

Technical Support Document
Notice of Construction Approval Order – [Preliminary Determination](#)

H5 Data Centers
AQPID No. A0250282
Quincy, WA

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1. Project Summary

H5 Data Centers – Quincy (the source) is a data center with diesel emergency generators classified as a synthetic minor with six installed emergency generators and four cooling tower emissions unit(s). This review is for an extension request for the installation of new emergency generators and cooling units and changes to the number of emission units and the type of cooling towers that have yet to be installed. The source has requested to reduce the previously permitted number of emergency generators from 18 to 13 total for the facility and cooling towers from 12 to nine total for the facility. All permitted air emissions will be reduced by the changes requested.

An initial Notice of Construction (NOC) application dated May 22, 2024, was submitted by H5 Data Centers – Quincy for the expansion changes project. The Washington State Department of Ecology (Ecology) reviewed the initial application and found it complete per WAC 173-400-111 on May 22, 2024.

2. Application Processing

a. Public Notice

Receipt of the application was posted on Ecology’s Public Involvement Calendar from June 17, 2024, through July 8, 2024, in both English and Spanish. An email regarding the project was provided to individuals that had expressed interest in Quincy Data Centers in the past. A 30-day comment period was requested and held July 22 through August 26, 2024.

Resources used to determine outreach:

Environmental Protection Agency: [EJScreen \(epa.gov\)](https://www.epa.gov/ejscreen)

Department Of Health Disparities map: [Information by Location | Washington Tracking Network \(WTN\)](#)

Washington GIS map: [Limited English Proficiency Application \(arcgis.com\)](https://www.arcgis.com)

b. State Environmental Policy Act

City of Quincy issued a determination of nonsignificance (DNS) for the current building with emergency engines on April 25, 2007.

3. Applicable Regulations

a. State Regulations

i. Minor New Source Review Applicability

Per WAC 173-400-110, an NOC application and an order of approval must be issued by the permitting authority prior to the establishment of a new source or modification.

As stated in the NOC application and consistent with Ecology's review, the emergency generators are being constructed by this project and therefore are subject to minor new source review (NSR). This review is to make sure that the project as originally permitted, still meets BACT and tBACT and review of cooling tower changes since it was permitted two years ago.

ii. Other Applicable Requirements

In accordance with WAC 173-400-113, the proposed new sources must comply with all applicable emission standards adopted under Chapter 70A.15 RCW. The following applicable emission standards are associated with the proposed project:

- A. WAC 173-400-040 General standards for maximum emissions: limits visible emissions from all sources to no more than three minutes of 20 percent opacity, in any hour, of an air contaminant from any emission unit.
- B. WAC 173-400-050 and WAC 173-400-060 Emission standards for general process units and Combustion and Incineration Units: limits emissions of particulate matter from combustion and general process units to 0.23 gram per dry cubic meter at standard conditions (0.10 grains per dry standard cubic foot) of exhaust gas.
- C. WAC 173-400-115 Standards of performance for new sources adopts by reference 40 C.F.R. Part 60, Subpart IIII. See more below.

b. Federal Regulations

In accordance with WAC 173-400-113, the proposed new sources must comply with all applicable new source performance standards (NSPS) included in 40 C.F.R. Part 60, national emission standards for hazardous air pollutants (NESHAPs) included in 40 C.F.R. Part 61, and NESHAPs for source categories included in 40 C.F.R. Part 63. The following applicable emission standards are associated with the proposed project:

i. Standards of Performance for New Stationary Sources

The ICE NSPS (40 C.F.R. Part 60, Subpart IIII) applies to each emergency generator. The regulation specifies: criteria for classification as emergency engines; Tier-2 emission standards for the engines; and fuel, monitoring, compliance, and notification requirements for the Permittee.

ii. National Emission Standards for Hazardous Air Pollutants for Source Categories

The RICE NESHAP applies to each engine. However, each engine is also subject to the ICE NSPS (see above). At 40 C.F.R. 63.6590(c), the NESHAP specifies that compliance must be met by meeting the requirements of the NSPS; therefore, no further requirements apply to the engines.

4. Emissions

a. Emission Factors

Emission factors for the emergency generator engines were provided as Not-Exceed-Limits by the manufacturers MTU Detroit Diesel and Kohler for nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), and hydrocarbons (HC). The following was assumed for the emergency generators:

- i. DEEP is assumed to be manufacturer-measured PM.
- ii. HCs were assumed to be equivalent to VOC and non-methane HC.
- iii. The sum of PM and HC (assumed to all condense) and be equivalent PM₁₀ and PM_{2.5} for the engines.

The emission factor for SO₂ was calculated based on sulfur content of the ultra-low sulfur fuel and an average heating value of diesel fuel. All sulfur was assumed to convert to SO₂.

An additional factor was added for cold-start emissions (PM, CO, total VOC, and volatile TAPs). These factors are based on short-term concentration trends for VOC and CO emission observed immediately after startup of a large diesel backup generator. These observations were documented in the California Energy Commission's report "Air Quality Implications of Backup Generators in California" (Lents et al. 2005).

All the remaining emission rates for toxic air pollutants from the generators were calculated using the most conservative emission factors from the following sources: EPA's AP-42, Volume 1, Chapter 3.4, which provides emission factors for HAPs from large internal combustion diesel engines (EPA 1995); Ventura County Air Pollution Control District AB 2588 emission factors for Diesel Internal Combustion; California

Air Toxics Emission Factors (CATEF) for Internal Combustion Engines, Diesel Mean values using the average of each unique Mean EF.

Emission rates for PM from the cooling towers were determined by the manufacturer guaranteed drift droplet rate percent. The size distribution of the evaporated solid particles was calculated based on the liquid droplet size distribution and the assumption that the total dissolved solids (TDS) concentration inside the liquid droplets will be the same as the TDS concentration within the cooler recirculation water. TAPs from the water droplets were calculated based on worst case concentrations within samples of the City of Quincy’s domestic water supply and well water samples (Cascade Analytical 2020).

b. Best Available Control Technology | Best Available Control Technology for Toxics

In the prior permitting effort, the consultant proposed and successfully demonstrated that Tier-4 engines are cost prohibitive and are likely to cause operational problems with the proposed engine use patterns. Therefore, the consultant proposed uncontrolled Tier-2 engines as BACT and tBACT. I have reviewed agree that the proposal still meets or exceeds: BACT for emissions of NOx, CO, VOC and PM; and tBACT for emissions listed in Table 2.

The proposed drift droplet rate of 0.0004 percent is presumptive BACT and tBACT or better for the evaporative cooling towers. Emissions for the cooling towers comes from the total dissolved solids in the water used in the cooling towers: PM and the PM based cooling tower TAPs listed in Table 2.

c. Allowable Emissions

The allowable emissions from the project, considering all emission and operational limits contained in the approval order, are shown in the tables below.

Table 1. Allowable emissions for pollutants listed under WAC 173-400-110(5)

Pollutant	OLD 22AQ-E005 (tons/year)	OLD 22AQ-E005 with commissioning (tons/year)	NEW 24AQ-E040 (tons/year)	NEW 24AQ-E040 with commissioning (tons/year)
Carbon Monoxide (CO)	9.1	11.2	7.5	8.7
Lead (Pb)	0.000023	0.000023	0.0000035	0.0000035
Nitrogen Oxides (NOX)	56.8	64.8	50.2	54.9
PM10	2.3	3.0	0.94	1.4
PM2.5	2.1	2.8	0.91	1.3
Total Suspended Particulates (TSP)	2.3	3.0	0.94	1.4

Pollutant	OLD 22AQ-E005 (tons/year)	OLD 22AQ-E005 with commissioning (tons/year)	NEW 24AQ-E040 (tons/year)	NEW 24AQ-E040 with commissioning (tons/year)
Sulfur Dioxide (SO ₂)	0.051	0.057	0.046	0.049
Volatile Organic Compounds, total (VOC)	0.66	1.1	0.29	0.56

Table 2. Toxic Air Pollutant (TAP) Facility-wide Emission changes

Pollutant	OLD 22AQ- E005 (ton/year)	OLD with commissioning (ton/year)	NEW 24AQ- E040 (ton/year)	NEW with commissioning (ton/year)
Generator Emissions	--	--	--	--
Nitrogen dioxide (NO ₂)	5.3	6.1	5.0	5.5
Diesel Engine Exhaust Particulate (DEEP)	0.69	0.96	0.57	0.73
Carbon monoxide (CO)	8.3	10.3	7.5	8.7
Sulfur dioxide	0.048	0.054	0.046	0.049
1,3-Butadiene	5.2E-02	5.8E-02	5.0E-02	5.3E-02
Acetaldehyde	1.9E-01	2.10E-01	1.8E-02	1.9E-02
Acrolein	8.1E-03	9.1E-03	7.7E-03	8.3E-03
Ammonia	1.16	1.30	1.10	1.18
Arsenic	3.8E-04	4.3E-04	3.6E-04	3.9E-04
Benzene	4.4E-02	5.0E-02	4.2E-02	4.6E-02
Benz(a)anthracene	2.6E-04	2.9E-04	2.5E-04	2.6E-04
Benzo(a)pyrene	2.1E-04	2.4E-04	2.0E-04	2.2E-04
Benzo(b)fluoranthene	4.2E-04	4.7E-04	4.0E-04	4.3E-04
Benzo(k)fluoranthene	4.1E-04	4.6E-04	3.9E-04	4.2E-04
Cadmium	3.6E-04	4.0E-04	3.4E-04	3.7E-04
Chlorobenzene	4.8E-05	5.4E-05	4.5E-05	4.9E-05
Chrysene	2.3E-04	2.6E-04	2.2E-04	2.4E-04
Copper	9.8E-04	1.1E-03	9.3E-04	1.0E-03
Dibenz(a,h)anthracene	2.2E-04	2.5E-04	2.1E-04	2.3E-04
Ethylbenzene	2.6E-03	2.9E-03	2.5E-03	2.7E-03
Formaldehyde	4.1E-01	4.6E-01	3.9E-01	4.2E-01
Hexavalent Chromium	2.37E-05	2.7E-05	2.3E-05	2.4E-05
Hydrogen Chloride	4.4E-02	5.0E-02	4.2E-02	4.6E-02
Indeno(1,2,3- cd)pyrene	2.2E-04	2.5E-04	2.1E-04	2.3E-04

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Pollutant	OLD 22AQ-E005 (ton/year)	OLD with commissioning (ton/year)	NEW 24AQ-E040 (ton/year)	NEW with commissioning (ton/year)
Lead	2.0E-03	2.2E-03	1.9E-03	2.0E-03
Manganese	7.4E-04	8.3E-04	7.0E-04	7.6E-04
Mercury	4.8E-04	5.4E-04	4.5E-04	4.9E-04
Naphthalene	8.5E-03	9.5E-03	8.1E-03	8.7E-03
n-Hexane	6.4E-03	7.2E-03	6.1E-03	6.6E-03
Nickel	9.3E-04	1.1E-03	8.9E-04	9.5E-04
Propylene	1.1E-01	1.3E-01	1.1E-01	1.1E-01
Selenium	5.3E-04	5.9E-04	5.0E-04	5.4E-04
Toluene	2.5E-02	2.8E-02	2.4E-02	2.6E-02
Total Chromium	1.4E-04	1.6E-04	1.4E-04	1.5E-04
Xylenes	1.0E-02	1.1E-02	9.6E-03	1.0E-03
Cooling Tower TAPs	--	--	--	--
Arsenic	6.9E-06	6.9E-06	2.1E-06	2.1E-06
Beryllium	2.4E-07	2.4E-07	7.4E-08	7.4E-08
Cadmium	4.0E-07	4.0E-07	2.3E-07	2.3E-07
Chromiuma	3.6E-06	3.6E-06	3.3E-06	3.3E-06
Cobalt	7.3E-06	7.3E-06	2.2E-06	2.2E-06
Copper	6.4E-04	6.4E-04	8.8E-05	8.8E-05
Lead	2.3E-05	2.3E-05	3.5E-06	3.5E-06
Manganese	3.4E-05	3.4E-05	5.7E-06	5.7E-06
Mercury	5.9E07	5.9E-07	2.6E-07	2.6E-07
Selenium	4.2E-06	4.2E-06	1.3E-06	1.3E-06
Vanadium	1.5E-04	1.5E-04	4.5E-05	4.5E-05
Total Cyanide	2.4E-05	2.4E-05	7.4E-06	7.4E-06
Ammonia	1.7E-04	1.7E-04	5.2E-05	5.2E-05
Total Phosphorus	1.7E-04	1.7E-04	5.2E-05	5.2E-05

Appendix A – Response to Comments

This section will be updated following the public comment period.

Appendix B – Federal Rule Applicability

1. 40 C.F.R. Part 60, Subpart IIII

The ICE NSPS (40 C.F.R. Part 60, Subpart IIII) applies to each engine. The applicable portions the rule appear to be:

Citation	Subject	Notes
60.4202(a)(2)	Manufacturer emission standards	Specifies that 2007 model year and later emergency stationary CI ICE with a maximum engine power ≥ 37 kW and $\leq 2,237$ KW be certified to the emission standards specified in 40 C.F.R. 1039, Appendix I.
60.4205(b)	Owner/Operator emission standards	Directs owners and operators of 2007 model year and later emergency stationary CI ICE to comply with the emission standards for new nonroad CI engines in §60.4202.
60.4209(a)	Owner/Operator monitoring requirements	Requires installation install a non-resettable hour meter prior to startup of each engine, since the engines do not meet the standards applicable to non-emergency engines.
Table 8 to Subpart IIII of Part 60	Applicability of General Provisions to Subpart IIII	The table lists what portions of 40 C.F.R. 60 Subpart I are applicable, including notification and recordkeeping requirements.

2. 40 C.F.R. Part 63, Subpart ZZZZ

The RICE NESHAP applies to each engine. Condition 1 of the Order requires general compliance with this regulation. However, each engine is also subject to the ICE NSPS (see above). At 40 C.F.R. 63.6590(c), the NESHAP specifies that compliance must be met by meeting the requirements of the NSPS; therefore, no further requirements apply to the engines.