load Test / Emissions Testing

Project Number: EP03524
Engine Serial Number: TB800180
Generator Serial Number: G7J06324

Engine Model: C175-16
Max Power: 3140 KW
Voltage: 480 Volts
Current: 3975 Amps

Summary of Test Results for Diesel vs. RD99 Fuel

The following report encompasses results from a series of tests used for evaluation of exhaust emissions and performance of HVO C175-16 Generator Set using #2 Diesel and Alternative RD99 Fuel. The transient response test results demonstrate that the Genset is able to pick up the 0 to100% block load and stabilize voltage and frequency in 6.54 seconds on #2 ULSD Fuel and 7.67 Seconds on RD99 Fuel.

Transient response and Emissions load test were conducted on a C175-16 genset rated at 480V 60Hz 0.95pf 3100kW without fan, 3000kW with engine mounted fan. The testing was conducted in a test cell in Griffin, GA at the YES facility, overseen by Caterpillar, with the purpose of comparing genset perform during transient load application and emissions on both diesel and RD99 fuel. The full set of test data was provided to the client for their records. Below is a high-level summary of the results including a reduced data set. The requirements for the RD99 fuel specification were determined during meetings between Caterpillar, client, and the fuel vendor and is documented outside of this summary of results.

Transient Response

Testing indicated that there was not a significant difference in genset transient response performance between the two fuels. Despite RD99 having a lower energy content, the engine fuel system was capable of dynamically adjusting flow rates to provide a similar transient performance. Operation on RD99 should not negatively impact operation during load acceptance. A table with the comparison at each load step is provided in Appendix A.

Emissions Data

Testing was conducted on both fuels for one hour at each 25%, 50% and 75% load and for 3 hours at 100% load. RD99 did show a reduction in PM and CO across all load steps. A reduction of NOx was experienced at part load steps, but the 100% load point was essentially the same between both fuels. A table with the comparison at each load point is provided in Appendix B.

Engine Oil Sample Analysis

Engine oil sample analysis were performed before and after testing on both fuels. The results of wear metals were consistent with a new engine moving through its break in cycle and did not indicate any areas for concern.

Fuel Sample Analysis

Fuel samples were taken for both fuels and have been provide outside of this summary to document the fuel characteristics.

Appendix C – Test Procedure

Test Details
November 4, 2020 – Yancy CAT test facility

4 hour load run on Diesel
20 hour load run on R99
Transient on both fuels

Emissions data

Analytes	EPA Method	Run Duration	Number of runs per test
Oxygen (O2)	3A	60 Min	1
Nitrogen oxides (NOx)	7E	60 Min	1
Carbon monoxide (CO)	10	60 Min	1
Visual emissions (opacity)	9	60 Min	1

Test Procedure:

The tests, as specified in test procedure provided to the customer, are conducted at Yancey Engineered Solutions Test Laboratory. The Genset is set up in Test Cell 2 with the following temporary connections; 24v Battery, 240 VAC Shore Power, Fuel supply and return.

1. Perform Pretest activities for Testing with #2 Diesel Fuel. Obtain Engine Oil and #2 Diesel Fuel Samples for Analysis.
2. Perform Transient Tests with #2 Diesel Fuel as per Test procedure. Load Percentages 0-75-0-50-100-50-75-100-75-50-0-100-0.
3. Operate the Genset on #2 Diesel Fuel at load percentages 25-50-75-100 for Emissions sampling and data collection.
4. Perform Pretest activities for Testing with RD99 Fuel. Obtain Engine Oil Sample for Analysis. Top off Oil Level and Record quantity as necessary.
5. Operate the Genset on RD99 Fuel for 14 Hours Continuously at 100 percent load and collect operating data.
6. Operate the Genset on RD99 Fuel at load percentages 25-50-75-100 for Emissions sampling and data collection.
7. Perform Transient Tests with RD99 Fuel as per Test procedure. Load Percentages 0-75-0-50-100-50-75-100-75-50-0-100-0.
8. Operate the Genset on RD99 Fuel for 3 Hours Continuously at 100 percent load and collect operating data.
9. Obtain Oil Sample for analysis.

Test Instrumentation:

Load bank	Creschic 6.25 Mva Resistive/Reactive.
Computer Software	Caterpillar- Electronic Technician
	Dran View 6 Enterprise
Data Recorder	Dranetz PX5, calibration date: 1/20/2020

Test Fuel:

#2 ULSD Fuel- Test Lab Analysis
RD99 Fuel- Test Lab Analysis

Advanced Industrial Resources, Inc.

Test Results

Yancy

Griffin, GA

Generator #2 Diesel

		Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Averages
Genset Load		% of full load	25	50	75	100	100	100	**100**
Test Date			05-Nov-20	05-Nov-20	05-Nov-20	05-Nov-20	05-Nov-20	05-Nov-20	**05-Nov-20**
Start Time			9:10	10:48	12:10	13:35	14:50	16:10	**Runs**
End Time			10:16	11:52	13:14	14:40	15:54	17:15	**4, 5, 6**
P_m	Pressure of meter gases	inches Hg	30.27	30.30	30.27	30.24	30.21	30.20	**30.22**
P_s	Pressure of stack gases	inches Hg	30.18	30.20	30.18	30.14	30.11	30.10	**30.12**
$V_{m(std)}$	Volume of gas sample	dscf	37.35	39.54	36.09	37.10	36.31	39.26	**37.56**
$V_{w(std),meas}$	Meas. volume of water vapor	scf	2.26	2.40	2.17	2.54	2.64	2.59	**2.59**
$B_{ws,meas}$	Measured moisture	dimensionless	0.057	0.057	0.057	0.064	0.068	0.062	**0.065**
$B_{ws,theo}$	Theoretical max. moisture		1.000	1.000	1.000	1.000	1.000	1.000	**1.000**
$B_{ws,act}$	Actual moisture		0.057	0.057	0.057	0.064	0.068	0.062	**0.065**
M_d	Mol. Wt. Of gas at DGM	lb./lb.-mole	29.48	29.50	29.59	29.66	29.66	29.65	**29.66**
M_s	Mol. Wt. Of gas at stack	lb./lb.-mole	28.83	28.85	28.93	28.92	28.87	28.93	**28.91**
v_s	Velocity of stack gas	ft./sec	42.42	85.13	96.59	119.90	120.96	121.60	**120.82**
A_n	Area of nozzle	ft^2	0.000491	0.000289	0.000241	0.000218	0.000218	0.000218	**0.000218**
A_s	Area of stack	ft^2	3.14	3.14	3.14	3.14	3.14	3.14	**3.14**
Gas Stream Flow Rates									
Q_a	Vol. Flow rate of actual gas	cfm	7,996	16,046	18,207	22,601	22,800	22,921	**22,774**
Q_w	Vol. Flow rate of wet gas	scfm	4,124	7,502	8,328	9,908	9,878	9,989	**9,925**
Q_w	Vol. Flow rate of wet gas	scfh	247,424	450,104	499,686	594,472	592,702	599,366	**595,513**
Q_{sd}	Vol. Flow rate of dry gas	dscfm	3,889	7,072	7,857	9,273	9,210	9,371	**9,285**
I	Isokinetic sampling ratio	percent	102.5	101.5	100.0	96.1	94.7	100.6	**97.1**
Process Data									
$P_{(product input)}$	Process	HP	1,126	2,148	3,151	4,159	4,160	4,166	**4,162**
$P_{(heat input)}$	Fuel firing rate	MMBtu/hr	9.8	18.0	23.8	31.3	31.1	31.0	**31.1**
Gas Stream Particulate Concentrations Method 5									
c_{PM}	Conc. Of PM in dry stack gas	mg/dscm	54.99	5.16	7.02	8.93	12.91	2.66	**8.17**
c_{PM}	Conc. Of PM in dry stack gas	gr/dscf	0.02402	0.00225	0.00307	0.00390	0.00564	0.00116	**0.00357**
Particulate Matter Mass Rates Method 5									
E_{PM}	Emission rate of PM	lb/hour	0.801	0.137	0.207	0.310	0.445	0.093	**0.283**
E_{PM}	Emission rate of PM	g/HP-hr	0.323	0.029	0.030	0.034	0.049	0.010	**0.031**
E_{PM}	Emission rate of PM	lb / MMBtu	0.0820	0.0076	0.0087	0.0099	0.0143	0.0030	**0.0091**
Gas Stream Particulate Concentrations Method 202									
c_{PM}	Conc. Of PM in dry stack gas	mg/dscm	17.06	21.35	18.15	24.04	18.67	9.04	**17.25**
c_{PM}	Conc. Of PM in dry stack gas	gr/dscf	0.00745	0.00932	0.00793	0.01050	0.00816	0.00395	**0.00753**
Particulate Matter Mass Rates Method 202									
E_{PM}	Emission rate of PM	lb/hour	0.249	0.565	0.534	0.835	0.644	0.317	**0.599**
E_{PM}	Emission rate of PM	g/HP-hr	0.100	0.119	0.077	0.091	0.070	0.035	**0.065**
E_{PM}	Emission rate of PM	lb / MMBtu	0.025	0.031	0.022	0.027	0.021	0.010	**0.0192**
Gas Stream Particulate Concentrations Methods 5 & 202									
c_{PM}	Conc. Of PM in dry stack gas	mg/dscm	72.06	26.50	25.17	32.96	31.59	11.70	**25.42**
c_{PM}	Conc. Of PM in dry stack gas	gr/dscf	0.0315	0.0116	0.0110	0.0144	0.0138	0.0051	**0.0111**
Particulate Matter Mass Rates Methods 5 & 202									
E_{PM}	Emission rate of PM	lb/hour	1.05	0.70	0.74	1.14	1.09	0.41	**0.88**
E_{PM}	Emission rate of PM	g/HP-hr	0.423	0.148	0.107	0.125	0.119	0.045	**0.096**
E_{PM}	Emission rate of PM	lb / MMBtu	0.1075	0.0389	0.0311	0.0366	0.0350	0.0132	**0.0283**
Sulfur Dioxide Concentrations Method 6C									
c_{SO2}	Conc. of SO_2 in dry stack gas	ppm	9.48	3.4	3.78	5.31	5.38	5.07	**5.25**
c_{SO2}	Conc. of SO_2 in dry stack gas	ppm @ 15% O_2	6.96	2.43	2.30	2.90	2.94	2.82	**2.89**
c_{SO2}	Conc. of SO_2 in dry stack gas	mg/dscm	25.23	8.96	10.07	14.13	14.31	13.48	**13.98**
c_{SO2}	Conc. of SO_2 in dry stack gas	gr/dscf	0.01102	0.00391	0.00440	0.00617	0.00625	0.00589	**0.00610**
Sulfur Dioxide Mass Rates Method 6C									
E_{SO2}	Emission rate of SO_2	lb/hour	0.37	0.24	0.30	0.49	0.49	0.47	**0.49**
E_{SO2}	Emission rate of SO_2	g/HP-hr	0.148	0.050	0.043	0.054	0.054	0.052	**0.053**
E_{SO2}	Emission rate of SO_2	lb / MMBtu	0.0376	0.0132	0.0124	0.0157	0.0159	0.0153	**0.0156**

Advanced Industrial Resources, Inc.

Test Results

Yancy

Griffin, GA

Generator #2 Diesel

		Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Averages
Genset Load		% of full load	25	50	75	100	100	100	**100**
Test Date			05-Nov-20	05-Nov-20	05-Nov-20	05-Nov-20	05-Nov-20	05-Nov-20	**05-Nov-20**
Start Time			9:10	10:48	12:10	13:35	14:50	16:10	**Runs**
End Time			10:16	11:52	13:14	14:40	15:54	17:15	**4, 5, 6**
Nitrogen Oxides Concentrations Method 7E									
c_{NOx}	Conc. of NO_x in dry stack gas	ppm	510.5	270.6	620.9	890.0	874.2	855.4	**873.2**
c_{NOx}	Conc. of NO_x in dry stack gas	ppm @ 15% O_2	374.6	195.4	377.7	486.6	477.1	476.1	**480.0**
c_{NOx}	Conc. of NO_x in dry stack gas	mg/dscm	976.4	517.6	1187.6	1702.3	1672.0	1636.0	**1670.1**
c_{NOx}	Conc. of NO_x in dry stack gas	gr/dscf	0.426	0.226	0.519	0.743	0.730	0.715	**0.729**
Nitrogen Oxides Mass Rates Method 7E									
E_{NOx}	Emission rate of NO_x	lb/hour	14.2	13.7	35.0	59.1	57.7	57.4	**58.1**
E_{NOx}	Emission rate of NO_x	g/HP-hr	5.73	2.90	5.03	6.33	6.29	6.25	**6.29**
E_{NOx}	Emission rate of NO_x	lb / MMBtu	1.46	0.76	1.47	1.89	1.85	1.85	**1.87**
Carbon Monoxide Concentrations Method 10									
c_{CO}	Conc. of CO in dry stack gas	ppm	360.4	89.2	116.1	78.6	74.6	65.3	**72.8**
c_{CO}	Conc. of CO in dry stack gas	ppm @ 15% O_2	264.5	64.4	70.6	43.0	40.7	36.3	**40.0**
c_{CO}	Conc. of CO in dry stack gas	mg/dscm	419.6	103.8	135.2	91.5	86.8	76.0	**84.8**
c_{CO}	Conc. of CO in dry stack gas	gr/dscf	0.1833	0.0454	0.0590	0.0399	0.0379	0.0332	**0.0370**
Carbon Monoxide Mass Rates Method 10									
E_{CO}	Emission rate of CO	lb/hour	6.11	2.75	3.98	3.18	3.00	2.67	**2.95**
E_{CO}	Emission rate of CO	g/HP-hr	2.46	0.58	0.57	0.35	0.33	0.29	**0.32**
E_{CO}	Emission rate of CO	lb / MMBtu	0.626	0.152	0.167	0.102	0.096	0.086	**0.095**
Total Hydrocarbon Concentrations (including methane) Method 25A									
c_{THC}	THC concentration (as methane)	ppm	12.20	5.63	2.04	2.48	2.15	3.15	**2.59**
c_{THC}	THC concentration (as methane)	ppm @ 15% O_2	8.95	4.06	1.24	1.35	1.17	1.75	**1.43**
c_{THC}	THC concentration (as methane)	mg/dscm	8.11	3.74	1.36	1.65	1.43	2.09	**1.72**
c_{THC}	THC concentration (as methane)	gr/dscf	0.00354	0.00164	0.00059	0.00072	0.00062	0.00091	**0.00075**
Total Hydrocarbon Mass Rates (including methane) Method 25A									
E_{THC}	THC emission rate (as methane)	lb/hour	0.1182	0.0992	0.0400	0.0572	0.0493	0.0735	**0.0600**
E_{THC}	THC emission rate (as carbon)	lb/hour	0.0886	0.0744	0.0300	0.0429	0.0370	0.0551	**0.0450**
E_{THC}	THC emission rate (as carbon)	lb / MMBtu	0.0121	0.0055	0.0017	0.0018	0.0016	0.0024	**0.0019**
Methane Concentrations Method 25A									
$c_{Methane}$	CH_4 concentration (as methane)	ppm	1.57	0.87	1.02	0.77	0.71	0.72	**0.73**
$c_{Methane}$	CH_4 concentration (as methane)	ppm @ 15% O_2	1.15	0.63	0.62	0.42	0.39	0.40	**0.40**
$c_{Methane}$	CH_4 concentration (as methane)	mg/dscm	1.04	0.58	0.68	0.51	0.47	0.48	**0.49**
$c_{Methane}$	CH_4 concentration (as methane)	gr/dscf	0.00046	0.00025	0.00030	0.00022	0.00021	0.00021	**0.00021**
Methane Mass Rates Method 25A									
$E_{Methane}$	CH_4 emission rate (as methane)	lb/hour	0.0152	0.0153	0.0199	0.0178	0.0163	0.0167	**0.0169**
$E_{Methane}$	CH_4 emission rate (as carbon)	lb/hour	0.0114	0.0115	0.0149	0.0134	0.0122	0.0125	**0.0127**
$E_{methane}$	CH_4 emission rate (as carbon)	lb / MMBtu	0.001168	0.000848	0.000836	0.000570	0.000525	0.000538	**0.000544**
Ethane Concentrations Method 25A									
c_{Ethane}	C_2H_6 concentration (as Ethane)	ppm	< 0.0502	< 0.0502	< 0.0501	< 0.0505	< 0.0507	< 0.0504	**< 0.0506**
c_{Ethane}	C_2H_6 concentration (as Ethane)	ppm @ 15% O_2	< 0.0368	< 0.0362	< 0.0305	< 0.0276	< 0.0277	< 0.0281	**< 0.0278**
c_{Ethane}	C_2H_6 concentration (as Ethane)	mg/dscm	< 0.0627	< 0.0627	< 0.0627	< 0.0632	< 0.0634	< 0.0630	**< 0.0632**
c_{Ethane}	C_2H_6 concentration (as Ethane)	gr/dscf	< 0.000027	< 0.000027	< 0.000027	< 0.000028	< 0.000028	< 0.000028	**< 0.000028**
Ethane Mass Rates Method 25A									
c_{Ethane}	C_2H_6 emission rate (as Ethane)	lb/hour	< 0.00091	< 0.00166	< 0.00184	< 0.00219	< 0.00219	< 0.00221	**< 0.00220**
c_{Ethane}	C_2H_6 emission rate (as carbon)	lb/hour	< 0.00073	< 0.00133	< 0.00147	< 0.00175	< 0.00175	< 0.00177	**< 0.00175**
c_{Ethane}	C_2H_6 emission rate (as carbon)	lb / MMBtu	< 0.00007	< 0.00009	< 0.00008	< 0.00007	< 0.00007	< 0.00007	**< 0.00007**
Total Hydrocarbon Mass Rates (excluding methane and ethane) Method 25A									
E_{THC}	THC emission rate (as carbon)	lb/hour	0.0765	0.0616	0.0136	0.0278	0.0230	0.0408	**0.0306**
E_{THC}	THC emission rate (as carbon)	g/HP-hr	0.0308	0.0130	0.0020	0.0030	0.0025	0.0044	**0.0033**

Notes:

1) lb/MMBtu results based on Method 19 Fd factor of 9190 for diesel oil combustion.

2) (<) indicates the result were below the detection limit and value used is the mininally detected value.

Advanced Industrial Resources, Inc.

Test Results

Yancy

Griffin, GA

Generator RD99 Diesel

		Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Averages
Genset Load		% of full load	25	50	75	100	100	100	**100**
Test Date			06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	**06-Nov-20**
Start Time			7:55	9:28	10:43	11:58	13:12	14:25	**Runs**
End Time			9:00	10:31	11:47	13:04	14:17	15:30	**4, 5, 6**
P_m	Pressure of meter gases	inches Hg	30.26	30.20	30.18	30.17	30.15	30.11	**30.14**
P_s	Pressure of stack gases	inches Hg	30.16	30.09	30.09	30.07	30.05	30.01	**30.04**
$V_{m(std)}$	Volume of gas sample	dscf	38.26	39.85	36.47	40.85	40.46	38.16	**39.82**
$V_{w(std),meas}$	Meas. volume of water vapor	scf	2.21	2.54	2.73	2.68	2.92	2.45	**2.68**
$B_{ws,meas}$	Measured moisture	dimensionless	0.055	0.060	0.070	0.062	0.067	0.060	**0.063**
$B_{ws,theo}$	Theoretical max. moisture		1.000	1.000	1.000	1.000	1.000	1.000	**1.000**
$B_{ws,act}$	Actual moisture		0.055	0.060	0.070	0.062	0.067	0.060	**0.063**
M_d	Mol. Wt. Of gas at DGM	lb./lb.-mole	29.44	29.36	29.46	29.54	29.58	29.64	**29.59**
M_s	Mol. Wt. Of gas at stack	lb./lb.-mole	28.82	28.68	28.66	28.83	28.80	28.94	**28.86**
v_s	Velocity of stack gas	ft./sec	45.33	85.70	95.71	121.65	121.50	121.94	**121.70**
A_n	Area of nozzle	ft^2	0.000491	0.000289	0.000241	0.000218	0.000218	0.000218	**0.000218**
A_s	Area of stack	ft^2	3.14	3.14	3.14	3.14	3.14	3.14	**3.14**
Gas Stream Flow Rates									
Q_a	Vol. Flow rate of actual gas	cfm	8,544	16,154	18,041	22,931	22,902	22,986	**22,939**
Q_w	Vol. Flow rate of wet gas	scfm	4,386	7,597	8,294	10,167	10,086	10,041	**10,098**
Q_w	Vol. Flow rate of wet gas	scfh	263,182	455,846	497,638	610,029	605,151	602,478	**605,886**
Q_{sd}	Vol. Flow rate of dry gas	dscfm	4,147	7,142	7,716	9,541	9,407	9,436	**9,461**
I	Isokinetic sampling ratio	percent	98.5	101.3	102.9	102.8	103.3	97.1	**101.1**
Process Data									
$P_{(product input)}$	Process	HP	1,126	2,148	3,133	4,166	4,165	4,166	**4,166**
$P_{(heat input)}$	Fuel firing rate	MMBtu/hr	10.9	20.9	25.0	33.2	32.7	31.7	**32.5**
Gas Stream Particulate Concentrations Method 5									
c_{PM}	Conc. Of PM in dry stack gas	mg/dscm	43.01	2.85	4.77	3.42	3.48	2.51	**3.14**
c_{PM}	Conc. Of PM in dry stack gas	gr/dscf	0.01879	0.00125	0.00208	0.00150	0.00152	0.00110	**0.00137**
Particulate Matter Mass Rates Method 5									
E_{PM}	Emission rate of PM	lb/hour	0.668	0.076	0.138	0.122	0.122	0.089	**0.111**
E_{PM}	Emission rate of PM	g/HP-hr	0.269	0.016	0.020	0.013	0.013	0.010	**0.012**
E_{PM}	Emission rate of PM	lb / MMBtu	0.0615	0.0036	0.0055	0.0037	0.0037	0.0028	**0.0034**
Gas Stream Particulate Concentrations Method 202									
c_{PM}	Conc. Of PM in dry stack gas	mg/dscm	9.88	10.68	15.15	8.34	11.00	12.96	**10.77**
c_{PM}	Conc. Of PM in dry stack gas	gr/dscf	0.00431	0.00466	0.00662	0.00364	0.00480	0.00566	**0.00470**
Particulate Matter Mass Rates Method 202									
E_{PM}	Emission rate of PM	lb/hour	0.153	0.286	0.438	0.298	0.388	0.458	**0.381**
E_{PM}	Emission rate of PM	g/HP-hr	0.062	0.060	0.063	0.032	0.042	0.050	**0.042**
E_{PM}	Emission rate of PM	lb / MMBtu	0.014	0.014	0.018	0.009	0.012	0.014	**0.0118**
Gas Stream Particulate Concentrations Methods 5 & 202									
c_{PM}	Conc. Of PM in dry stack gas	mg/dscm	52.89	13.53	19.92	11.77	14.47	15.46	**13.90**
c_{PM}	Conc. Of PM in dry stack gas	gr/dscf	0.0231	0.0059	0.0087	0.0051	0.0063	0.0068	**0.0061**
Particulate Matter Mass Rates Methods 5 & 202									
E_{PM}	Emission rate of PM	lb/hour	0.82	0.36	0.58	0.42	0.51	0.55	**0.49**
E_{PM}	Emission rate of PM	g/HP-hr	0.331	0.076	0.083	0.046	0.056	0.060	**0.054**
E_{PM}	Emission rate of PM	lb / MMBtu	0.0757	0.0173	0.0230	0.0127	0.0156	0.0172	**0.0152**
Sulfur Dioxide Concentrations Method 6C									
c_{SO2}	Conc. of SO_2 in dry stack gas	ppm	3.38	2.3	4.40	5.67	6.44	6.20	**6.10**
c_{SO2}	Conc. of SO_2 in dry stack gas	ppm @ 15% O_2	2.38	1.46	2.50	3.00	3.42	3.40	**3.27**
c_{SO2}	Conc. of SO_2 in dry stack gas	mg/dscm	8.99	6.19	11.71	15.08	17.15	16.50	**16.24**
c_{SO2}	Conc. of SO_2 in dry stack gas	gr/dscf	0.00393	0.00270	0.00511	0.00658	0.00749	0.00721	**0.00709**
Sulfur Dioxide Mass Rates Method 6C									
E_{SO2}	Emission rate of SO_2	lb/hour	0.14	0.17	0.34	0.54	0.60	0.58	**0.58**
E_{SO2}	Emission rate of SO_2	g/HP-hr	0.056	0.035	0.049	0.059	0.066	0.064	**0.063**
E_{SO2}	Emission rate of SO_2	lb / MMBtu	0.0129	0.0079	0.0135	0.0162	0.0185	0.0184	**0.0177**

Advanced Industrial Resources, Inc.

Test Results

Yancy

Griffin, GA

Generator RD99 Diesel

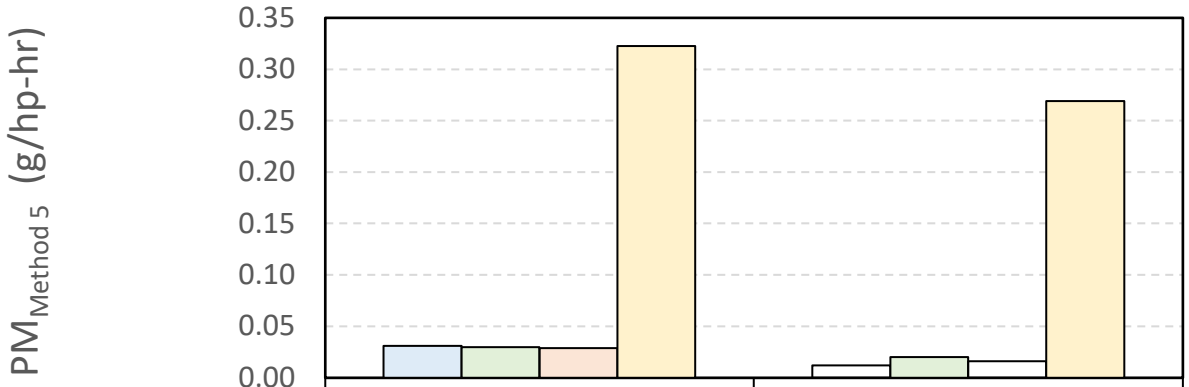
		Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Averages
Genset Load		% of full load	25	50	75	100	100	100	**100**
Test Date			06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	**06-Nov-20**
Start Time			7:55	9:28	10:43	11:58	13:12	14:25	**Runs**
End Time			9:00	10:31	11:47	13:04	14:17	15:30	**4, 5, 6**
Nitrogen Oxides Concentrations Method 7E									
c_{NOx}	Conc. of NO_x in dry stack gas	ppm	516.4	236.9	555.0	812.5	823.6	859.7	**831.9**
c_{NOx}	Conc. of NO_x in dry stack gas	ppm @ 15% O_2	363.6	148.9	315.4	430.7	437.0	470.9	**446.2**
c_{NOx}	Conc. of NO_x in dry stack gas	mg/dscm	987.7	453.1	1061.5	1554.0	1575.3	1644.3	**1591.2**
c_{NOx}	Conc. of NO_x in dry stack gas	gr/dscf	0.431	0.198	0.464	0.679	0.688	0.718	**0.695**
Nitrogen Oxides Mass Rates Method 7E									
E_{NOx}	Emission rate of NO_x	lb/hour	15.3	12.1	30.7	55.5	55.5	58.1	**56.4**
E_{NOx}	Emission rate of NO_x	g/HP-hr	6.18	2.56	4.44	6.05	6.05	6.33	**6.14**
E_{NOx}	Emission rate of NO_x	lb / MMBtu	1.41	0.58	1.23	1.67	1.70	1.83	**1.73**
Carbon Monoxide Concentrations Method 10									
c_{CO}	Conc. of CO in dry stack gas	ppm	294.0	52.5	90.5	57.1	61.2	63.3	**60.6**
c_{CO}	Conc. of CO in dry stack gas	ppm @ 15% O_2	207.0	33.0	51.4	30.3	32.5	34.7	**32.5**
c_{CO}	Conc. of CO in dry stack gas	mg/dscm	342.3	61.1	105.3	66.5	71.3	73.8	**70.5**
c_{CO}	Conc. of CO in dry stack gas	gr/dscf	0.1495	0.0267	0.0460	0.0290	0.0311	0.0322	**0.0308**
Carbon Monoxide Mass Rates Method 10									
E_{CO}	Emission rate of CO	lb/hour	5.32	1.63	3.04	2.38	2.51	2.61	**2.50**
E_{CO}	Emission rate of CO	g/HP-hr	2.14	0.35	0.44	0.26	0.27	0.28	**0.27**
E_{CO}	Emission rate of CO	lb / MMBtu	0.490	0.078	0.122	0.072	0.077	0.082	**0.077**
Total Hydrocarbon Concentrations (including methane) Method 25A									
c_{THC}	THC concentration (as methane)	ppm	5.56	2.98	1.87	2.03	2.10	2.18	**2.10**
c_{THC}	THC concentration (as methane)	ppm @ 15% O_2	3.91	1.88	1.06	1.08	1.12	1.19	**1.13**
c_{THC}	THC concentration (as methane)	mg/dscm	3.70	1.99	1.24	1.35	1.40	1.45	**1.40**
c_{THC}	THC concentration (as methane)	gr/dscf	0.00162	0.00087	0.00054	0.00059	0.00061	0.00063	**0.00061**
Total Hydrocarbon Mass Rates (including methane) Method 25A									
E_{THC}	THC emission rate (as methane)	lb/hour	0.0575	0.0531	0.0359	0.0484	0.0493	0.0511	**0.0496**
E_{THC}	THC emission rate (as carbon)	lb/hour	0.0431	0.0398	0.0270	0.0363	0.0370	0.0384	**0.0372**
E_{THC}	THC emission rate (as carbon)	lb / MMBtu	0.0053	0.0025	0.0014	0.0015	0.0015	0.0016	**0.0015**
Methane Concentrations Method 25A									
$c_{Methane}$	CH_4 concentration (as methane)	ppm	1.62	0.79	< 0.49	< 0.48	< 0.45	< 0.45	**0.46**
$c_{Methane}$	CH_4 concentration (as methane)	ppm @ 15% O_2	1.14	0.50	< 0.28	< 0.26	< 0.24	< 0.25	**0.25**
$c_{Methane}$	CH_4 concentration (as methane)	mg/dscm	1.08	0.53	< 0.32	< 0.32	< 0.30	< 0.30	**0.31**
$c_{Methane}$	CH_4 concentration (as methane)	gr/dscf	0.00047	0.00023	< 0.00014	< 0.00014	< 0.00013	< 0.00013	**0.00013**
Methane Mass Rates Method 25A									
$E_{Methane}$	CH_4 emission rate (as methane)	lb/hour	0.0167	0.0141	< 0.0094	< 0.0115	< 0.0106	< 0.0107	**0.0109**
$E_{Methane}$	CH_4 emission rate (as carbon)	lb/hour	0.0125	0.0106	< 0.0070	< 0.0086	< 0.0080	< 0.0080	**0.0082**
$E_{methane}$	CH_4 emission rate (as carbon)	lb / MMBtu	0.001156	0.000675	< 0.000374	< 0.000346	< 0.000325	< 0.000336	**0.000335**
Ethane Concentrations Method 25A									
c_{Ethane}	C_2H_6 concentration (as Ethane)	ppm	< 0.0514	< 0.0491	< 0.0497	< 0.0492	< 0.0495	< 0.0492	**< 0.0493**
c_{Ethane}	C_2H_6 concentration (as Ethane)	ppm @ 15% O_2	< 0.0362	< 0.0309	< 0.0282	< 0.0261	< 0.0263	< 0.0269	**< 0.0264**
c_{Ethane}	C_2H_6 concentration (as Ethane)	mg/dscm	< 0.0643	< 0.0614	< 0.0621	< 0.0616	< 0.0619	< 0.0615	**< 0.0617**
c_{Ethane}	C_2H_6 concentration (as Ethane)	gr/dscf	< 0.000028	< 0.000027	< 0.000027	< 0.000027	< 0.000027	< 0.000027	**< 0.000027**
Ethane Mass Rates Method 25A									
c_{Ethane}	C_2H_6 emission rate (as Ethane)	lb/hour	< 0.00100	< 0.00164	< 0.00179	< 0.00220	< 0.00218	< 0.00217	**< 0.00218**
c_{Ethane}	C_2H_6 emission rate (as carbon)	lb/hour	< 0.00080	< 0.00131	< 0.00143	< 0.00176	< 0.00174	< 0.00173	**< 0.00174**
c_{Ethane}	C_2H_6 emission rate (as carbon)	lb / MMBtu	< 0.00007	< 0.00008	< 0.00007	< 0.00007	< 0.00007	< 0.00007	**< 0.00007**
Total Hydrocarbon Mass Rates (excluding methane and ethane) Method 25A									
E_{THC}	THC emission rate (as carbon)	lb/hour	0.0297	0.0279	0.0185	0.0259	0.0273	0.0286	**0.0273**
E_{THC}	THC emission rate (as carbon)	g/HP-hr	0.0120	0.0059	0.0027	0.0028	0.0030	0.0031	**0.0030**

Notes:

1) lb/MMBtu results based on Method 19 Fd factor of 9190 for diesel oil combustion.

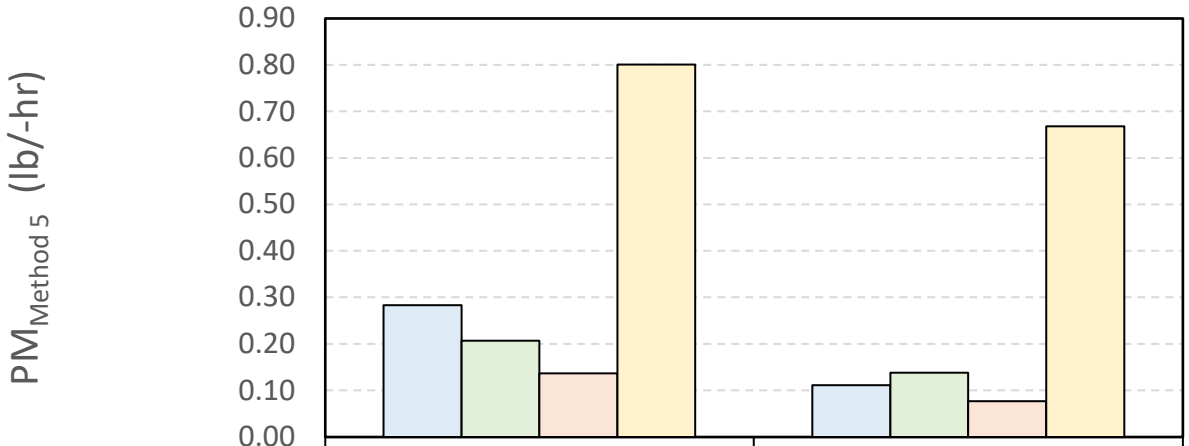
2) (<) indicates the result were below the detection limit and value used is the mininally detected value.

Emissions Test Comparisons - $PM_{Method\ 5}$ (g/hp-hr)



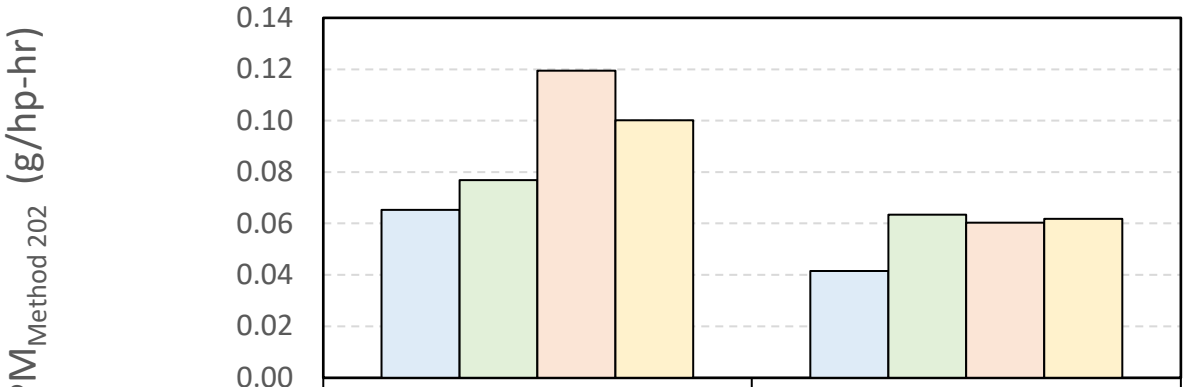
	#2 Diesel	RD99 Diesel
100% of Full Load	0.0308	0.0121
75% of Full Load	0.0297	0.0199
50% of Full Load	0.0288	0.0161
25% of Full Load	0.3227	0.2691

Emissions Test Comparisons - $PM_{Method\ 5}$ (lb/hr)



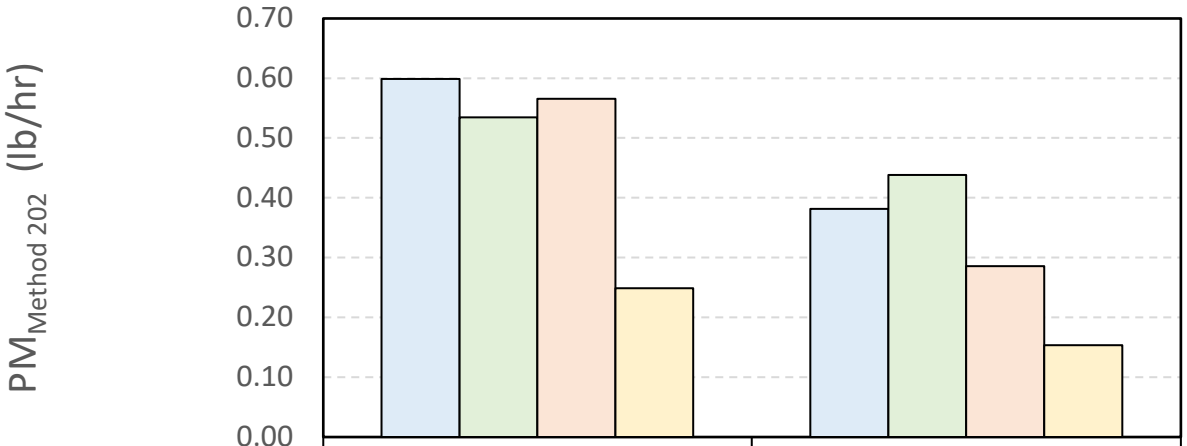
	#2 Diesel	RD99 Diesel
100% of Full Load	0.2829	0.1112
75% of Full Load	0.2066	0.1378
50% of Full Load	0.1366	0.0763
25% of Full Load	0.8010	0.6681

Emissions Test Comparisons - $PM_{Method\ 202}$ (g/hp-hr)



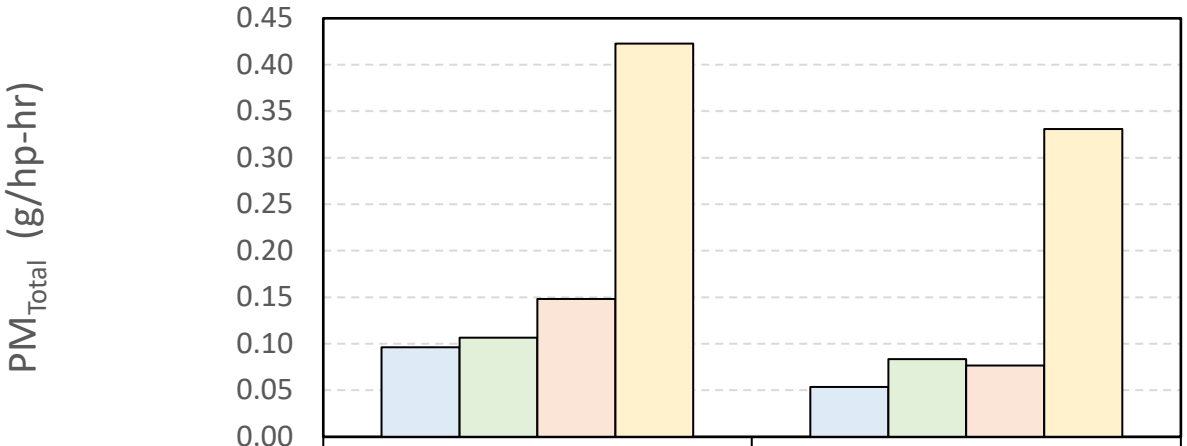
	#2 Diesel	RD99 Diesel
100% of Full Load	0.0653	0.0415
75% of Full Load	0.0769	0.0634
50% of Full Load	0.1194	0.0603
25% of Full Load	0.1001	0.0618

Emissions Test Comparisons - $PM_{Method\ 202}$ (lb/hr)



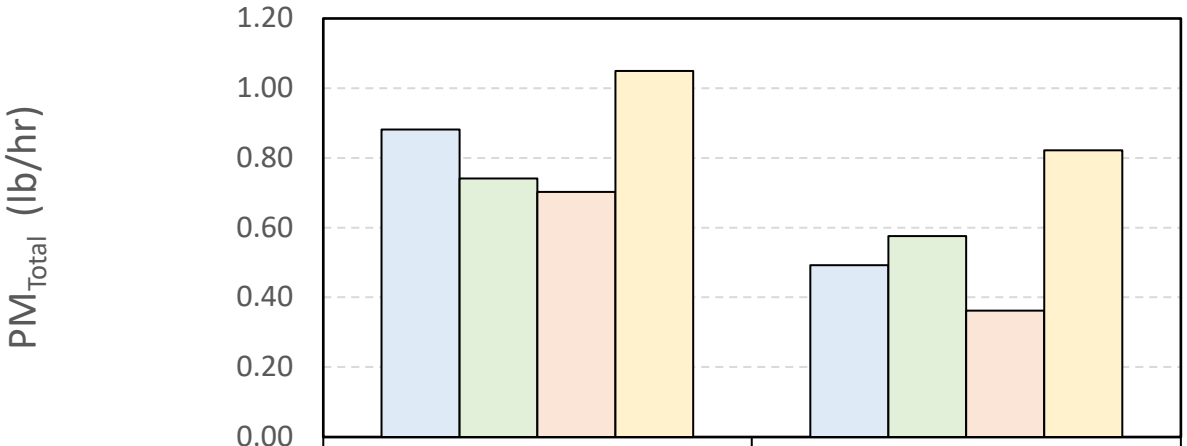
	#2 Diesel	RD99 Diesel
100% of Full Load	0.5988	0.3812
75% of Full Load	0.5342	0.4380
50% of Full Load	0.5654	0.2857
25% of Full Load	0.2486	0.1534

Emissions Test Comparisons - PM_{Total} (g/hp-hr)



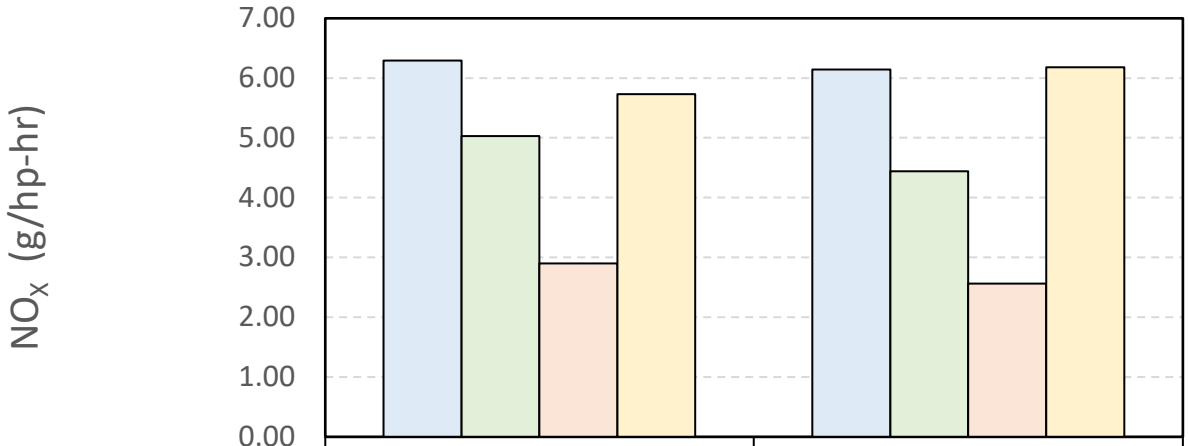
	#2 Diesel	RD99 Diesel
100% of Full Load	0.0961	0.0536
75% of Full Load	0.1066	0.0834
50% of Full Load	0.1483	0.0764
25% of Full Load	0.4228	0.3309

Emissions Test Comparisons - PM_{Total} (lb/hr)



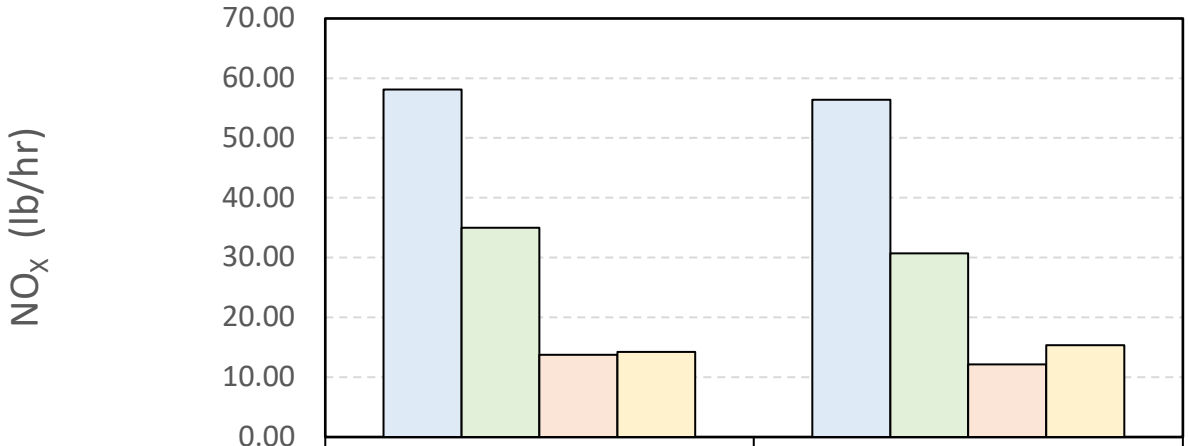
	#2 Diesel	RD99 Diesel
100% of Full Load	0.8817	0.4924
75% of Full Load	0.7409	0.5757
50% of Full Load	0.7021	0.3620
25% of Full Load	1.0495	0.8214

Emissions Test Comparisons - NO_X (g/hp-hr)



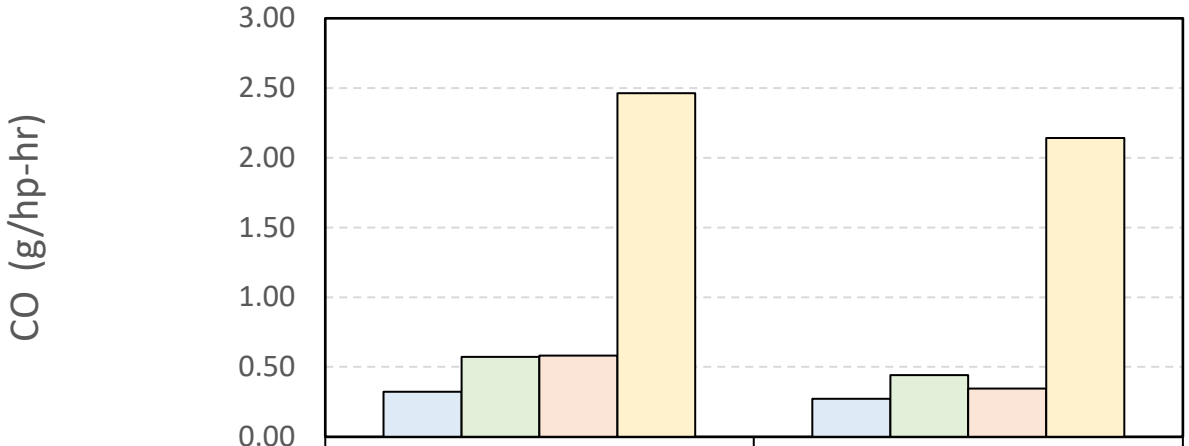
	#2 Diesel	RD99 Diesel
100% of Full Load	6.2908	6.1399
75% of Full Load	5.0312	4.4419
50% of Full Load	2.8958	2.5598
25% of Full Load	5.7292	6.1802

Emissions Test Comparisons - NO_X (lb/hr)



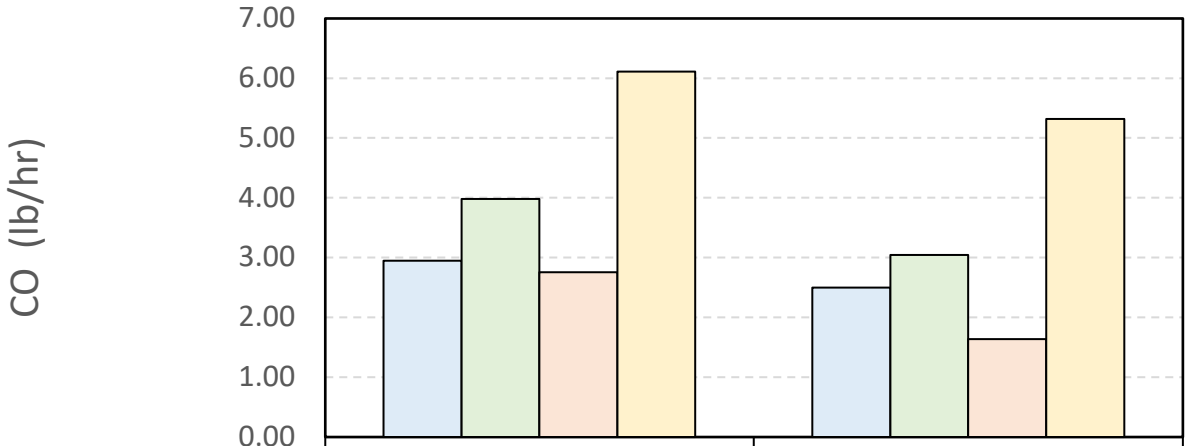
	#2 Diesel	RD99 Diesel
100% of Full Load	58.0785	56.3874
75% of Full Load	34.9503	30.6804
50% of Full Load	13.7131	12.1221
25% of Full Load	14.2221	15.3419

Emissions Test Comparisons - CO (g/hp-hr)



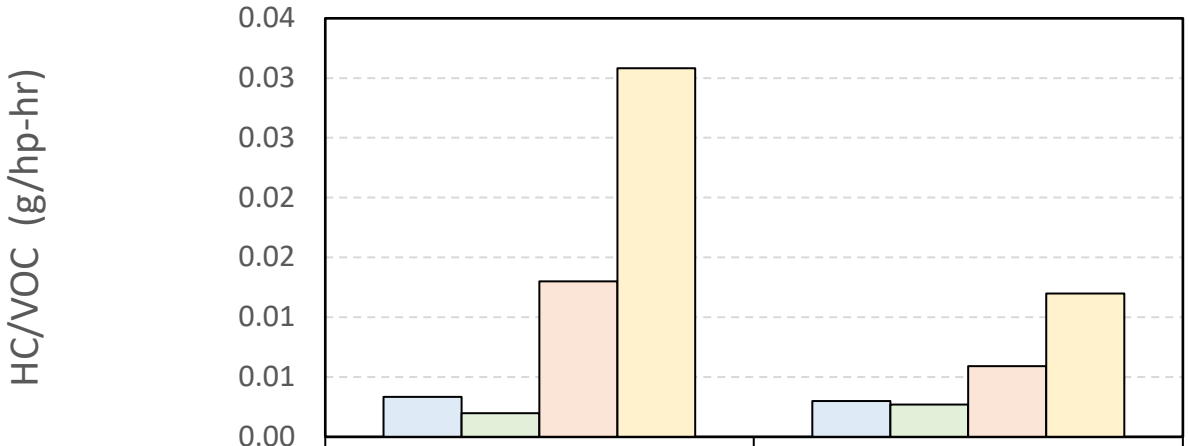
	#2 Diesel	RD99 Diesel
100% of Full Load	0.3212	0.2721
75% of Full Load	0.5726	0.4408
50% of Full Load	0.5809	0.3450
25% of Full Load	2.4619	2.1417

Emissions Test Comparisons - CO (lb/hr)



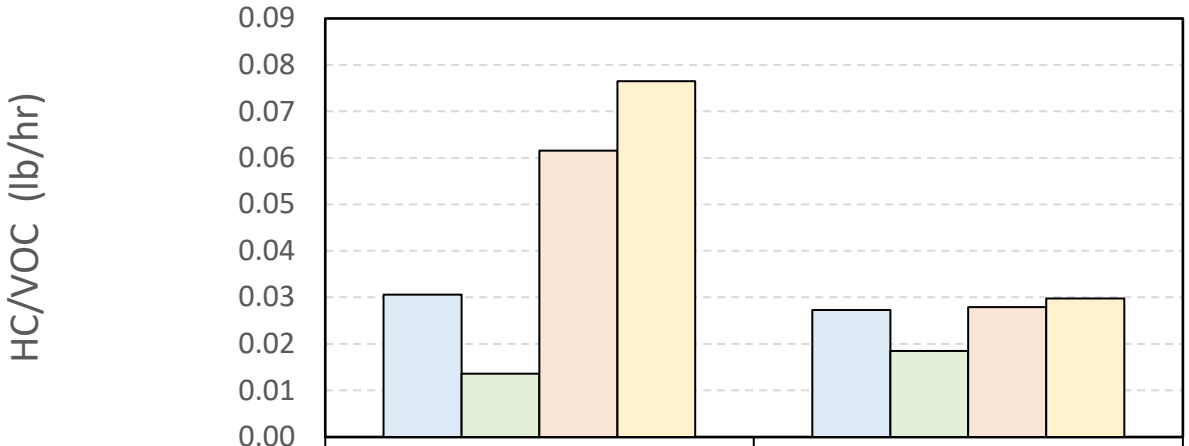
	#2 Diesel	RD99 Diesel
100% of Full Load	2.9471	2.4987
75% of Full Load	3.9776	3.0445
50% of Full Load	2.7510	1.6339
25% of Full Load	6.1115	5.3166

Emissions Test Comparisons - HC/VOC (g/hp-hr)



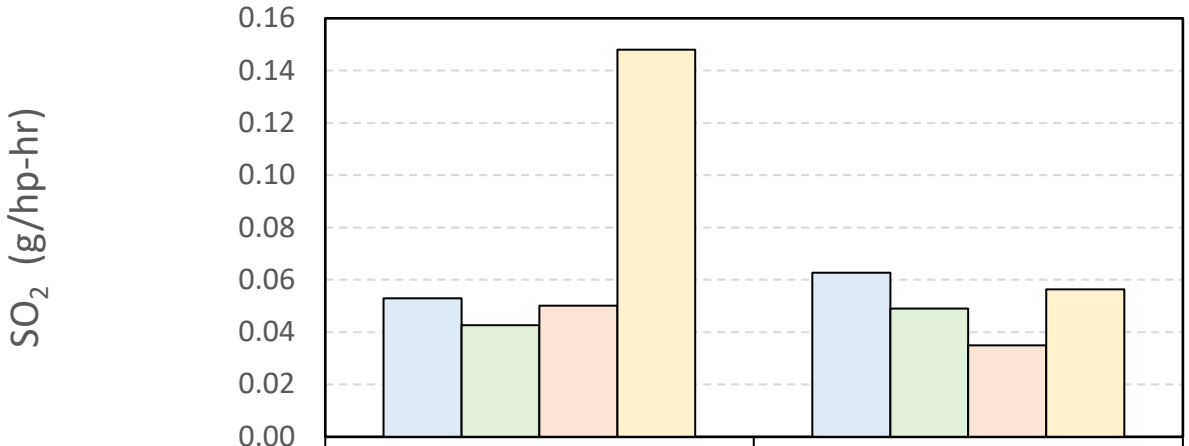
	#2 Diesel	RD99 Diesel
100% of Full Load	0.0033	0.0030
75% of Full Load	0.0020	0.0027
50% of Full Load	0.0130	0.0059
25% of Full Load	0.0308	0.0120

Emissions Test Comparisons - HC/VOC (lb/hr)



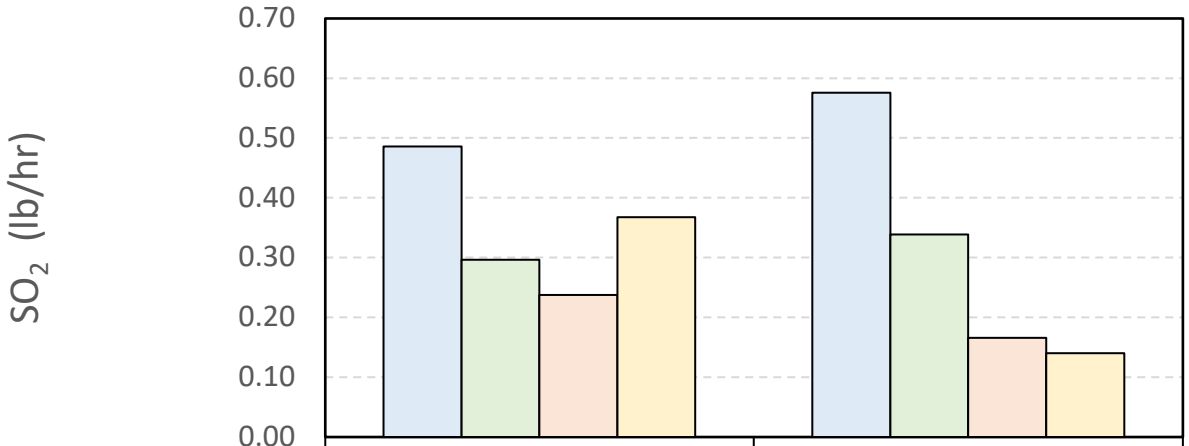
	#2 Diesel	RD99 Diesel
100% of Full Load	0.0306	0.0273
75% of Full Load	0.0136	0.0185
50% of Full Load	0.0616	0.0279
25% of Full Load	0.0765	0.0297

Emissions Test Comparisons - SO_2 (g/hp-hr)



	#2 Diesel	RD99 Diesel
100% of Full Load	0.0530	0.0627
75% of Full Load	0.0426	0.0490
50% of Full Load	0.0501	0.0350
25% of Full Load	0.1480	0.0563

Emissions Test Comparisons - SO_2 (lb/hr)



	#2 Diesel	RD99 Diesel
100% of Full Load	0.4860	0.5754
75% of Full Load	0.2963	0.3384
50% of Full Load	0.2374	0.1657
25% of Full Load	0.3675	0.1397

ATTACHMENT 4

Notice of Construction Application Form

Notice of Construction Application

A notice of construction permit is required before installing a new source of air pollution or modifying an existing source of air pollution. This application applies to facilities in Ecology's jurisdiction. Submit this application for review of your project. For general information about completing the application, refer to Ecology Forms ECY 070-410a-g, "Instructions for Ecology's Notice of Construction Application."

Ecology offers up to two hours of free pre-application assistance. We encourage you to schedule a pre-application meeting with the contact person specified for the location of your proposal, below. If you use up your two hours of free pre-application assistance, we will continue to assist you after you submit Part 1 of the application and the application fee. You may schedule a meeting with us at any point in the process.

Upon completion of the application, please enclose a check for the initial fee and mail to:

Department of Ecology
Cashiering Unit
P.O. Box 47611
Olympia, WA 98504-7611

For Fiscal Office Use Only:
001-NSR-216-0299-000404

Check the box for the location of your proposal. For assistance, call the contact listed below:		
	Ecology Permitting Office	**Contact**
☐ **CRO**	**Chelan, Douglas, Kittitas, Klickitat, or Okanogan County** Ecology Central Regional Office – Air Quality Program	Lynnette Haller (509) 457-7126 lynnette.haller@ecy.wa.gov
☒ **ERO**	**Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Stevens, Walla Walla or Whitman County** Ecology Eastern Regional Office – Air Quality Program	Karin Baldwin (509) 329-3452 karin.baldwin@ecy.wa.gov
☐ **NWRO**	**San Juan County** Ecology Northwest Regional Office – Air Quality Program	David Adler (425) 649-7267 david.adler@ecy.wa.gov
☐ **IND**	**For actions taken at Kraft and Sulfite Paper Mills and Aluminum Smelters** Ecology Industrial Section – Waste 2 Resources Program Permit manager: _____	James DeMay (360) 407-6868 james.demay@ecy.wa.gov
☐ **NWP**	**For actions taken on the US Department of Energy Hanford Reservation** Ecology Nuclear Waste Program	Lilyann Murphy (509) 372-7951 lilyann.murphy@ecy.wa.gov

Check the box below for the fee that applies to your application.

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State of Washington

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New project or equipment:

☐	**$1,500: Basic project** initial fee covers up to 16 hours of review.
☐	**$10,000: Complex project** initial fee covers up to 106 hours of review.

Change to an existing permit or equipment:

☐	**$200: Administrative or simple change** initial fee covers up to 3 hours of review Ecology may determine your change is complex during completeness review of your application. If your project is complex, you must pay the additional $675 before we will continue working on your application.
☒	**$875: Complex change** initial fee covers up to 10 hours of review
☐	**$350** flat fee: **Replace or alter control technology equipment under WAC 173-400-114** Ecology will contact you if we determine your change belongs in another fee category. You must pay the fee associated with that category before we will continue working on your application.

Read each statement, then check the box next to it to acknowledge that you agree.	
☒	The initial fee you submitted may not cover the cost of processing your application. Ecology will track the number of hours spent on your project. If the number of hours Ecology spends exceeds the hours included in your initial fee, Ecology will bill you $95 per hour for the extra time.
☒	You must include all information requested by this application. Ecology may not process your application if it does not include all the information requested.
☒	Submittal of this application allows Ecology staff to visit and inspect your facility.

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State of Washington

Notice of Construction Application
Part 1: General Information

I. Project, Facility, and Company Information

1. Project Name MWH Data Center Approval Order Amendment Request
2. Facility Name MWH Data Center
3. Facility Street Address 1515 Port Industrial Parkway, Quincy, WA, 98848
4. Facility Legal Description PARCEL 'C' OXFORD SP 28-8
5. Company Legal Name (if different from Facility Name) Microsoft Corporation
6. Company Mailing Address (street, city, state, zip) 1515 Port Industrial Parkway, Quincy, WA, 98848

II. Contact Information and Certification

1. Facility Contact Name (who will be onsite) Shirazeh Entezari	
2. Facility Contact Mailing Address (if different than Company Mailing Address) 1515 Port Industrial Parkway, Quincy, WA, 98848	
3. Facility Contact Phone Number 509-669-0884	4. Facility Contact E-mail shirazeh.entezari@microsoft.com
5. Billing Contact Name (who should receive billing information) Mark Brunner, Landau Associates, Inc.	
6. Billing Contact Mailing Address (if different than Company Mailing Address) 155 NE 100th Ste 302, Seattle, WA 98125	
7. Billing Contact Phone Number (206) 631-8695	8. Billing Contact E-mail mbrunner@landauinc.com
9. Consultant Name (optional – if 3rd party hired to complete application elements) Mark Brunner	
10. Consultant Organization/Company Landau Associates, Inc.	
11. Consultant Mailing Address (street, city, state, zip) 155 NE 100th Ste 302, Seattle, WA 98125	
12. Consultant Phone Number (206) 631-8695	13.Consultant E-mail mbrunner@landauinc.com
14. Responsible Official Name and Title (who is responsible for project policy or decision-making) Hichem Garnaoui	
16. Responsible Official Phone 206-330-7508	17. Responsible Official E-mail higarnao@microsoft.com
18. Responsible Official Certification and Signature I certify that the information on this application is accurate and complete. Signature _____ Date 04/14/2022	

Part 2: Technical Information

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The Technical Information may be sent with this application form to the Cashiering Unit, or may be sent directly to the Ecology regional office with jurisdiction along with a copy of this application form.

For all sections, check the box next to each item as you complete it.

III. Project Description

Please attach the following to your application.

☒ Written narrative describing your proposed project.
☒ Projected construction start and completion dates.
☐ Operating schedule and production rates.
☐ List of all major process equipment with manufacturer and maximum rated capacity.
☐ Process flow diagram with all emission points identified.
☐ Plan view site map.

☒ Manufacturer specification sheets for major process equipment components.
☐ Manufacturer specification sheets for pollution control equipment.
☐ Fuel specifications, including type, consumption (per hour & per year) and percent sulfur.

IV. State Environmental Policy Act (SEPA) Compliance

Check the appropriate box below.

☐ SEPA review is complete:
Include a copy of the final SEPA checklist and SEPA determination (e.g., DNS, MDNS, EIS) with your application.

☒ SEPA review has not been conducted:

☐ If review will be conducted by another agency, list the agency. You must provide a copy of the final SEPA checklist and SEPA determination before Ecology will issue your permit.
Agency Reviewing SEPA:

_____

☐ If the review will be conducted by Ecology, fill out a SEPA checklist and submit it with your application. You can find a SEPA checklist online at https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-document-templates

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V. Emissions Estimations of Criteria Pollutants

Does your project generate criteria air pollutant emissions? ☐ Yes ☒ No

If yes, please provide the following information regarding your criteria emissions in your application.

☐ The names of the criteria air pollutants emitted (i.e., NO_x, SO_2, CO, $PM_{2.5}$, PM_{10}, TSP, VOC, and Pb)

☐ Potential emissions of criteria air pollutants in tons per hour, tons per day, and tons per year (include calculations)

☐ If there will be any fugitive criteria pollutant emissions, clearly identify the pollutant and quantity

VI. Emissions Estimations of Toxic Air Pollutants

Does your project generate toxic air pollutant emissions? ☐ Yes ☒ No

If yes, please provide the following information regarding your toxic air pollutant emissions in your application.

☐ The names of the toxic air pollutants emitted (specified in WAC 173-460-150[1])

☐ Potential emissions of toxic air pollutants in pounds per hour, pounds per day, and pounds per year (include calculations)

☐ If there will be any fugitive toxic air pollutant emissions, clearly identify the pollutant and quantity

VII. Emission Standard Compliance

☐ Provide a list of all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, and emission standards adopted under Chapter 70.94 RCW.

Does your project comply with all applicable standards identified? ☒ Yes ☐ No

VIII. Best Available Control Technology

☐ Provide a complete evaluation of Best Available Control Technology (BACT) for your proposal.

[1] http://apps.leg.wa.gov/WAC/default.aspx?cite=173-460-150

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IX. Ambient Air Impacts Analyses

Please provide the following:

☐ Ambient air impacts analyses for Criteria Air Pollutants (including fugitive emissions)

☐ Ambient air impacts analyses for Toxic Air Pollutants (including fugitive emissions)

☐ Discharge point data for each point included in air impacts analyses (include only if modeling is required)

- ☐ Exhaust height
- ☐ Exhaust inside dimensions (ex. diameter or length and width)
- ☐ Exhaust gas velocity or volumetric flow rate
- ☐ Exhaust gas exit temperature
- ☐ The volumetric flow rate
- ☐ Description of the discharges (i.e., vertically or horizontally) and whether there are any obstructions (ex., raincap)
- ☐ Identification of the emission unit(s) discharging from the point
- ☐ The distance from the stack to the nearest property line
- ☐ Emission unit building height, width, and length
- ☐ Height of tallest building on-site or in the vicinity and the nearest distance of that building to the exhaust
- ☐ Whether the facility is in an urban or rural location

Does your project cause or contribute to a violation of any ambient air quality standard or acceptable source impact level? ☐ Yes ☒ No