New Standby Engine Notice of Construction and Application for Approval

HF Sinclair Puget Sound Refining – Anacortes, Washington

Prepared for
HF Sinclair – Puget Sound Refinery

Prepared by
Barr Engineering Co.

April 2026

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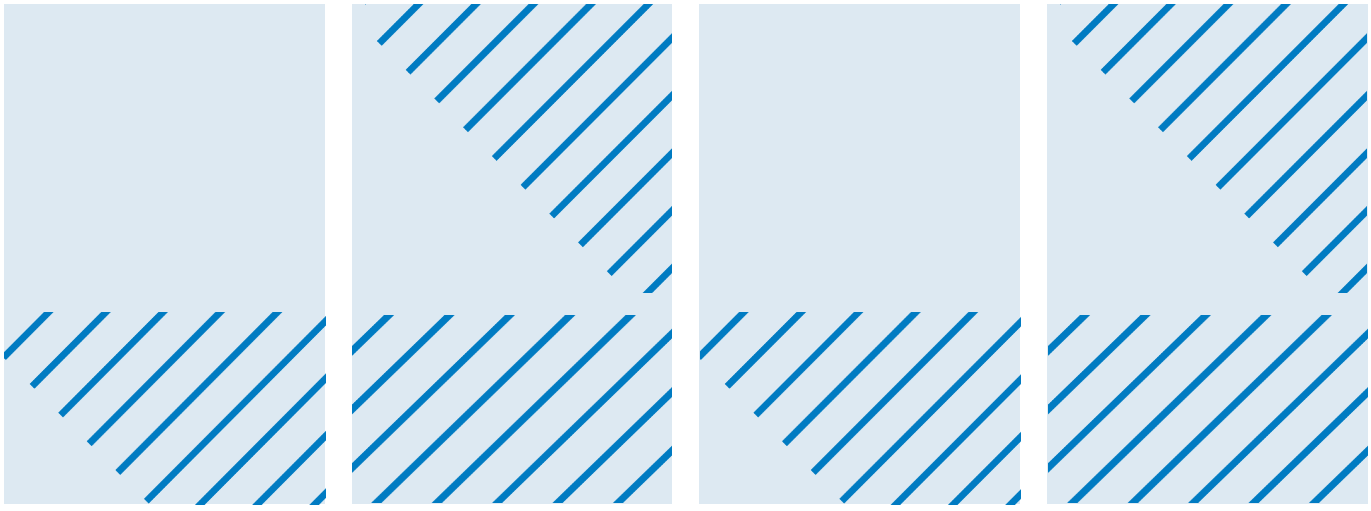

New Standby Engine Notice of Construction Application for Approval

April 2026

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Tables

Attachments

1 Introduction

This Notice of Construction (NOC) application is submitted for approval of a standby engine generator set at HF Sinclair Puget Sound Refining (PSR).

This engine requires an NOC application for an Order of Approval for Construction (OAC) under Northwest Clean Air Agency (NWCAA) regulations at Section 300. An NOC application is required for any project that involves installing a new emission unit with air contaminant emissions above the emission thresholds in NWCAA 300.4. Emissions from the new engine are greater than emission thresholds in NWCAA 300.4 for the pollutant “diesel engine exhaust, particulate” (DEEP). Therefore, an OAC is required prior to installation of the engine.

This NOC application is organized as follows:

- Section 2 contains a description of the proposed project.
- Section 3 provides an applicability analysis of the EPA’s New Source Review (NSR) air permitting program, specifically the Prevention of Significant Deterioration (PSD) rules.
- Section 4 provides applicability of federal air quality regulatory standards.
- Section 5 provides applicability of local air quality regulatory standards.
- Attachment A provides the application form.
- Attachment B provides the project emission calculations.
- Attachment C provides the plot plan.
- Attachment D provides the SEPA checklist.
- Attachment E provides an Ambient Air Quality Impacts Analysis.
- Attachment F provides a detailed BACT Analysis.
- Attachment G provides the engine manufacturer specifications.

2 Project Description

A new diesel engine-powered generator will be installed to replace existing emergency generator 30LEG2 (#2 Control Room Generator). The existing 30LEG2 diesel generator was built in 1993 and has been used to provide operability to Control Room #2 systems during emergency power outages. The proposed new engine is a 500-kW power output diesel-fired engine and generator. The manufacturer specifications for the engine can be found in Attachment G. The engine is US EPA Tier IV-final certified and is equipped with a diesel particulate filter (DPF). The engine is for standby service and will be used primarily in emergency situations. However, the engine will be permitted as a non-emergency engine to provide needed operational flexibility, notably to supplant the need to bring in portable generators during certain plant maintenance and testing procedures.

3 Emissions Summary and NSR Applicability

A comparison of the emissions before and resulting after the project is required for evaluation of State/Local and Federal air permitting applicability.

3.1 Emissions Increase Calculation Procedures

Under NWCAA Section 300, permitting is required for projects involving new or modified sources that will increase the amount or change the type of air contaminants discharged from emission units that are constructed or modified. HF Sinclair considered permitting applicability in the following sections.

3.1.1 Potential Emission Calculations

Potential emissions for NO_x, CO, PM, and VOC are calculated using manufacturer-specified emission factors which can be found in Attachment G. The emission factor for VOC is provided as THC. This value is converted to VOC using ratios of CH_4/THC and VOC/NMHC from Table 3-3 of the EPA document: "Speciation Profiles and Toxic Emission Factors for Nonroad Engines in MOVES3[1]." Toxic air pollutant emissions are based on emission factors from Table 3-4, Table 3-5, Table 3-6, and Table 3-7 of the same EPA document using the Tier IV factors and DPF ratios.

3.1.2 Notice of Construction (NOC) Applicability

The following sections discuss NOC applicability.

3.1.2.1 NWCAA 300.4(D) Applicability

New source review under NWCAA Section 300 is limited to the emissions unit or units proposed to be added to or modified at an existing stationary source and the air contaminants for which emissions will increase above the emission thresholds in NWCAA 300.4 as a result of the modification or construction. Construction of a new emission unit with an uncontrolled potential to emit emission rate below all of the threshold levels listed in the table in NWCAA 300.4(D) is exempt from new source review.

Potential emissions of criteria pollutants were calculated assuming 8,760 hours of operation per year. Table 1 compares the potential emissions for the new engine to the NWCAA 300.4(D) exemption thresholds. Potential engine emissions are below the exemption thresholds for all criteria pollutants.

Table 1 New Engine Potential to Emit Compared to NWCAA 300.4(D) Exemption Thresholds

	NO_X	CO	PM	PM_{10}	$PM_{2.5}$	VOC
New Engine Potential Emissions (tpy)	1.3	NA	0.06	0.06	0.02	0.03
NWCAA 300.4(D) Exemption Threshold (tpy)	2.0	5.0	1.25	0.75	0.5	2.0
Are the Engine Potential Emissions Less Than NWCAA 300.4(D) Exemption Threshold?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

[1] Accessed March 26, 2026: https://www.epa.gov/system/files/documents/2022-07/420r22015.pdf

3.1.2.2 WAC 173-460-150 Applicability

Potential emissions of any toxic air pollutant (TAP) that exceeds the Small Quantity Emissions Rate (SQER) listed in WAC 173-460-150 requires new source review. Potential TAP emissions were calculated using 1,200 hours of operation per year. HF Sinclair proposes a voluntary operational limit of 1,200 hours of operation per year. As shown in Table 2, potential emissions for the new engine exceed the SQER for DEEP. Therefore, new source review is required for the engine. Additional details on the TAP review are in Section 5.3.

Table 2 New Engine Potential Emissions Compared to SQER

Pollutant	Averaging Period	Potential Emissions During the Averaging Period (lb/year)	SQER (lb/year)	Are Potential Emissions Less Than the SQER?
DEEP	Year	13.26	0.54	No

3.1.3 Prevention of Significant Deterioration (PSD) Applicability

WAC 173-400-700 and WAC 173-400-800 implement the Prevention of Significant Deterioration (PSD) preconstruction permitting program for major sources and major modifications in attainment areas. PSR is currently a major source as defined in Washington Rule WAC 173-400-710, which incorporates the definitions in 40 CFR 52.21(b) by reference. HF Sinclair has completed a PSD applicability analysis to determine if this project is a major modification as defined under Washington rules and the NSR permitting program. Calculations for this analysis assume the engine operates continuously year round for a total of 8,760 hour of operation per year. Table 3 compares the emissions from the engine to the PSD significant emission rates (SER). Emissions are less than the SER for all pollutants; therefore, the new engine does not trigger PSD.

Table 3 New Engine Potential Emissions Compared to Significant Emissions Rates

	NO_X	CO	PM	PM_{10}	$PM_{2.5}$	VOC
New Engine Potential Emissions (tpy)	1.30	NA	0.06	0.06	0.06	0.03
PSD Significant Emission Rate (tpy)	40	100	25	15	10	40
Are Project Emissions Less Than SERs?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

4 Federal Air Quality Performance Standards

The following sections discuss applicability of federal standards.

4.1 40 CFR Part 60 Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Pursuant to 40 CFR §60.4200, the new engine is subject to the New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60, Subpart IIII) because it is a stationary compression ignition engine that will be manufactured and installed after April 1, 2006.

As a non-emergency CI engine, the engine must comply with the emission standards applicable to its model year and size, as specified in 40 CFR §60.4204. The proposed engine will be EPA-certified to the applicable Tier 4 Final emission standards under the relevant EPA nonroad engine program (40 CFR Part 1039 or Part 1042), which regulate emissions of nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), and hydrocarbons (NMHC). Compliance with Subpart IIII emission standards are demonstrated through installation and operation of an EPA-certified engine, rather than through source-specific emission testing.

In accordance with 40 CFR §60.4207, the engine must operate exclusively on ultra-low sulfur diesel (ULSD) fuel with a sulfur content not exceeding 15 parts per million (ppm). Fuel supplier documentation and/or delivery records must be maintained to demonstrate compliance with this fuel requirement.

The engine must be installed, operated, and maintained in a manner consistent with the manufacturer's written instructions and good air pollution control practices. All emission control and aftertreatment systems provided as part of the certified engine configuration (e.g., selective catalytic reduction, diesel particulate filter) must be maintained in proper working order and operated at all times the engine is in use, as required by Subpart IIII.

No initial performance test, continuous emissions monitoring, or ongoing emissions testing is required for this engine under Subpart IIII, provided the engine is operated consistently with its EPA certification. HF Sinclair must maintain records as required by 40 CFR §60.4214, including engine identification information, certification documentation, fuel records demonstrating ULSD use, and maintenance records sufficient to demonstrate compliance. These records must be retained for a minimum of two (2) years and made available to regulatory agencies upon request.

The engine is not subject to routine federal notification or reporting requirements under Subpart IIII.

4.2 40 CFR Part 63 Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Pursuant to 40 CFR §63.6585, Subpart ZZZZ applies to owners and operators of stationary RICE located at major sources of HAP. The proposed engine is a stationary, non-emergency CI engine installed at a facility with the potential to emit greater than 10 tons per year of an individual HAP or greater than 25 tons per year of combined HAP; therefore, the requirements of Subpart ZZZZ apply. The engine is classified

as new and will be required to comply with all applicable emission, operating, monitoring, recordkeeping, and reporting requirements upon startup.

Under 40 CFR §63.6600, new non-emergency stationary CI RICE with a site rating greater than 500 HP located at a major source of HAP must comply with emission limits for carbon monoxide (CO) and formaldehyde (HCHO). Compliance will be demonstrated by meeting one of the following standards:

- Carbon Monoxide emissions limited to 23 parts per million by volume, dry basis (ppmvd), corrected to 15 percent oxygen, or achieving a minimum 95 percent reduction from uncontrolled emissions.
- Formaldehyde emissions limited to 580 micrograms per dry standard cubic meter (µg/dscm), corrected to 15 percent oxygen, or achieving a minimum 85 percent reduction from uncontrolled emissions.

The manufacturer-specified emission rates for carbon monoxide and formaldehyde meet the standards listed above.

Initial compliance with the applicable emission standards must be demonstrated through a performance test conducted in accordance with 40 CFR §63.6610 and the applicable EPA reference methods identified in Table 4 of Subpart ZZZZ. The performance test must be completed within 180 days of startup. Operating limits established during the initial performance test, including minimum catalyst inlet temperature, must be maintained.

Continuous compliance shall be demonstrated by:

- Operating emission control equipment at all times when the engine is in operation;
- Continuously monitoring operating parameters (e.g., catalyst inlet temperature) and maintaining them within established operating limits;
- Performing maintenance and repairs in accordance with the manufacturer's recommendations or an approved maintenance plan; and
- Taking prompt corrective action if monitored parameters deviate from established operating limits.

In accordance with 40 CFR §63.6604, the stationary CI RICE must operate on ultra-low sulfur diesel (ULSD) with a sulfur content not to exceed 15 parts per million (ppm). Any alternative fuel used must meet the applicable fuel requirements specified in Subpart ZZZZ.

The owner or operator must comply with all monitoring, recordkeeping, and reporting requirements applicable to new stationary CI RICE under Subpart ZZZZ, including:

- Submission of an Initial Notification and a Notification of Compliance Status in accordance with 40 CFR §§63.9 and 63.6645;
- Maintenance of records for at least five years, including performance test results, monitoring data, maintenance activities, deviations, and corrective actions, with the most recent two years maintained onsite;
- Submission of required semiannual compliance reports and deviation reports, as applicable; and
- Electronic submission of notifications and reports using EPA's Compliance and Emissions Data Reporting Interface (CEDRI).

5 Local Air Quality Requirements

The following sections discuss applicable of Washington State and NWCAA requirements.

5.1 New Source Review (NWCAA 300)

The NWCAA Regulation, Section 300.2, requires the filing of a Notice of Construction (NOC) application for projects that meet certain criteria. HF Sinclair is required to file an NOC application because the project involves construction of a new emission source, the project emissions increase is greater than the NOC *de minimis* thresholds in NWCAA 300.4(d) for certain TAPs. Therefore, the project triggers an NOC.

NWCAA 300.7 requires the following for all NOC applications (based on NWCAA General Permit Application form):

- Forms provided by NWCAA – refer to Attachment A
- Appropriate fees specified in NWCAA 324.2
- A completed State Environmental Policy Act (SEPA) checklist.
- A BACT analysis
- An ambient air quality impact analysis for the project
- A demonstration of compliance with the BACT for toxics (tBACT) as required in WAC 173-460

5.1.1 Application Fees

Filing of a NOC application requires payment of associated fees. The fees associated with this NOC application are listed below. Only the filing fee is required for submission.

- Filing fee: $1,571
- Fuel burning equipment ≥ 0.5 MM Btu per hour, but < 10 MM Btu per hour: $623
- SEPA threshold determination (DNS): $947
- Each stationary source subject to NESHAP, per subpart: $1,257

Only the fees for the NESHAP were included even though the engine is subject to both NESHAP and NSPS since the NESHAP requirements are more substantive.

5.2 Best Available Control Technology (NWCAA Rule 300.9)

A best available control technology (BACT) review is required for criteria pollutants that exceed the de minimis thresholds in NWCAA 300.4(D). No pollutants exceed the thresholds in NWCAA 300.4(D). Therefore, a BACT analysis is not required.

5.3 Washington Toxic Air Pollutants Regulations (WAC 173-460)

WAC 173-460, adopted at NWCAA Regulation 104.1, applies to new or modified sources that emit toxic air pollutants (TAPs). This regulation requires TAP emissions quantification and requires BACT for toxics (tBACT) and an ambient impact assessment for TAPs that exceed the Small Quantity Emission Rate (SQER) found in WAC 173-460-150.

HF Sinclair reviewed potential increases in TAP emissions from the new equipment against the respective Small Quantity Emission Rate (SQER) in WAC 173-460-150. For this analysis potential emission were

calculated using the proposed 1,200 hours of operation per year limit. Refer to Attachment B for these calculations. Table 4 documents the TAPs emitted by the engine in comparison to their corresponding SQERs.

Table 4 Comparison of Potential TAP Emissions to SQERs

Pollutant	Period	SQER (lb/period)	Total Emissions (lb/period)	Are Emissions Less than the SQER?
1,2,3,4,6,7,8-Heptachlorodibenzofuran	Year	4.30E-05	1.56E-09	Yes
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	Year	4.30E-04	1.64E-09	Yes
1,2,3,4,7,8,9-Heptachlorodibenzofuran	Year	4.30E-05	9.17E-11	Yes
1,2,3,4,7,8-Hexachlorodibenzofuran	Year	4.30E-05	3.46E-10	Yes
1,2,3,6,7,8-Hexachlorodibenzofuran	Year	4.30E-05	3.82E-10	Yes
1,2,3,7,8,9-Hexachlorodibenzofuran	Year	4.30E-05	2.83E-10	Yes
1,2,3,7,8-Pentachlorodibenzofuran	Year	1.50E-04	1.69E-10	Yes
2,3,4,7,8-Pentachlorodibenzofuran	Year	1.50E-05	5.07E-10	Yes
2,3,7,8-Tetrachlorodibenzofuran	Year	4.30E-05	7.99E-11	Yes
1,3-Butadiene	Year	5.4	0.01	Yes
Acetaldehyde	Year	6.0	0.65	Yes
Acrolein	24-hr	0.026	1.88E-03	Yes
Arsenic	Year	0.049	1.39E-03	Yes
Benz(a)anthracene	Year	0.89	2.82E-06	Yes
Benzene	Year	21	0.12	Yes
Benzo(a)pyrene	Year	0.16	0	Yes
Benzo(b)fluoranthene	Year	0.89	0	Yes
Benzo(k)fluoranthene	Year	0.89	0	Yes
Chromium VI	Year	6.50E-04	2.76E-06	Yes
Chrysene	Year	8.9	4.69E-06	Yes
Dibenz(a,h)anthracene	Year	0.89	0	Yes
DEEP	Year	0.54	13.26	No
Ethyl Benzene	Year	6.5	0.06	Yes

Pollutant	Period	SQER (lb/period)	Total Emissions (lb/period)	Are Emissions Less than the SQER?
Formaldehyde	Year	2.7	2.04	Yes
Hexane	24-hr	52	0.05	Yes
Indeno(1,2,3-cd)pyrene	Year	0.89	0	Yes
Manganese	24-hr	0.022	7.08E-06	Yes
Mercury, elemental	24-hr	0.0022	2.08E-07	Yes
Naphthalene	Year	4.8	0.15	Yes
Nickel	Year	0.62	3.59E-04	Yes
Octachlorodibenzofuran	Year	0.015	2.73E-09	Yes
Octachlorodibenzo-p-dioxin	Year	0.015	1.10E-08	Yes
Propionaldehyde	24-hr	0.59	5.90E-04	Yes
Styrene	24-hr	65	0	Yes
Toluene	24-hr	370	5.63E-03	Yes
Xylenes	24-hr	16	7.14E-03	Yes

For the pollutants identified above, where the PTE is greater than the respective SQERs, air dispersion modeling is utilized to further resolve ambient impacts, and tBACT is required.

5.3.1 Toxics Ambient Impact Modeling Results Summary

Table 5 provides a summary of the ambient air impacts for the TAPs associated with the project subject to dispersion modeling requirements. All TAPs emitted above their respective SQER do not exceed their associated acceptable source impact levels (ASIL).

Table 5 TAP Ambient Air Modeling Summary

Pollutant	ASIL ($\mu g/m^3$)	Modeled Ambient Impact ($\mu g/m^3$)	Passing?
DEEP	3.30E-03	3.19E-03	Yes

5.3.2 Toxic Best Available Control Technology, tBACT

The project is subject to tBACT review for emissions of (pollutants) that exceed the SQERs. DEEP emissions exceed the SQER and therefore requires a tBACT review. PM is used as a surrogate for DEEP. The tBACT is determined to be the use of a Tier IV engine with DPF. See Attachment F for further details on the tBACT review.

5.4 NWCAA Section 520 – Sulfur Compounds in Fuel

NWCAA Section 520 regulates the sulfur content of diesel fuel burned by fuel burning equipment. Diesel burned by the new engine must meet the following requirements:

- Distillate fuel oil classified as Grade No. 1 (ASTM designation: D396-69) shall contain three tenths percent (0.3%) or less sulfur by weight.
- Distillate fuel oil classified as Grade No. 2 (ASTM Designation: D396-69) shall contain five-tenths percent (0.5%) or less sulfur by weight.

Attachment A

Application Form

northwest Clean Air agency
1600 S 2nd Street
Mount Vernon, WA 98273
Main: 360-428-1617
Fax: 360-428-1620
info@nwcleanairwa.gov
nwcleanairwa.gov

General Permit Application

SECTION A:

☑ **1. Facility information:**

Facility name: HF Sinclair Puget Sound Refining
Facility owner: HF Sinclair
Owner agent:
Contact person: Mindy Mejia
Contact phone: 360-299-1930
Contact email: Mindy.Mejia@HFSinclair.com

Facility address: 8505 South Texas Road
City: Anacortes State: WA ZIP: 98221
Mailing/Billing address (if different): 8505 South Texas Road
City: Anacortes State: WA ZIP: 98221
Desired start of construction: June 1, 2026

Facility NAICS code: 324110

☑ **2. Fee:** Permit filing fee of $1,571. NWCAA will invoice you for any additional fees according to the NWCAA **permit fee schedule** .

☑ **3. SEPA environmental checklist:** If another agency has issued a SEPA determination for this project include a copy of the determination instead.

☑ **4. Type of project:** Is this an approval for new equipment? ☑ Yes ☐ No

OR Is this a permit revision to a current NWCAA permit? ☐ Yes ☑ No If yes, include the NWCAA permit number: _____

☑ **5. Describe the project:** Include a list of process equipment and any proposed air pollution controls:

Include equipment capacity (i.e. lb wood/ hr for a chipper)

See application narrative for a description of the project.

Will equipment vent through a stack? ☑ Yes ☐ No

If yes, include the following: Stack diameter (ft): 0.5 Stack flow rate (cfm): 934.9 Stack temperature (°F): 836.6

How far will stack extend above building? (ft): 9.6 Discharge orientation: ☑ Vertical ☐ Horizontal

NWCAA Office Use Only

NOC No.: _____ SEPA checklist date: _____
Fee received: _____ New source? ☐ Yes ☐ No
Date received: _____ If yes: ☐ Added to Stratus database
Receipt No.: _____ ☐

Notes

northwest CleanAir agency
1600 S 2nd Street
Mount Vernon, WA 98273
Main: 360-428-1617
Fax: 360-428-1620
info@nwcleanairwa.gov
nwcleanairwa.gov

General Permit Application

SECTION B: Specific equipment.

If your project fits one of the following, fill out the appropriate application (link below) and attach it. Then skip to Section D.

Baghouse Cartridge-type | Gas station Stage I & II | Gas station Stage II removal | Rock crusher | Spray coating operation

SECTION C: If you provided specific equipment form Section B, Skip this section.

☑ **1.** Calculate and attach mass emission rate increases (and stack concentrations, if available) for all air pollutants (e.g., NO_X, SO_2, VOC, CO, $PM_{2.5}$, PM_{10}, toxic pollutants, hazardous air pollutants) due to the project for comparison against minor NSR and PSD applicability thresholds.

☑ **2.** Attach a description of why the proposed air pollution emission control strategy is the best available for the process at the time of application submittal. This can take the form of a written explanation or, for larger projects, a top-down best available control technology analysis (BACT).

☑ **3.** Attach an ambient impact analysis for the project.

☑ **4.** List of all federal regulations that would apply to the project, (NSPS, NESHAP, and MACT). Attach pages if needed.

See application narrative for a list of applicable federal regulations.

SECTION D: Signature

I certify, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate and complete.

By NWCAA Regulation 300.1, construction cannot begin until after permit has been issued.

Aaron Vahid
Applicant name or authorized representative

Environmental Manager
Title


Signature

04/01/2026
Date

If you have any questions or need assistance please do not hesitate to call us at 360-428-1617.

Attachment B

Engine Emissions Calculations

HF Sinclair Puget Sound Refining

Potential Emission Calculations Criteria Pollutants - New Standby Engine

Fuel Type:	Diesel	
Engine Power:[1]	672	hp
Fuel Consumption 100% Load with fan:[1]	32.7	gal/hr
Hours of Operation:	8760	hr
Control:	DPF	

Pollutant	Emission Factor (g/hp-hr)[1]	Emissions (lb/hr)	Emissions (tpy)	300.4(D) Exemption Threshold (tpy)	Are the Engine Potential Emissions Less Than NWCAA 300.4(D) Exemption Threshold?
NO_x	0.2	0.30	1.30	2	Yes
CO	NA	NA	NA	5	Yes
VOC [2]	0.01	0.0078	0.03	2	Yes
PM	0.01	0.01	0.06	1.25	Yes

[1] NOX, CO, VOC and PM emission factors are from the Cat C18 Diesel Generator Sets specification sheet for the engine operating in standby service.

[2] THC emissions are converted to VOC emissions using the following equation: VOC = THC x (1-CH4/THC) x VOC/NMHC. The ratio of CH4/THC and VOC/NMHC are from Table 3-3 of the EAP document: Speciation Profiles and Toxic Emission Factors for Nonroad Engines in MOVES3. The Tier 4, DPF ratios were used.

HF Sinclair Puget Sound Refining

Potential Emission Calculations Toxic Air Pollutants - New Standby Engine

Fuel Type:	Diesel	
Engine Power:[1]	672	hp
Fuel Consumption 100% Load with fan:[1]	32.7	gal/hr
Hours of Operation:	1200	hr
Control:	DPF	

Pollutant	Emission Factor (g/hp-hr)[1]	Emissions (lb/hr)	Emissions (lb/24-hr)	Emissions (lb/yr)	SQER Averaging period	SQER (lb/averaging period)	Are Emissions Less than the SQER?
Diesel engine exhaust, particulate	0.01	0.01	0.27	13.26	Year	0.54	**No**

Pollutant	Emission Factor (Toxic Fraction)[4]	Emissions (lb/hr)	Emissions (lb/24-hr)	Emissions (lb/yr)	SQER Averaging period	SQER (lb/averaging period)	Are Emissions Less than the SQER?
1,3-Butadiene	0.0008	6.26E-06	1.50E-04	0.01	Year	5.4	Yes
2,2,4 - Trimethylpentane	0.00782	6.12E-05	1.47E-03	0.07	NA	NA	NA
Acenaphthene	0.0000526	4.12E-07	9.88E-06	4.94E-04	NA	NA	NA
Acenaphthylene	0.0000853	6.67E-07	1.60E-05	8.01E-04	NA	NA	NA
Acetaldehyde	0.06934	5.43E-04	1.30E-02	0.65	Year	6	Yes
Acrolein	0.00999	7.82E-05	1.88E-03	0.09	24-hr	0.026	Yes
Anthracene	0.0000304	2.38E-07	5.71E-06	2.85E-04	NA	NA	NA
Benz(a)anthracene	0.0000003	2.35E-09	5.63E-08	2.82E-06	year	0.89	Yes
Benzene	0.01291	1.01E-04	2.42E-03	0.12	Year	21	Yes
Benzo(a)pyrene	0	0	0	0	Year	0.16	Yes
Benzo(b)fluoranthene	0	0	0	0	Year	0.89	Yes
Benzo(ghi)perylene	0.0000002	1.56E-09	3.76E-08	1.88E-06	NA	NA	NA
Benzo(k)fluoranthene	0	0	0	0	Year	0.89	Yes
Chrysene	0.0000005	3.91E-09	9.39E-08	4.69E-06	Year	8.9	Yes
Dibenz(a,h)anthracene	0	0	0	0	Year	0.89	Yes
Ethyl Benzene	0.00627	4.91E-05	1.18E-03	0.06	Year	6.5	Yes
Fluoranthene	0.0000457	3.58E-07	8.58E-06	4.29E-04	NA	NA	NA
Fluorene	0.000196	1.53E-06	3.68E-05	1.84E-03	NA	NA	NA
Formaldehyde	0.21744	1.70E-03	4.08E-02	2.04	Year	2.7	Yes
Hexane	0.00541	4.23E-05	1.02E-03	0.05	24-hr	52	Yes
Indeno(1,2,3-cd)pyrene	0	0	0	0	Year	0.89	Yes
Naphthalene	0.0163	1.28E-04	3.06E-03	0.15	Year	4.8	Yes
Phenanthrene	0.000851	6.66E-06	1.60E-04	0.01	NA	NA	NA
Propionaldehyde	0.00314	2.46E-05	5.90E-04	0.03	24-hr	0.59	Yes
Pyrene	0.0000379	2.97E-07	7.12E-06	3.56E-04	NA	NA	NA
Styrene	0	0	0	0	24-hr	65	Yes
Toluene	0.02999	2.35E-04	5.63E-03	0.28	24-hr	370	Yes
Xylenes	0.038	2.97E-04	7.14E-03	0.36	24-hr	16	Yes

Pollutant	Emission Factor (g/gal)[2]	Emissions (lb/hr)	Emissions (lb/24-hr)	Emissions (lb/yr)	SQER Averaging period	SQER (lb/averaging period)	Emissions ~~greater than~~ SQER?
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.8E-11	1.30E-12	3.11E-11	1.56E-09	Year	4.30E-05	Yes
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	1.9E-11	1.37E-12	3.29E-11	1.64E-09	Year	4.30E-04	Yes
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.06E-12	7.64E-14	1.83E-12	9.17E-11	Year	4.30E-05	Yes
1,2,3,4,7,8-Hexachlorodibenzofuran	4E-12	2.88E-13	6.92E-12	3.46E-10	Year	4.30E-05	Yes
1,2,3,6,7,8-Hexachlorodibenzofuran	4.41E-12	3.18E-13	7.63E-12	3.82E-10	Year	4.30E-05	Yes
1,2,3,7,8,9-Hexachlorodibenzofuran	3.27E-12	2.36E-13	5.66E-12	2.83E-10	Year	4.30E-05	Yes
1,2,3,7,8-Pentachlorodibenzofuran	1.95E-12	1.41E-13	3.37E-12	1.69E-10	Year	1.50E-04	Yes
2,3,4,7,8-Pentachlorodibenzofuran	5.86E-12	4.22E-13	1.01E-11	5.07E-10	Year	1.50E-05	Yes
2,3,7,8-Tetrachlorodibenzofuran	9.24E-13	6.66E-14	1.60E-12	7.99E-11	Year	4.30E-05	Yes
Arsenic	0.0000161	1.16E-06	2.79E-05	1.39E-03	Year	0.049	Yes
Chromium VI	3.19E-08	2.30E-09	5.52E-08	2.76E-06	Year	6.50E-04	Yes
Manganese	0.00000409	2.95E-07	7.08E-06	3.54E-04	24-hr	0.022	Yes
Mercury, elemental	0.00000012	8.65E-09	2.08E-07	1.04E-05	24-hr	0.0022	Yes
Nickel	0.00000415	2.99E-07	7.18E-06	3.59E-04	Year	0.62	Yes
Octachlorodibenzofuran	3.15E-11	2.27E-12	5.45E-11	2.73E-09	Year	0.015	Yes
Octachlorodibenzo-p-dioxin	1.27E-10	9.16E-12	2.20E-10	1.10E-08	Year	0.015	Yes

[1] From the Cat C18 Diesel Generator Sets specification sheet for the engine operating in standby service.

[2] Emission factors for metals are from Table 3-6 and dioxins and furans from Table 3-7 of the EAP document: Speciation Profiles and Toxic Emission Factors for Nonroad Engines in MOVES3. The Tier 4, DPF factors were used.

[3] THC emissions are converted to VOC emissions using the following equation: VOC = THC x (1-CH4/THC) x VOC/NMHC. The ratio of CH4/THC and VOC/NMHC are from Table 3-3 of the EAP document: Speciation Profiles and Toxic Emission Factors for Nonroad Engines in MOVES3. The Tier 4, DPF ratios were used.

[4] Emission factors are from Table 3-4 and 3-5 of the EAP document: Speciation Profiles and Toxic Emission Factors for Nonroad Engines in MOVES3. The Tier 4, DPF factors were used.

HF Sinclair Puget Sound Refining

AERSCREEN Modeling Results for Diesel Engine Exhaust, Particulate Matter and Formaldehyde

Pollutant	Distance to Boundary (m)	Stack Height (ft)	Modeled Emission Rate (lb/hr)	Modeled Emission Rate (g/s)	Averaging Period	Maximum Predicted Concentration (ug/m3)	ASIL	% ASIL
Diesel engine exhaust, particulate	297	9.6	1.51E-03	1.90E-04	Annual	3.19E-03	3.30E-03	97

Attachment C

Plot Plan

Approx. Fenceline

Engine

0 150 300

Feet

Imagery: Nearmap (7/7/2025)

Engine Location and Property Boundary

Notice of Construction Application
HF Sinclair Puget Sound Refining
Skagit County, Washington

FIGURE 1

BARR

Barr Footer: ArcGISPro 3.6.1, 2026-03-19 09:40 File: I:\Projects\47291017\Maps\Reports\AirPermitApplication\AirPermitApplication.aprx Layout: Fig01 - Engine Location and Property Boundary User: erm3

Attachment D

SEPA Checklist

SEPA[1] Environmental Checklist

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal**, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the Supplemental Sheet for Nonproject Actions (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in "Part B: Environmental Elements" that do not contribute meaningfully to the analysis of the proposal.

[1] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Checklist-guidance

A.Background

Find help answering background questions[2]

1. **Name of proposed project, if applicable:**

   PSR – PLT –Diesel Generator Reliability Improvements

2. **Name of applicant:**

   HF Sinclair Puget Sound Refining LLC

3. **Address and phone number of applicant and contact person:**

   HF Sinclair Puget Sound Refinery
   Mindy Mejia
   8585 South Texas Road
   Anacortes, WA 98221
   360-299-1930

4. **Date checklist prepared:**

   March 2, 2026

5. **Agency requesting checklist:**

   Northwest Clean Air Agency (NWCAA)

6. **Proposed timing of schedule (including phasing, if applicable):**

   Engineering and Permitting: March 2026 through July 2026

   Construction: August 2026 through September 2026

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

   No future additions, expansions, or further activity related to or connected with this proposal are anticipated.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

   Air permit application has been submitted to NWCAA.

9. **Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

   Skagit County: Commercial Accessory Structures (Commercial Building Permit for equipment foundation)

   Northwest Clean Air Agency: Air permit

10. **List any government approvals or permits that will be needed for your proposal, if known.**

[2] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-A-Background

The following government approvals or permits are anticipated:

Skagit County: Commercial Accessory Structures (Commercial Building Permit for equipment foundation)

Northwest Clean Air Agency: Air permit

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The project is located at the HF Sinclair Puget Sound Refinery. The scope of this project is to install a new backup standby generator and construct an associated concrete foundation. The proposed new 625 kVA Caterpillar C18 diesel generator will be set on the foundation and connected to the reinforced concrete mat foundation with cast-in-place anchors. This generator has been built and designed to meet Best Available Emissions Control Technology that meets federal and local regulatory requirements.

The foundation is an ordinary reinforced concrete mat comprising the shallow foundation. The foundation will be approximately 20 feet long, 10 feet wide, and 1.67 feet deep, with 1.5 feet set below grade. The foundation will be designed in accordance with the 2021 IBC.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The proposed project is located at the HF Sinclair Puget Sound Refinery, in the southeastern part of the property. The refinery property is Parcel P33502 and the physical address is 8505 South Texas Road, Anacortes, WA, 98221. This is a commercial property of 717.84 acres located in the Anacortes Unincorporated Growth Area (UGA).

Current Legal Description:

(717.8400 ac) CU F&A AF#201003100026 ORIGINAL PLANT TAX F BEG AT NW COR OF GOVERNMENT LOT 3, SECTION 34, TOWNSHIP 35 NORTH, RANGE 2 EAST, W.M., TH S ON W LI LOT 3 455.91' TH S 87 DEG 01'30' E 1321.01' TO E LI LOT 3 TH SE'LY ON E LI LOT 3 TO SE COR TH N 89 DEG 15' 30' W TO A PT ON N LI LOT 4 SEC 34 872.5' E OF NW COR LOT 4 TH S 1328.4' TO S LI OF SEC TH E ALG N LI SEC 3-34-2 TO NE COR LOT 4 SEC 3 S'LY ON E LI LOT 4 747.5' TH S 89 DEG 15'30' E 586. 575' TH N 1 DEG 00'10' E 742.5' TO N LI SEC 3TH E ALG N LI TO NE COR TH SE'LY FOL E LI LOT 3 TH NW COR LOT 2 SEC 3 TH S ON W LI LOT 2 TO SW LINE OF KASCH RD TH S'ELY ALG SW LN OF RD TO N LN GN R/W TH S'WLY ALG GN R/W TO A PT S 0 DEG 40' W TO A PT ON S LN LOT 1 SEC 4 216.16' E FROM SW COR SD LOT TH N 0 DEG 40' E ALG E LN OF DRG EASE CONV'D BY TEXACO TO SKAGIT CO TO S LN OF PAR DEEDED BY TEXACO TO SKAGIT CO FOR RD TH E'LY & PLL W/ S LN OF LOT 1 40' TH N 0 DEG 40' E ALG E

LN OF SD PAR 699.59' TO S LN LOT 1 TH W'LY ALG S LN LOT 1 2 & 3 2245.32' TO NW COR NE1/4 OF SE1/4 OF NW1/4 SEC 4 TH S 333.13' TO C/L OF VAC BAY ST COMPTONS PLAT TH W ALG C/L OF BAY ST TO E LI SW1/4 OF NW1/4 SEC 4 TH N 0 DEG 45' E 22.2' TO A PT 356' N OF S LI NE1/4 OF SW1/4 OF NW1/4 TH N 89 DEG 27' W PARL WITH S LI TO W LI G.N. RLY TH S'LY FOL R/W TO A PT S 89 DEG 31'12' E OF A PT ON W LI SEC 4 1762' S OF NW COR OF SEC 4 TH N 89 DEG 31'12' W TO W LI SEC 4 TH N'LY ALG W LI SEC 4 TO NW COR TH N'LY ON W'LY LI OF GOV LOT 5 & 6 SEC 32 TO PT ON W LI GOV LOT 6 WHICH IS S 68 DEG 40' W FR SW COR G.N. STATION GROUNDS SD SW COR BEING 959.4' S & 100.82' W OF NE COR OF LOT 6 TH N 68 DEG 4' E TO E LI OF G.N. RLY CO R/W TH NW'LY FOL E LINE OF G.N. RLY R/W TO ITS INTER WITH E'LY LI OF SHELL SPUR R/W 50' WIDE TH N'LY FOL E'LY LI SHELL SPUR R/W TO PT 40' S MEAS AT RIGHT ANGLES FR N LI OF S1/2 GOV LT 7 SEC 32 TH N 89-18-45 E PARL TO SD NLI TAP 20 FT E OF E R/W LI MARCHES PT BURROW'S BAY RD TH ON A CURVE TO THE LEFT WITH A RADIUS OF 17.7 FT TH S TO POB LESS TRS A, B & C MARCH POINT COGEN BINDING SITE PLAN AF#9212140035

See attached files for Site Plan, Vicinity Map, and a Topographic Map.

B.Environmental Elements

1. Earth

Find help answering earth questions[3]

a. General description of the site:

The project site is located in a gravel-covered area, with asphalt paved local access roads to the west, south and east sides of the proposed generator foundation location. The Alkylation Unit is to the north, which is a concrete slab on grade. There are no wetlands mapped for this area of Puget Sound Refinery.

Stormwater runoff from the existing site drains into the Refinery's existing onsite treatment plant. No stormwater runoff drains off the refinery property. Surface drainage will not be altered or rerouted and no new impervious surface area will be introduced.

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

b. What is the steepest slope on the site (approximate percent slope)?

The HF Sinclair PSR site is generally flat for this project. There is no significant slope at the project site. General slopes across the site are below 2 percent gradient. Elevations range from approximately 78-81 feet.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any

[3] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-earth

agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the Soil Survey of the Skagit County Area Washington, three dominant soil map units are indicated for the project area: Bow gravelly loam; Coveland; and Xerorthents. Bow and Coveland are considered as hydric soils by the Natural Resources Conservation Service (NRCS). Bow gravelly loam and Coveland gravelly loam are considered prime farmland by the NRCS when drained. These soils are not currently cultivated. No prime farmland is located on the HF Sinclair PSR site.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no surface indications or history of unstable soils in the immediate vicinity of the HF Sinclair PSR site.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Approximately 16.6 cubic yards of excavation is anticipated for construction of the generator foundation. Surplus excavated materials would be hauled to an approved stockpile location on the refinery property. Approximately 5.5 cubic yards of the excavated material will be reused for backfill around the foundation.

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

Erosion is unlikely to occur as a result of clearing, construction, or use, due to the flat nature of the HF Sinclair PSR site. In addition, Best Management Practices (BMPs) such as silt fencing, sediment controls, and protection of drain inlets would be used during construction to minimize erosion and prevent silt from entering into drains. The Model Construction SWPPP will be implemented for this project.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 200 square feet of foundation will replace compacted gravel, therefore no net change in impervious surface area. The foundation area is 0.00006% of the property area.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

Measures to reduce or control erosion, or other impacts to the earth, would be implemented during the construction process at the site in accordance with the NPDES Construction Stormwater Permit, Ecology's General Stormwater Permit, and the County's Drainage Ordinance (Skagit County Code [SCC] 14.32). BMPs may include:

- Protecting cut slopes during construction, and any soil stockpiled on the site, by placing plastic sheeting on exposed cut slopes;
- Limiting the maximum duration of open excavation to the shortest time possible;

- Stabilizing disturbed soils that are exposed to surface water runoff;
- Implementing in-place temporary construction erosion and sediment control measures prior to any site grading activities, which may include erosion control fencing;
- Maintaining any erosion control measures left in place after construction is completed.

2. Air

Find help answering air questions[4]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction: During construction, combustion emissions and dust would temporarily be emitted from construction equipment at the site. Construction equipment to be used includes dump trucks, backhoes, concrete mixers, cranes, and generators. Emissions associated with construction would be short-term and are not anticipated to result in air quality impacts.

Operations & Maintenance: Operation will emit diesel exhaust. This generator has been designed to meet required in 40 CFR 60 Subpart iiii and tier 4 requirements in 40 CFR Part 1039. Ambient impacts are within acceptable limits stipulated by WAC 173-460. For further information see air permit application.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no potential emissions and/or odors from surrounding land uses that would affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Construction: The following measures are proposed during construction to reduce or control emissions: Wet exposed soils to minimize dust, cover stockpiled materials, wash truck and equipment wheels before leaving the sites to reduce track-out; and sweep roadway when track-out accumulates.

Operations & Maintenance: The generator will be operated and maintained to meet requirements in 40 CFR 60 Subpart iiii and tier 4 requirements in 40 CFR Part 1039. For further information see air permit application.

[4] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-Air

3. Water

Find help answering water questions[5]

a. Surface:

Find help answering surface water questions[6]

1. **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

   Marches Point projects northerly into Padilla Bay (Puget Sound) so it is adjacent to the refinery property on both the east and west sides. The distance from this project location to the bay on the east is about 3100 feet and about 4500 feet on the west. As stated previously, no wetlands exist at or near the project site.

2. **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

   No work to be done within 200 feet of the above-described Padilla Bay, streams, ditches, and wetlands, includes construction/installation of grading and fill.

3. **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

   No fill/excavation will be placed in wetlands on the HF Sinclair PSR site. Surplus excavated materials would be hauled to an approved location within the refinery.

4. **Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.**

   No surface water withdrawals are necessary for the project.

5. **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

   No, the project site does not lie within a 100-year floodplain and is not in Flood Hazard Area.

6. **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

   The proposal would not involve discharges of waste materials to surface waters.

[5] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water
[6] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Surface-water

b. Ground:

Find help answering ground water questions[7]

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

   No, groundwater would not be withdrawn or recharged for this project.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals…; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

   The proposal would not involve discharges of waste materials to ground waters.

c. Water Runoff (including stormwater):

1. **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

   Sources of runoff include stormwater from the generator and immediate gravel surface surrounding this equipment and foundation.

2. **Could waste materials enter ground or surface waters? If so, generally describe.**

   The project is designed to capture and/or control all potential waste or spills and preclude such materials from reaching ground or surface waters. The generator has no refinery processes occurring within. The generator's diesel fuel is stored in a double wall steel fuel tank that provides secondary containment.

3. **Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

   This proposal does not alter or affect drainage patterns in the vicinity of the site. The grading and surface water drainage at the project site generally remains unchanged.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Surface runoff continues to be directed to the existing oily water storm drainage system, which is ultimately routed to the onsite treatment plant.

4. Plants

Find help answering plants questions

a. Check the types of vegetation found on the site:

[7] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Groundwater

☒ **deciduous tree: alder, maple, aspen, other**

☒ **evergreen tree: fir, cedar, pine, other**

☒ **shrubs**

☐ **grass**

☐ **pasture**

☐ **crop or grain**

☐ **orchards, vineyards, or other permanent crops.**

☐ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

☐ **water plants: water lily, eelgrass, milfoil, other**

☐ **other types of vegetation**

NOTE – this project area is in a gravel portion of nearby asphalt-paved roads and a unit concrete slab on grade. Currently, there is no vegetation and that will be the same when the project is completed. Plants listed above are in a forested area about 500 feet east of the project boundaries.

b. What kind and amount of vegetation will be removed or altered?

No vegetation will be removed or altered on this HF Sinclair PSR project site.

c. List threatened and endangered species known to be on or near the site.

No threatened or endangered plant species are known to be on the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Landscaping is not proposed; nor is it required per Skagit County or the City of Anacortes.

e. List all noxious weeds and invasive species known to be on or near the site.

No noxious weeds or invasive species are known to be on or near the site.

5. Animals

Find help answering animal questions[8]

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds: hawk, heron, eagle, songbirds, other:**
- **Mammals: deer, bear, elk, beaver, other:**

[8] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-5-Animals

- **Fish: bass, salmon, trout, herring, shellfish, other:**

b. List any threatened and endangered species known to be on or near the site.

There are no threatened or endangered species known to be on the site.

The following threatened or endangered species are known to occur in nearby Padilla Bay: Chinook salmon, Puget Sound steelhead, Steller sea lion, southern resident killer whale, southern distinct population segment (DPS) of North American green sturgeon, southern DPS of eulachon, Bocaccio rockfish, Canary rockfish, yellow rockfish, bull trout, and marbled murrelet.

c. Is the site part of a migration route? If so, explain.

The HF Sinclair PSR site is located within the Pacific Flyway, which is a flight corridor for waterfowl and other avian fauna migration. The Pacific Flyway extends from Alaska south to Mexico and South America. The project would not affect use of the Pacific Flyway by migratory birds.

d. Proposed measures to preserve or enhance wildlife, if any.

This project does not have any measures proposed to enhance or preserve wildlife.

e. List any invasive animal species known to be on or near the site.

There are no invasive animal species known to be on or near the site.

6. Energy and natural resources

Find help answering energy and natural resource questions[9]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The new backup standby generator will be connected to existing electrical services that are already at the project location. The generator is fueled by diesel which is stored in a double walled tank.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, the project would not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

The project will not include any additional electrical energy conservation measures, it is a backup use only, standby generator.

[9] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-6-Energy-natural-resou

7. Environmental health

Health Find help with answering environmental health questions[10]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

The project includes diesel fuel stored in a steel fuel tank. There is a potential limited risk of fire and explosion that is managed by the design of the generator operating system. Diesel fuel poses a risk of a spill, however this risk is minimized because the diesel fuel is stored in double wall steel fuel tank that functions as secondary containment. The diesel engine emissions are controlled in accordance with federal and local regulations. The on-site emergency response team is nearby and trained for any such incident should something out of the ordinary occur.

1. **Describe any known or possible contamination at the site from present or past uses.**

   There is no known or possible contamination from present or past use on the project site that is related to the proposed shelter.

2. **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

   There are no existing hazardous chemicals/conditions that might affect the project development and design on the project site.

3. **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

   There are no toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life on the project site.

4. **Describe special emergency services that might be required.**

   No special or new emergency services would be required. A trained refinery on-site emergency response team would be able to respond to emergencies. HF Sinclair would continue to coordinate with local emergency responders.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

   None required.

b. Noise

1. **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

[10] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-7-Environmental-health

The project is located within an active industrial area. Existing noise sources (vehicular; air; rail and water traffic; surrounding operations) would not affect the project.

2. **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?**

   Construction: In the short-term, noise would be created by construction activities. Construction equipment to be used includes dump trucks, backhoes, concrete mixers, cranes, and generators. Per Skagit County Code 9.50 and WAC 173-60, construction-related sounds from temporary construction sites are exempt from noise level standards between the hours of 7:00 a.m. and 10:00 p.m. Construction activities on the HF Sinclair PSR site would mostly occur during daylight hours; however, there may be a need to work outside these hours due to schedule or time constraints. A majority of all noises from construction would be limited to the HF Sinclair property.

   Operation: Operation of engine will not present adverse noise impacts to the surrounding community.

3. **Proposed measures to reduce or control noise impacts, if any:**

   HF Sinclair will adhere to Skagit County Code 9.50 and WAC 173-60 noise level standards during construction. Long-term noise impacts are not anticipated; therefore, mitigation measures for operations are not proposed.

8. Land and shoreline use

Find help answering land and shoreline use questions[11]

a. **What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

   The site is in use as the HF Sinclair Puget Sound Refinery, which contains heavy industrial uses. Surrounding uses include a refinery to the north, grazed pasture, undeveloped forest, and March's Point Road.

b. **Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?**

   This site has been owned by the refinery since 1958. The project area is not used for pasture, farmland, or forest land.

[11] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-8-Land-shoreline-use

1. **Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

   This proposal does not affect or be affected by surrounding working farm or forest land normal business operations.

c. Describe any structures on the site.

The greater refinery site contains structures that include buildings, tanks, process equipment, a rail spur, and buildings.

d. Will any structures be demolished? If so, what?

No existing structures will be demolished.

e. What is the current zoning classification of the site?

Skagit County classifies this site as A-UD Anacortes UGA Urban Development District. The City of Anacortes classifies this site as HM Heavy Manufacturing.

f. What is the current comprehensive plan designation of the site?

The PSR site is within Skagit County but within the Anacortes Urban Growth Area (UGA). Skagit County designates this site as A-UD Anacortes UGA Urban Development District. The City of Anacortes designates this site as Heavy Manufacturing (HM).

g. If applicable, what is the current shoreline master program designation of the site?

The current environmental designation of the site per Skagit County's Shoreline Master Program (SMP) is Rural. The proposed site is not within 200 feet of the shoreline.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

The site is not classified as a critical area by the city or county.

i. Approximately how many people would reside or work in the completed project?

No people reside on the site before or after project completion. One or two people may work occasionally in or on the completed project for maintenance purposes.

j. Approximately how many people would the completed project displace?

No people would be displaced by the project.

k. Proposed measures to avoid or reduce displacement impacts, if any.

None required, no displacement occurs.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

Per Skagit County Code 14.16.220, uses are allowed within UGAs provided they are also consistent with the standards for the zone that has been identified for the target property by the city. Per Anacortes Municipal Code Chapter 17.15, the March Point HM district is intended primarily for heavy manufacturing and closely related uses.

Permitted uses in the HM zone include industrial, processing, and shipping terminal uses, provided such uses do not inflict nuisances or hazards onto neighboring districts. Therefore, the proposed operations facility is considered a permitted use and would be consistent with the HM district.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

None required, no impacts occur with the proposed shelter.

9. Housing

Find help answering housing questions[12]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units would be provided.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units would be eliminated.

c. Proposed measures to reduce or control housing impacts, if any:

None required, no impacts occur with the proposed shelter.

10. Aesthetics

Find help answering aesthetics questions[13]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The highest point of the new generator will be approximately 9.5 feet above finished grade. The generator set consists of light gage steel surrounding mechanical and electrical components, all set on a steel beam skid that is anchored to the new concrete foundation.

b. What views in the immediate vicinity would be altered or obstructed?

The site is located within an industrial zoned area. The proposed project is not expected to alter views in the immediate vicinity.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None required, no impacts occur with the proposed shelter.

[12] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-9-Housing
[13] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-10-Aesthetics

11. Light and glare

Find help answering light and glare questions[14]

a. **What type of light or glare will the proposal produce? What time of day would it mainly occur?**

   Construction would require temporary lighting including equipment lights and portable lighting structures during the fall and winter, when daylight is shorter. Operation will not contribute to light or glare.

b. **Could light or glare from the finished project be a safety hazard or interfere with views?**

   Light or glare from the finished project would not be a safety hazard or interfere with views.

c. **What existing off-site sources of light or glare may affect your proposal?**

   Off-site sources of light or glare would not affect this proposal.

d. **Proposed measures to reduce or control light and glare impacts, if any:**

   During construction and operation, lighting would be downward directed into the site, to the extent possible, to minimize effects.

12. Recreation

Find help answering recreation questions

a. **What designated and informal recreational opportunities are in the immediate vicinity?**

   There are no designated recreational areas in the immediate vicinity of the HF Sinclair PSR site. Informal boating recreation occurs in adjacent Padilla Bay.

b. **Would the proposed project displace any existing recreational uses? If so, describe.**

   The project would not displace any existing recreational uses.

c. **Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

   None required, no impacts occur with the proposed shelter.

13. Historic and cultural preservation

Find help answering historic and cultural preservation questions[15]

a. **Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.**

[14] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-11-Light-glare
[15] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-13-Historic-cultural-p

A cultural resources survey dated 5/6/2013 was conducted for another project within the refinery by URS Corporation. A copy of this report is on file at the Department of Archaeology and Historic Preservation (DAHP). No archaeological sites or historic structures were identified in the initial project area.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

A cultural resources survey dated 5/6/2013 was conducted for another project within the refinery by URS Corporation. A copy of this report is on file at the Department of Archaeology and Historic Preservation (DAHP). No archaeological sites or historic structures were identified in the initial project area.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Not required, no impacts occur with the proposed project.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Not required, no impacts occur with the proposed project.

14. Transportation

Find help with answering transportation questions[16]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Private roads internal to the HF Sinclair PSR would provide access to this project site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The site is not currently served by public transit. The nearest transit stop is at the Skagit Transit-operated March's Point Park-and-Ride, which is approximately 1.0 mile west of the site on leased HF Sinclair property. This park-and-ride is served by Skagit Transit Routes 410, 615, and 513; and Island Transit Route 411.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

[16] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-14-Transportation

Proposal will not require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities.

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Project nor proposal will not use water, rail, or air transportation.

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

No new trips per day would be generated by this project. Existing personnel and existing workflows will generally remain unchanged since this is a standby generator.

f. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

Proposal will not interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area.

g. Proposed measures to reduce or control transportation impacts, if any:

Not required, no impacts occur with the proposed project.

15. Public services

Find help answering public service questions[17]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

An increased need for public services at the HF Sinclair PSR site would not occur as a result of the proposed project.

b. Proposed measures to reduce or control direct impacts on public services, if any.

None proposed, no impacts occur with the proposed project.

16. Utilities

Find help answering utilities questions[18]

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

Utilities currently available at the project site are electricity, water, natural gas, telephone, sanitary sewer.

[17] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-15-public-services
[18] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-16-utilities

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The new standby generator will be connected to existing electrical/communication services that are already at the project location.

C.Signature

Find help about who should sign[19]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

X 

Type name of signee: Aaron Vahid

Position and agency/organization: Environmental Manager/ HF Sinclair Puget Sound Refinery

Date submitted: 4/1/2026

D.Supplemental sheet for nonproject actions

Find help for the nonproject actions worksheet[20]

Do not use this section for project actions.

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. **How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?**

    - **Proposed measures to avoid or reduce such increases are:**

[19] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-C-Signature

[20] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-d-non-project-actions

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**

    - **Proposed measures to protect or conserve plants, animals, fish, or marine life are:**

3. **How would the proposal be likely to deplete energy or natural resources?**

    - **Proposed measures to protect or conserve energy and natural resources are:**

4. **How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection, such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?**

    - **Proposed measures to protect such resources or to avoid or reduce impacts are:**

5. **How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?**

    - **Proposed measures to avoid or reduce shoreline and land use impacts are:**

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

    - **Proposed measures to reduce or respond to such demand(s) are:**

7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

Attachment E

Ambient Air Quality Impacts Analysis

Attachment E - Ambient Air Quality Impacts Analysis

HF Sinclair Puget Sound Refining – Anacortes, Washington

Prepared for
HF Sinclair – Puget Sound Refinery

Prepared by
Barr Engineering Co.

April 2026

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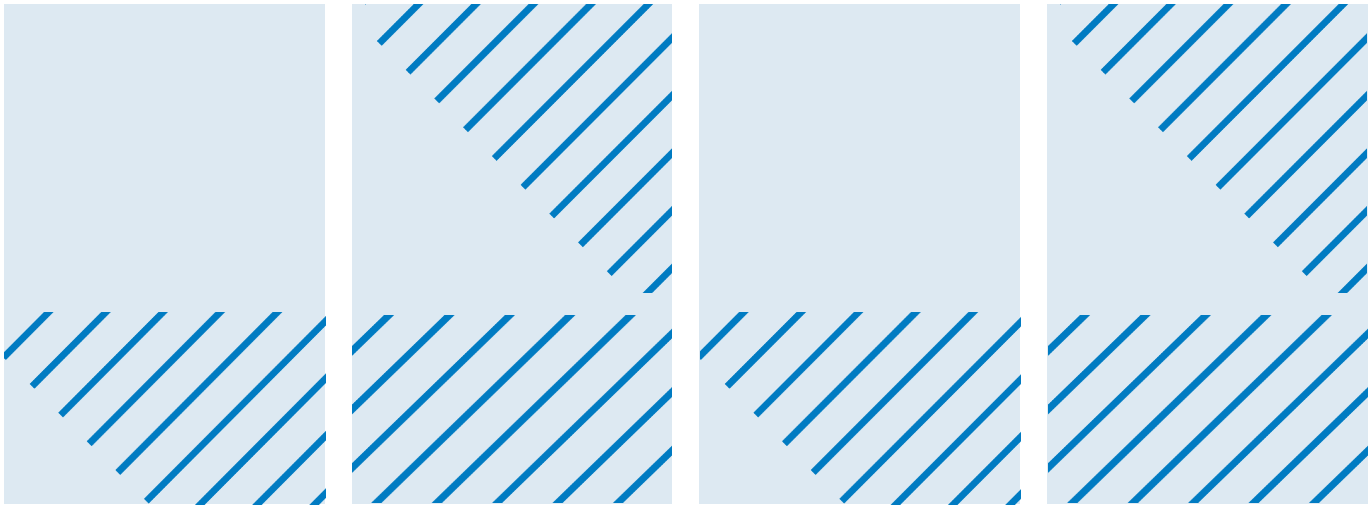


Attachment E - Ambient Air Quality Impacts Analysis

April 2026

Contents

Tables

1 Modeling Approach Summary

HF Sinclair Puget Sound Refinery (PSR) is proposing to install a new stationary engine. Dispersion modeling is required for those toxic air pollutants (TAPs) from the engine that will result in an emissions increase greater than or equal to the small quantity emission rates (SQERs) identified in Washington Administrative Code (WAC) 173-460. This air quality modeling analysis is conducted using AERSCREEN.

2 Toxic Air Pollutant Modeling Methodology

WAC 173-460 requires projects to address three main requirements: BACT for toxics, TAP emissions quantification, and human health and safety protection demonstration. As part of the health and safety demonstration under WAC 173-460-070, air dispersion modeling is required for pollutants with an increase in potential emissions greater than the respective SQERs.

As part of a First-Tier review under WAC 173-460-080, the maximum modeled concentration for the corresponding averaging period must then be compared to the TAP-specific acceptable source impact level (ASIL). If the modeling analysis demonstrates that the predicted project-related pollutant concentrations fall below the ASIL, then the compliance demonstration for that TAP is complete.

2.1 Emissions Modeling Methodology

Potential emissions for the engine were calculated using the 1,200 hours of operation per year limit proposed in this application. Further details on the emissions calculations for the engine are included in the application narrative. Emissions from the engine are modeled as a point source. The location of the engine along with the nearest property boundary are included in Attachment C of this application.

2.2 Source Characterization and Emissions Rates

The release parameters for the engine are contained below in Table 1.

Table 1 Engine Release Parameters

Stack Height (ft)	Stack Diameter (in)	Distance to Boundary (m)	Exhaust Flow (ft^3/min)	Exhaust Temperature (°F)
9.6	6	297	934.9	836.6

Two nearby buildings were included in the modeling as downwash. Table 2 provides the dimensions of buildings included in the modeling as downwash.

Table 2 Dimensions of Buildings Included in Downwash

	Height (ft)	Length (ft)	Width (ft)
Building 1	14	70	30
Building 2	17	72	63

3 Toxic Air Pollutant Modeling Results

Table 3 provides a summary of the annual impact of diesel engine exhaust, particulate. The modeled concentration does not exceed the ASIL. Therefore, the TAP evaluation is complete and no further analyses are needed.

Table 3 TAP Modeling Results

Pollutant	Averaging Time	ASIL (µg/m^3)	Maximum Conc. (µg/m^3)	Percent of ASIL (%)
DEEP	Year	3.30E-03	3.19E-03	97

Attachment F

BACT Analysis

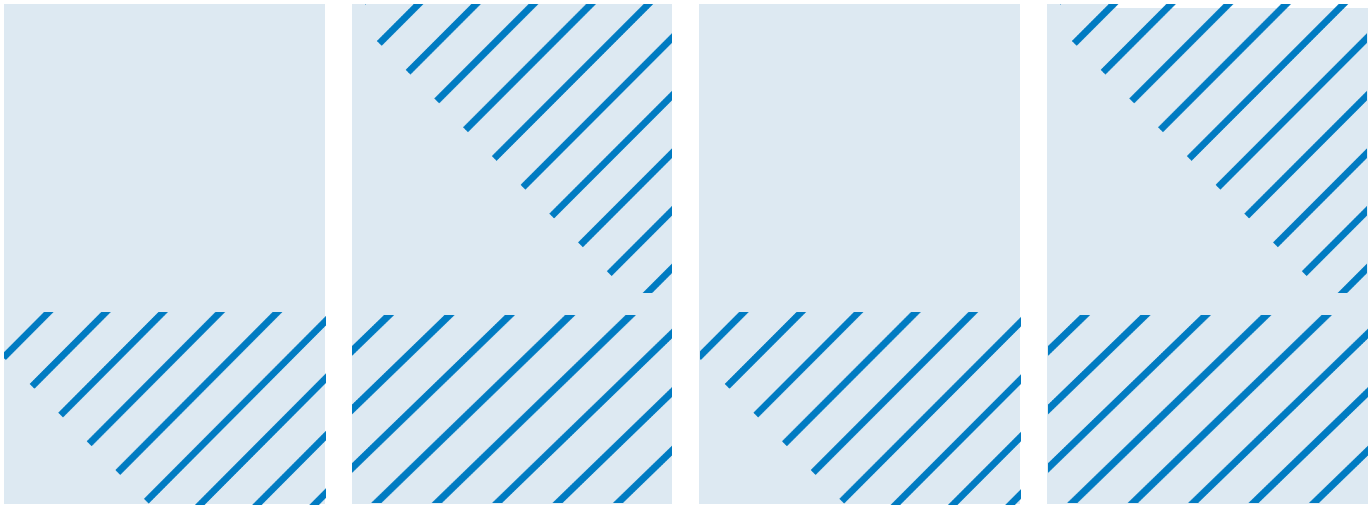
Attachment F - Best Available Control Technology (BACT) Analysis

HF Sinclair Puget Sound Refining – Anacortes, Washington

Prepared for
HF Sinclair – Puget Sound Refinery

Prepared by
Barr Engineering Co.

April 2026



Attachment F - Best Available Control Technology (BACT) Analysis

April 2026

Contents

1 Project Description

The proposed project includes installation and operation of one new stationary diesel-fired internal combustion engine equipped with Tier IV (Tier 4 Final) emission controls and a diesel particulate filter (DPF). The engine will be used for standby power generation service and will combust ultra-low sulfur diesel (ULSD) fuel containing no more than 15 ppm sulfur. The engine is subject to federal New Source Performance Standards (NSPS) and local New Source Review (NSR) requirements. This Attachment addresses Best Available Control Technology requirements of Northwest Clean Air Agency (NWCAA) Regulation section 300.9.

To address Northwest Clean Air Agency (NWCAA) Regulation Section 300.9, HF Sinclair is providing a Best Available Control Technology (BACT) review for each emissions unit at which an emissions increase will occur above *de minimis* thresholds. BACT for TAPs (tBACT) is required for emissions above the small quantity emission rates listed in WAC 173-460-150. tBACT review is required for diesel engine exhaust, particulate (DEEP). PM is used as a surrogate for DEEP in the tBACT review.

2 BACT Analysis Methodology

This BACT analysis has been conducted using the "top-down" approach specified in U.S. EPA's draft New Source Review Workshop Manual, (October 1990),[1] using the five-step process.

A top-down BACT analysis consistent with U.S. EPA guidance was performed. The analysis follows these steps:

1. Identify all available control technologies
2. Eliminate technically infeasible options
3. Rank remaining technologies by control effectiveness
4. Evaluate energy, environmental, and economic impacts
5. Select BACT

This methodology is consistent with EPA's established BACT procedures under the Prevention of Significant Deterioration (PSD) and NSR programs.

3 Step 1 – Identification of Available Control Technologies

Available control technologies for diesel internal combustion engines include:

- EPA Tier IV (Tier 4 Final) certified engine
- Selective Catalytic Reduction (SCR) for NOx control
- Diesel Particulate Filter (DPF) for PM control
- Diesel Oxidation Catalyst (DOC) for CO and VOC control
- Engine design controls (advanced combustion, electronic fuel injection)
- Fuel controls (use of ULSD fuel ≤15 ppm sulfur)

[1] The workshop manual can be found at U.S. EPA's website http://www.epa.gov/NSR/ttnnsr01/gen/wkshpman.pdf.

Tier 4 Final technology represents an integrated system combining advanced engine design with aftertreatment systems (SCR, DPF, and DOC as applicable) to achieve the lowest achievable emission levels for diesel engines.

4 Step 2 – Elimination of Technically Infeasible Options

All control technologies listed above are technically feasible for the proposed engine size and application. No technically infeasible options were identified. Tier 4 Final engines are commercially available across a wide range of horsepower ratings and are routinely permitted for stationary applications.

5 Step 3 – Ranking of Control Technologies by Effectiveness

Control technologies were ranked based on overall emission reduction effectiveness:

1. Tier 4 Final certified engine – Highest control effectiveness
2. Tier 4 equivalent retrofitted engine with aftertreatment
3. Lower-tier engines with partial aftertreatment
4. Engine-only controls without exhaust aftertreatment

Tier 4 Final engines achieve the most stringent emission limits for NOx and PM, with reductions of approximately 90 percent compared to earlier tier engines. As such, Tier 4 Final represents the top of the control hierarchy for diesel engines.

6 Step 4 – Evaluation of Energy, Environmental, and Economic Impacts

The following sections discuss energy, environmental, and economic impacts.

6.1 Energy Impacts

Tier 4 Final engines require additional energy for aftertreatment operation. These impacts are inherent to Tier 4 technology and are considered reasonable and unavoidable for achieving the highest level of emission control.

6.2 Environmental Impacts

Use of Tier 4 technology significantly reduces NOx, PM, CO, and VOC emissions. The use of ULSD fuel minimizes sulfur dioxide emissions and protects aftertreatment systems. No significant secondary environmental impacts were identified.

6.3 Economic Impacts

Tier 4 Final engines are commercially available and widely permitted. While capital and maintenance costs are higher than lower-tier engines, these costs are not considered excessive, especially given that

Tier 4 Final emission levels are achieved in practice and are often required as BACT by air districts nationwide including the Bay Area Air Quality Management District

7 Step 5 – BACT Selection

Based on the top-down BACT analysis, BACT for the proposed engine is an EPA Tier IV (Tier 4 Final) certified diesel engine. Compliance with BACT shall be demonstrated through manufacturer certification.

This determination is consistent with BACT findings by:

- **Bay Area Air Quality Management District**, which requires Tier 4 engines as BACT for new diesel installations ≥1,000 bhp.
- **South Coast AQMD**, which established Tier 4 Final emission limits as BACT/LAER for large CI engines.
- **San Joaquin Valley APCD**, which codified Tier 4 Final standards as BACT for emergency and non-emergency engines.
- **U.S. EPA RBLC precedent**, which documents multiple Tier 4 BACT determinations nationwide.

8 Conclusion

The proposed Tier IV (Tier 4 Final) diesel engine represents the most stringent level of emission control currently achieved in practice for stationary diesel engines. Based on the top-down BACT analysis, Tier 4 Final technology satisfies BACT requirements for NOx, PM, CO, and VOC and is therefore selected as BACT for the proposed project.

Attachment G

Engine Manufacturer Specifications

Cat® C18
Diesel Generator Sets

Standby & Prime: 60 Hz

Image shown might not reflect actual configuration.

Engine Model	Cat® C18 In-line 6, 4-cycle Diesel
Bore x Stroke	145 mm x 183 mm (5.7 in x 7.2 in)
Displacement	18.13 L (1106.3 in³)
Compression Ratio	16.1:1
Aspiration	Turbocharged Air-to-Air Aftercooled
Fuel Injection System	Electronic Unit Injection
Governor	Electronic ADEM™ A4 – G3 Class* capable

Model	Standby	Prime	Emission Strategy
C18	625 kVA, 500 ekW	569 kVA, 455 ekW	US EPA TIER IV Final, Non-Road

PACKAGE PERFORMANCE

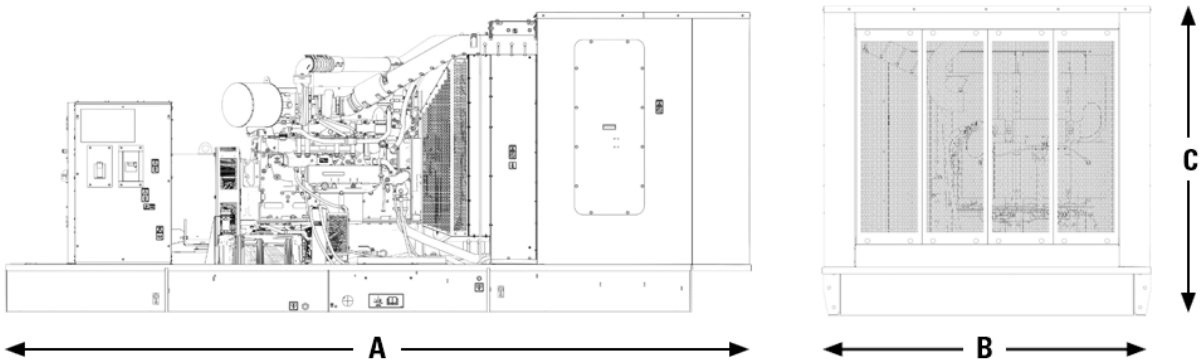
Performance	Standby	Prime
Frequency	60 Hz	
Genset Power Rating	625 kVA	569 kVA
Genset power rating with fan @ 0.8 power factor	500 ekW	455 ekW
Emissions	US EPA TIER IV Final, Non-Road	
Performance Number	EM1017	EM1112
Fuel Consumption		
100% load with fan, L/hr (gal/hr)	136.9 (36.1)	123.8 (32.7)
75% load with fan, L/hr (gal/hr)	104.3 (27.5)	94.6 (24.9)
50% load with fan, L/hr (gal/hr)	74.2 (19.6)	67.7 (17.8)
25% load with fan, L/hr (gal/hr)	46.0 (12.1)	42.3 (11.1)
Cooling System[1]		
Radiator air flow restriction (system), kPa (in. water)	0.12 (0.48)	0.12 (0.48)
Radiator air flow, m³/min (CFM)	804 (28393)	804 (28393)
Engine coolant capacity, L (gal)	26.9 (7.1)	26.9 (7.1)
Radiator coolant capacity, L (gal)	61 (16.11)	61 (16.11)
Total coolant capacity, L (gal)	87.9 (23.2)	87.9 (23.2)
Inlet Air		
Combustion air inlet flow rate, m³/min (CFM)	37.9 (1340)	36.3 (1208)
Max. Allowable Combustion Air Inlet Temp, °C (°F)	50 (122)	
Exhaust System		
Exhaust stack gas temperature, °C (°F)	447 (836.8)	426.3 (799.3)
Exhaust gas flow rate, m³/min (CFM)	69.8 (2465.3)	66.5 (2349.7)
Exhaust system backpressure (maximum allowable), kPa (in. water)	10.0 (40.0)	10.0 (40.0)
Heat Rejection		
Heat rejection to jacket water, kW (BTU/min)	282 (16037)	256 (14558)
Heat rejection to exhaust (total), kW (BTU/min)	435 (24738)	392 (22292)
Heat rejection to aftercooler, kW (BTU/min)	114 (6483)	102 (5800)
Heat rejection to atmosphere from engine, kW (BTU/min)	101 (5743)	94.1 (5351)

Emissions (Nominal)[2]	Standby	Prime
NOx, mg/Nm³ (g/hp-hr)	100.5 (0.2)	122.8 (0.26)
CO, mg/Nm³ (g/hp-hr)	NA	NA
HC, mg/Nm³ (g/hp-hr)	4.9 (0.01)	3.9 (0.01)
PM, mg/Nm³ (g/hp-hr)	2.2 (0.01)	1.6 (0.00)

Alternator[3]							
Duty Cycle		Standby			Prime		
Phase		3-Phase			3-Phase		
Voltages, V		208	480	600	208	480	600
Current, Amps		1735	752	601	1579	684	547
Frame: LC6124G Excitation: AREP	Temperature Rise @ 40°C	130	105	105	130	105	105
	Motor Starting Capability @ 30% Voltage Dip, skVA	1335	1729	1731	1335	1729	1731

C18 Diesel Generator Sets
Electric Power

WEIGHTS & DIMENSIONS



Rating	Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
Standby and Prime	5310 (209)	2286 (90)	2179 (86)	5160 (11376)

Note: General configuration not to be used for installation. See general dimension drawings for detail.

APPLICABLE CODES AND STANDARDS:

CSA C22.2 No 100-04, UL489, UL869, UL2200, IBC, IEC60034-1, ISO 3046, ISO 8528, NEMA MG 1-22, NEMA MG 1-33 and facilitates the compliance to NFPA 37, NFPA70, NFPA 99, NFPA110.

Note: Codes may not be available for all model configurations. Site level review needed for NFPA 70. Please consult your Cat Dealer for availability.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

PRIME: Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

RATINGS: Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO 3046 standard conditions.

DEFINITIONS AND CONDITIONS

[1] For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

[2] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 BTU/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

[3] UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.

*Governing Class capability as per ISO 8528-5. Consult your local Cat dealer for configuration and site specific transient performance classification.