STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N. Monroe Street • Spokane, Washington 99205-1295 • (509) 329-3400
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

March 9, 2022

Bruce Eisele
VP Operation
H5 Data Centers
1711 M Street NE
Quincy, WA 98848

Re: H5 Data Centers – Quincy Approval Order No. 22AQ-E005

AQPID No. A0250282

Dear Bruce Eisele:

The Department of Ecology's Air Quality Program (Ecology) approves the installation of 12 new emergency backup engines and eight cooling towers at H5 Data Centers - Quincy. The Data Center is located at 1711 M Street NE, Quincy, Washington in Grant County.

Ecology's approval is based on the Notice of Construction application and supplemental information submitted on April 13 through October 8, 2021. The 30-day comment period required per Washington Administrative Code (WAC) 173-400-171, was completed. Comments were received and Ecology's response to comments are in Appendix A of the Technical Support Document.

Enclosed is Approval Order No. 22AQ-E005 for H5 Data Centers – Quincy.

Thank you for your patience while we processed your application. If you have any questions, please contact me at jfil461@ecy.wa.gov or 509-329-3407.

Sincerely,

Jenny Filipy

Jenny Filipy, P.E.
Commercial Industrial Unit
Regional Air Quality Program

JF:sg

Enclosures: Approval Order No. 22AQ-E005
Technical Support Document

Certified Mail: 7019 0140 0000 6496 4861

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF APPROVING AN	)	Approval Order No. 22AQ-E005
AIR CONTAMINANT SOURCE FOR	)	AQPID No. A0250282
H5 DATA CENTERS - QUINCY	)	

Project Summary

H5 Data Centers – Quincy (H5), herein referred to as the Permittee, is an existing data center located at 1711 M Street NE, Quincy, Washington in Grant County.

Equipment

H5 installed six MTU Detroit Diesel Model 16V4000 emergency generators, and four Evapco USS 312-454 cooling towers in 2007. An additional 12 emergency generators, either MTU Detroit Diesel Model 16V4000DS2250 or Kolher KD Model 2250, and eight Evapco AT 312-454 cooling towers are included in this Approval Order. All generators are rated at 2.5 MWm (3353 BHP) and are EPA Tier II certified.

Table 1: Emergency Engine and Generator Serial Numbers

Unit ID	Manufacturer & Model No.	Capacity MWm (BHP)	Engine SN	Generator SN	Engine date
1	MTU – 16V4000	2.5 (3353)	527 105 153	150786-2-0208	2007
2	MTU – 16V4000	2.5 (3353)	527 200 2979	150679-2-0208	2007
3	MTU – 16V4000	2.5 (3353)	527 105 111	150679-1-0208	2007
4	MTU – 16V4000	2.5 (3353)	527 105 108	150787-2-0308	2007
5	MTU – 16V4000	2.5 (3353)	527 105 154	150786-1-0208	2007
6	MTU – 16V4000	2.5 (3353)	527 105 110	150787-1-0308	2007
7	MTU or Kohler	2.5 (3353)			
8	MTU or Kohler	2.5 (3353)			
9	MTU or Kohler	2.5 (3353)			
10	MTU or Kohler	2.5 (3353)			
11	MTU or Kohler	2.5 (3353)			
12	MTU or Kohler	2.5 (3353)			
13	MTU or Kohler	2.5 (3353)			
14	MTU or Kohler	2.5 (3353)			
15	MTU or Kohler	2.5 (3353)			
16	MTU or Kohler	2.5 (3353)			
17	MTU or Kohler	2.5 (3353)			
18	MTU or Kohler	2.5 (3353)			

Table 2: Cooling Towers

Quantity	Make and Model	Cells
4	Evapco Model USS 312-454	3
8	Evapco Model AT 312-454	3

Legal Authority

The emissions from the proposed project have been reviewed under the legal authority of RCW 70A.15.2210 and the applicable rules and regulations adopted thereunder. The proposed project, if operated as specified, will be in accordance with applicable rules and regulations, as set forth in Chapters 173-400 WAC and 173-460 WAC and the operation thereof, at the location proposed, will not result in ambient air quality standards being exceeded.

This Notice of Construction (NOC) Approval Order rescinds and replaces NOC Approval Order No. 18AQ-E044, NOC Approval Order No. 18AQ-E044 is no longer in effect.

Therefore, it is ordered that the project as described in the NOC application and/or in the plans, specifications, and other information submitted to the Washington State Department of Ecology (Ecology), is approved for construction and operation provided the following conditions are satisfied:

Approval Conditions

1. Equipment Restrictions

a. Any engine used to power the electrical generators must be operated in accordance with applicable 40 C.F.R. Part 60, Subpart IIII requirements including but not limited to: certification by the manufacturer to meet the 40 C.F.R. Part 89 EPA Tier 2 emissions levels as required by 40 C.F.R. 60.4202; and installed and operated as emergency engines, as defined in 40 C.F.R. 60.4219.

   i. At the time of the effective date of this permit, Tier 4 interim and Tier 4 final certified engines (as specified in 40 C.F.R. 1039.102 Table 7 and 40 C.F.R. 1039.101 Table 1, respectively), are not required for 2.5 MWm electrical generators used for emergency purposes as defined in 40 C.F.R. 60.4219 in attainment areas in Washington State. However, any engines installed at H5 Data Centers after Tier 4 or other limits are implemented by EPA for emergency generators, must meet the applicable specifications as required by EPA at the time the emergency engines are installed.

b. The only engines and electrical generating units approved for operation at H5 Data Centers are those listed by serial number in Table 1 of this Approval Order, which must have equal or less emissions than the engine/generator models specified in the equipment section of this Approval Order.

c. The installation of any new or replacement engines 18 months after issuance of this Approval Order, will require notification to Ecology that includes engine manufacturer's specification sheets. Ecology will decide whether new source review is required based on

various factors including whether the new engines will have either an increased emission rate, or result in an emission concentration that may increase community impacts over those evaluated for this Approval Order, or if an update to Best Available Control Technology analysis is necessary.

d. In addition to meeting EPA Tier 2 certification requirements, the source must have written verification from the engine manufacturer that each engine of the same make, model, and rated capacity installed at the facility uses the same electronic Programmable System Parameters, i.e., configuration parameters, in the electronic engine control unit.

e. The 18 facility engines must meet the stack dimensions in Table 3.

Table 3: Engine Exhaust Stack Dimension Requirements

Quantity	Engine Year	Minimum Stack Height (feet)	Maximum Stack Diameter (engine – inches)
6	2007	40’	24”
12	2021- 2023	43’	24”
12	Cooling Tower	20’	11.68 feet

2. Operating Limitations

a. The fuel consumption by all the engines that power the emergency backup generators will be limited to 443,335 gallons per year and 31,493 gallons per day of on-road specification No. 2 distillate fuel oil (less than 0.00150 weight percent sulfur). Total annual fuel consumption by the facility must be averaged over a 12-month period using monthly rolling totals.

   i. While commissioning the 12 new generator engines, the fuel consumption by the engines will be limited to 108,281 gallons per year. Annual fuel consumption must be averaged over a 12-month period using monthly rolling totals.

b. The six generators installed in 2007, must not be operated more than 400 hours per year each, including testing for reliability or maintenance and emergency operation. Fewer units may be operated longer than 400 hours a year as long as total engine fuel consumption remains in compliance with Approval Condition 3.e.

c. The 12 generators installed in 2021 and after, must not be operated more than 18 hours per year each, including testing for reliability or maintenance operation. The 18 hours of operation per engine may be averaged over the 12 generators. Total hours of operation must be averaged over a 12-month period using monthly rolling totals.

   i. While commissioning the 12 new generators, each engine must not be operated more than 54 hours per year.

d. Total hours of operation for all engines must not exceed 2,712 hours averaged over a 12-month period using monthly rolling totals.

i. During commissioning of the 12 generators installed in year 2022 or after, total hours of operation for all facility engines must not exceed 3,048 hours averaged over a 12-month period using monthly rolling totals.

ii. For any prolonged unplanned power outage that results in the above conditions being exceeded, Ecology must be notified and a Notice of Construction may be required.

e. Operation of more than six generator-hours (combined) in any 24-hour period must not occur more than 15 times in any three calendar-year period.

f. The generators must only be operated for reliability or maintenance testing and to provide emergency backup electrical power to the H5 Data Centers in the case of failure of Grant Co. PUD hydroelectric power. Under no circumstances will the generators be utilized to satisfy a financial arrangement with Grant County PUD or any other entity (e.g. curtailment rate structures, load shedding, distributed power generation), or to provide electrical power to the Grant County PUD or any other electric power provider or user without first submitting a Notice of Construction application and receiving prior approval from Ecology.

g. Cooling towers must comply with the following droplet drift rate percentage and recirculation rate in Table 4.

Table 4: Cooling Tower Requirements

Cooling Tower Make and Model	Droplet Drift rate percentage	Maximum Cell recirculation rate (gallons/minute)
Evapco USS 312-454	0.001	2,410
Evapco AT 312-454	0.0005	7,352

h. Any biocide or other cooling tower water additives must contain no HAPs or TAPs.

3. General Testing and Maintenance Requirements

a. H5 must follow engine-manufacturer's recommended diagnostic testing and maintenance procedures to ensure that each individual engine will conform to 40 CFR 89 Tier II emission specifications throughout the life of each engine.

b. H5 must measure emissions of particulate matter (PM), volatile organic compounds (VOC), nitric oxide (NO), nitrogen dioxide (NO_2), and carbon monoxide (CO) from engine exhaust stacks in accordance with Approval Condition 3.c. This testing will serve to demonstrate compliance with the g/kWm-hr EPA Tier 2 average emission limits contained in Section 4, and as an indicator of proper operation of the engines. The selection of the engines(s) to be tested must be in accordance with Conditions 3.b.i, 3.b.ii and 3.b.iii and must be defined in a source test protocol submitted to Ecology no less than 30 days in advance of any compliance-related stack sampling conducted by H5. Additional testing as described in 40 C.F.R. 60.8 (g) may be required by Ecology at their discretion.

i. For new engines, at least one representative engine from each manufacturer must be tested as soon as possible after commissioning and before it becomes operational.

ii. Every 60 months after the first testing performed in Condition 3.b.i, H5 must test at least one engine from each manufacturer, including the engine with the most operating hours as long as it is a different engine from that which was tested during the previous 60 month interval testing.

A. For the six engines installed in 2007, after the emission control warranty is expired, testing must be done for at least one engine from the batch of engines, and every 60 months thereafter one engine from the batch of engines must be tested as long as it is a different engine from that which was tested previously.

iii. The testing protocol must include the following information:

A. The location and unit ID of the equipment proposed to be tested.

B. The operating parameters to be monitored during the test.

C. A description of the source including manufacturer, model number, design capacity of the equipment and the location of the sample ports or test locations.

D. Time and date of the test and identification and qualifications of the personnel involved.

E. A description of the test methods or procedures to be used.

c. The following procedure must be used for each test for the engines as required by Condition 3.b unless an alternate method is proposed by H5 and approved in writing by Ecology prior to the test.

i. Periodic emissions testing should be combined with other pre-scheduled maintenance testing.

ii. PM (filterable fraction only), VOC, NO, NO_2, and CO emissions measurement must be conducted at five individual generator electrical loads of 100 percent 75 percent, 50 percent, 25 percent, and 10 percent using weighting factor averaging according to Table 2 of Appendix B to Subpart E of 40 C.F.R. Part 89.

iii. EPA Reference Methods and test procedures from 40 C.F.R. Part 60, 40 C.F.R. Part 51, and/or 40 C.F.R. Part 89 as appropriate for each pollutant must be used including Method 5 or 40 C.F.R. Part 1065 for PM. A test plan will be submitted for Ecology approval at least 30 days before any testing is conducted and must include the criteria used to select the engine for testing, as well as any modifications to the standard test procedure contained in the above references.

iv. The F-factor method, as described in EPA Method 19, may be used to calculate exhaust flow rate through the exhaust stack. The fuel meter data, as measured according to Condition 3.e, must be included in the test report, along with the emissions calculations.

v. In the event that any source test shows non-compliance with the emission limits in Condition 4, H5 must repair or replace the engine and repeat the test on the same engine plus two additional engines of the same make and model as the engine showing non-compliance. Test reports must be submitted to Ecology as provided in Condition 8.e of this Order.

d. Each engine must be equipped with a properly installed and maintained non-resettable meter that records total operating hours.

e. Each engine (or the central fuel supply line if so equipped) must be equipped with a properly installed and maintained fuel flow monitoring system (either certified physical or generator manufacturer provided software) that records the amount of fuel consumed by that engine during operation.

4. Emission Limits

a. Engines must meet the emission rate limitations contained in Table 5. Unless otherwise approved by Ecology in writing, compliance with emission limits for those pollutants that are required to be tested under Conditions 3.b and 3.c must be based on emissions test data as determined according to those approval conditions.

b. To demonstrate compliance with 40 C.F.R. 89.112 and 89.113 g/kWm-hr EPA Tier 2 weighted average emission limits through stack testing, H5 must conduct exhaust stack testing as described in Conditions 3.b and 3.c according to Table 2 of Appendix B to Subpart E of 40 C.F.R. Part 89, or any other applicable EPA requirement in effect at the time the engines are installed.

Table 5: Emission Limits and Testing Requirements

Pollutant	Load Test	Test Method[(a)]	Emission Limits[(b)]
PM	Five-load weighted avg.	EPA Method 5 or 40 C.F.R. Part 1065	0.2 g/kW-hr
NO_X + NMHC/VOC	Five-load weighted avg.	EPA Method 7E, or 40 C.F.R. Part 1065	6.4 g/kW-hr
CO	Five-load weighted avg.	EPA Method 10, or 40 C.F.R. Part 1065	3.5 g/kW-hr

(a) In lieu of these requirements, H5 may propose an alternative test protocol to Ecology in writing for approval.
(b) For Compliance Test Frequency, See Approval Conditions 3.b.i and 3.b.ii.

c. Total annual facility-wide emissions must not exceed the 12-month rolling average emissions for PM_{10}, $PM_{2.5}$, CO, NO_X, VOC, SO_2, DEEP, and NO_2 as listed in Table 6.

Table 6: Criteria Pollutant and Toxic Air Pollutant Emission Limits for the Total Facility H5 Data Center – Quincy (Tons/Year)

Pollutant	Annual Emissions	Maximum Year
PM smaller than 10 microns in diameter (PM_{10})	2.3	3.0
PM smaller than 2.5 microns in diameter ($PM_{2.5}$)[(a)]	2.1	2.8
Carbon monoxide (CO)	9.1	11.0
Nitrogen oxides (NO_X)	57.0	65.0
Volatile organic compound (VOC)	0.66	1.1

Pollutant	Annual Emissions	Maximum Year
Sulfur dioxide (SO_2)	0.051	0.057
Diesel Engine Exhaust Particulate (DEEP)[(a)]	0.68	1.0
Nitrogen Dioxide (NO_2)[(b)]	5.7	6.5

(a) All PM emissions from the generator engines are $PM_{2.5}$, and all filterable $PM_{2.5}$ from the generator engines is considered Diesel Engine Exhaust Particulate (DEEP).
(b) NO_2 is assumed to be equal to 10 percent of the total NOx emitted.

d. Visual emissions from each diesel generator exhaust stack must be no more than 10 percent, with the exception of a two minute period after unit start-up. Visual emissions must be measured by using the procedures contained in 40 C.F.R. Part 60, Appendix A, Method 9.

5. Operation and Maintenance (O&M) Manuals

A site-specific O&M manual for the H5 Data Center equipment must be developed and followed. Manufacturers' operating instructions and design specifications for the engines, generators, cooling towers and associated equipment must be included in the manual. The O&M manual must be updated to reflect any modifications of the equipment or its operating procedures. Emissions that result from failure to follow the operating procedures contained in the O&M manual or manufacturer's operating instructions may be considered proof that the equipment was not properly installed, operated, and/or maintained. The O&M manual for the diesel electric generation units and associated equipment must at a minimum include:

a. Manufacturer's testing and maintenance procedures that will ensure that each individual engine will conform to 40 CFR 89 Tier II specifications throughout the life of the engine.

b. Normal operating parameters and design specifications.

c. Operating maintenance schedule.

6. Submittals

All notifications, reports, and other submittals must be sent to:

Washington State Department of Ecology
Air Quality Program
4601 N. Monroe Street
Spokane, WA 99205-1295

Annual reports may also be submitted electronically to: emissions.inventory@ecy.wa.gov

OR AS DIRECTED.

7. Recordkeeping

All records, O&M manual, and procedures developed under this Order must be organized in a readily accessible manner and cover a minimum of the most recent 60-month period except as required for stack testing in Condition 3. Any records required to be kept under the provisions

of this Order must be provided within 30 days to Ecology upon request. The following records are required to be collected and maintained.

a. Fuel receipts with amount of diesel and sulfur content for each delivery to the facility.

b. Monthly and annual fuel usage.

c. Monthly and annual hours of operation for each diesel engine. The cumulative hours of operation for each engine must be maintained for the life of the engine while at H5, and must include which engines have been stack tested, and the report information from Condition 8.e.

d. Purpose, electrical load and duration of runtime for each diesel engine period of operation.

e. Annual gross power generated at the facility.

f. Upset condition log for each engine and generator that includes date, time, duration of upset, cause, and corrective action.

g. Any recordkeeping required by 40 C.F.R. Part 60 Subpart IIII.

h. Air quality complaints received from the public or other entity, and the affected emissions units and any actions taken to resolve issues.

8. Reporting

a. The serial number, manufacturer make and model, standby capacity, and date of manufacture must be submitted to Ecology prior to installation for each engine and generator.

b. The following information will be submitted to Ecology at the address in Condition 6 by January 31 of each calendar year. This information may be submitted with annual emissions information requested by Ecology's Air Quality Program (AQP).

   i. Monthly and 12-month rolling annual total summary of fuel usage compared to Condition 2.a.

   ii. Monthly and 12-month rolling annual total summary of the air contaminant emissions for pollutants above the WAC 173-400-110(5) and WAC 173-460-150 de minimis levels.

   iii. Monthly and 12-month rolling hours of operation with annual rolling total.

   iv. Monthly and 12-month rolling gross power generation with annual total as specified in Condition 7.e.

   v. A listing of each start-up of each diesel engine that shows the purpose, fuel usage, and duration of each period of operation.

c. Any air quality complaints resulting from operation of the emissions units or activities must be promptly assessed and addressed. A record must be maintained by each tenant of the action taken to investigate the validity of the complaint and what, if any, corrective action was taken in response to the complaint. Ecology must be notified within three days of receipt of any such complaint.

d. H5 must notify Ecology by e-mail or in writing within 24 hours of any engine operation of greater than 60 minutes if such engine operation occurs as the result of a power outage or other unscheduled operation. This notification does not alleviate H5 from annual reporting of operations contained in any section of Condition 9.

e. Stack test reports of any engine must be submitted to Ecology within 45 days of completion of the test and must include, at a minimum, the following information:

   i. Location, unit ID, manufacturer and model number of the engine(s) tested, including the location of the sample ports.

   ii. A summary of test methods, results (reported in units and averaging periods consistent with the applicable emission standard or limit), field and analytical laboratory data, quality assurance/quality control procedures and documentation.

   iii. A summary of operating parameters for the diesel engines being tested.

   iv. Engine electronic operational data during testing.

   v. Copies of field data and example calculations.

   vi. Chain of custody information.

   vii. Calibration documentation.

   viii. Discussion of any abnormalities associated with the results.

   ix. A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

9. General Conditions

a. **Activities Inconsistent with this Order** – Any activity undertaken by the Permittee, or others, in a manner that is inconsistent with the data and specifications submitted as part of the NOC application or this NOC Approval Order, will be subject to Ecology enforcement under applicable regulations.

b. **Availability of Order** – Legible copies of this NOC Approval Order and any O&M manual(s) must be available to employees in direct operation of the equipment described in the NOC application and must be available for review upon request by Ecology.

c. **Compliance Assurance Access** – Access to the source by representatives of Ecology or the United States Environmental Protection Agency (EPA) must be permitted upon request. Failure to allow access is grounds for enforcement action under the federal Clean Air Act or the Washington State Clean Air Act, and may result in revocation of this NOC Approval Order.

d. **Discontinuing Construction or Operation** – This NOC Approval Order will become invalid if construction of the equipment described in the NOC application and this NOC Approval Order does not commence within 18 months after receipt of this NOC Approval Order.

   If construction or operation is discontinued for 18 months or longer on a portion or all of the equipment described in the NOC application and this NOC Approval Order, the portion of the NOC Approval Order regulating the inactive equipment will become invalid. Ecology

may extend the 18-month period upon request by the Permittee and a satisfactory showing that an extension is justified.

e. **Equipment Operation –** Operation of the facility must be conducted in compliance with all data and specifications submitted as part of the NOC application and in accordance with O&M manuals, unless otherwise approved in writing by Ecology.

f. **Registration –** Periodic emissions inventory and other information may be requested by Ecology. The requested information must be submitted within 30 days of receiving the request, unless otherwise specified. All fees must be paid by the date specified.

g. **Violation Duration –** If the Permittee violates an approval condition in this NOC Approval Order, the violation is presumed to commence at the time of the testing, recordkeeping, or monitoring which indicates noncompliance. The violation is presumed to continue until the time of retesting, recordkeeping, or monitoring which indicates compliance. A violation of an approval condition includes, but is not limited to, failure of air pollution control equipment, failure of other equipment resulting in increased emissions, or a failed source test indicating an exceedance of an emission limit. The duration of a violation may also be determined based on credible evidence which shows that the violation was of longer duration, that there were intervening days during which no violation occurred, or that the violation was not continuous in nature.

h. **Obligations under Other Laws or Regulations –** Nothing in this NOC Approval Order excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

i. **Maintaining Compliance –** It will not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the operations in order to maintain compliance with the conditions of this NOC Approval Order.

j. **Visible Emissions –** No visible emissions from the source are allowed beyond the property line, as determined by 40 C.F.R. Part 60, Appendix A, Test Method 22.

k. **Changes in Operations –** Any changes in operation contrary to information submitted in the NOC application must be reported to Ecology at least 60 days before the changes are implemented. Such changes in operation may require a new amended NOC Approval Order.

Authorization may be modified, suspended, or revoked in whole or part for cause, including, but not limited to, the following:

- Violation of any terms or conditions of this authorization.
- Obtaining this authorization by misrepresentation or failure to disclose full all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization or application of any provision to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this authorization, will not be affected thereby.

Your Right To Appeal

You have a right to appeal this Approval Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Approval Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this Approval Order:

- File your appeal and a copy of this Approval Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Approval Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

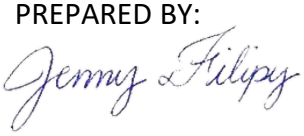
You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Address and Location Information

Street Addresses	**Mailing Addresses**
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk P O Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Rd. SW, STE 301 Tumwater, WA 98501	**Pollution Control Hearings Board** P O Box 40903 Olympia, WA 98504-0903

DATED at Spokane, Washington this 9th day of March 2022.

PREPARED BY:



Jenny Filipy, P.E.
Commercial Industrial Unit
Air Quality Program
Eastern Regional Office

APPROVED BY:

David T. Knight
Section Manager
Air Quality Program
Eastern Regional Office

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Address and Location Information

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk P O Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Rd. SW, STE 301 Tumwater, WA 98501	**Pollution Control Hearings Board** P O Box 40903 Olympia, WA 98504-0903

DATED at Spokane, Washington this 9th day of March 2022.

PREPARED BY:

Jenny Filipy, P.E.
Commercial Industrial Unit
Air Quality Program
Eastern Regional Office

JENNY MAY FILIPY STATE OF WASHINGTON 54393 REGISTERED PROFESSIONAL ENGINEER

APPROVED BY:

David T. Knight
Section Manager
Air Quality Program
Eastern Regional Office

Technical Support Document
Notice of Construction Approval Order No. 22AQ-E005
H5 Data Center - Quincy
AQPID No. A0250282
Quincy, WA

Prepared by: Jenny Filipy, P.E.

1. **Project Summary**

H5 Data Center (the source) is a data center classified as a synthetic minor with six installed emergency generators and four cooling tower emissions units. This review is for a project to add 12 new emergency generators and eight cooling towers to the existing site building.

An initial Notice of Construction (NOC) application was submitted by H5 Data Center for the Quincy Expansion project. The Washington State Department of Ecology (Ecology) reviewed the initial application and found it incomplete per WAC 173-400-111 on April 15, 2021. An amended NOC application was received by Ecology on July 16th and October 8, 2021 and found to be complete on October 8, 2021.

2. **Application Processing**

a. Public Notice

This project is subject to a mandatory 30-day public comment period per WAC 173-400-171(3)(b) and (k) for a project that exceeds an acceptable source impact level and an order issued under WAC 173-400-091 that establishes limitations on a source's potential to emit. The comment period was held November 10 through December 10, 2021. Response to comments received during the comment period are attached in appendix A.

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, a 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 new units are being constructed for this project and therefore are subject to minor new source review (NSR).

Emission increases from the project are greater than the exemption levels listed under WAC 173-400-110(5), as shown in bold in Tables 1 and 2 below.

Table 1. Emissions Increases for pollutants listed under WAC 173-400-110(5), NSR Exemption Levels

Pollutant	Annual Project (tons/year)	Project emissions with commissioning (tons/year)	Minor NSR Exemption (tons/year)	PTE for facility (tons/year)	PTE for facility with commissioning (tons/year)
Carbon Monoxide (CO)	**2.7**	**4.8**	5.0	9.1	11.2
Lead (Pb)	0.000023	0.000023	0.005	0.000023	0.000023
Nitrogen Oxides (NO_X)	**10.8**	**18.8**	2.0	56.8	64.8
PM_{10}	**1.8**	**2.6**	0.75	2.3	3.0
$PM_{2.5}$	**1.6**	**2.4**	0.5	2.1	2.8
Total Suspended Particulates (TSP)	**1.8**	**2.6**	1.25	2.3	3.0
Sulfur Dioxide (SO_2)	0.0081	0.014	2.0	0.051	0.057
Volatile Organic Compounds, total (VOC)	0.62	1.1	2.0	0.66	1.1

Table 2. Toxic Air Pollutant (TAP) Emission Increases and De Minimis Levels

Pollutant	Averaging Period	Project emissions with commissioning (lbs/averaging period)	De Minimis
Generator Emissions			
Nitrogen dioxide (NO_2)	1-hr	**57**	0.46
Diesel Engine Exhaust Particulate (DEEP)	Year	**1,276**	0.027
Carbon monoxide (CO)	1-hr	**152**	1.1
Sulfur dioxide	1-hr	0.43	0.46

Pollutant	Averaging Period	Project emissions with commissioning (lbs/averaging period)	De Minimis
1,3-Butadiene	Year	**0.73**	0.27
Acetaldehyde	Year	0.47	3.0
Acrolein	24-hr	**6.7E-03**	1.3E-03
Benzene	Year	**15**	1.0
Benz(a)anthracene	Year	1.2E-02	4.5E-02
Benzo(a)pyrene	Year	4.8E-03	8.2E-03
Benzo(b)fluoranthene	Year	2.1E-02	4.5E-02
Benzo(k)fluoranthene	Year	4.1E-03	4.5E-02
Chrysene	Year	2.9E-02	0.45
Dibenz(a,h)anthracene	Year	**6.5E-03**	4.1E-03
Formaldehyde	Year	1.5	1.4
Indeno(1,2,3-cd)pyrene	Year	7.8E-03	4.5E-02
Naphthalene	Year	**2.4**	0.24
Propylene	24-hr	2.4	11
Toluene	24-hr	0.24	19
Xylenes	24-hr	0.16	0.82
Cooling Tower TAPs			
Arsenic	Year	**1.1E-02**	2.5E-03
Beryllium	Year	3.9E-04	3.4E-03
Cadmium	Year	3.9E-04	1.9E-03
Chromium[a]	24-hr	1.8E-06	3.7E-04
Cobalt	24-hr	3.2E-05	3.7E-04
Copper	1-hr	1.4E-04	9.3E-03
Lead	Year	4.6E-02	10
Manganese	24-hr	1.8E-04	1.1E-03
Mercury	24-hr	2.1E-06	1.1E-04
Selenium	24-hr	1.8E-05	7.4E-02
Vanadium	24-hr	**6.5E-04**	3.7E-04
Total Cyanide	24-hr	1.1E-04	3.0E-03
Ammonia	24-hr	7.4E-04	1.9
Total Phosphorus	24-hr	7.4E-04	7.4E-02

[a]All chromium was assumed to be Chromium (III), soluble particulates.

ii. Prevention of Significant Deterioration

PSD does not apply to this source based on permitted potential to emit.

iii. Other Applicable Requirements

In accordance with WAC 173-400-113, the proposed new source(s) 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 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 source(s) 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 NOx, CO, 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 PM_{10} and $PM_{2.5}$ for the engines.

The emission factor for SO_2 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 SO_2.

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 emission factors from EPA's AP-42, Volume 1, Chapter 3.4, which provides emission factors for HAPs from large internal combustion diesel engines (EPA 1995).

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 analysis, the consultant proposed and successfully demonstrated that Tier-4 engines, urea-based selective catalytic reduction, catalyzed diesel particulate filter and diesel oxidation catalyst 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 agree that the proposal meets or exceeds: BACT for emissions of NOx, CO, VOC and PM; and tBACT for engine TAP emissions listed in Table 2.

The proposed drift droplet rate of 0.0005 percent is presumptive BACT and tBACT for 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.

5. Ambient Air Quality Standards

As specified in WAC 173-400-113, the proposed new or modified source(s) must not cause or contribute to a violation of any ambient air quality standard. This includes the ambient air quality standards for both criteria and toxic air pollutants.

a. Pollutants Listed Under WAC 173-400-110 (Except TAPs)

For NO_2, CO, PM_{10}, $PM_{2.5}$, modeling was performed to satisfy the requirements of Chapter 173-476 WAC. The modeling demonstrates that the emission increases as a result of the project will not exceed the ambient air quality standards. The modeling results are included in Table 3.

Table 3. Criteria Pollutant Modeling Results.

Criteria Pollutant	Averaging Period	Maximum Modeled Concentration	Modeled Concentration with background	Ambient Air Quality Standard
Nitrogen Dioxide (NO_2)	1-hr	85	137	188
NO_2	Annual	3.5	8.2	100
CO	1-hr	4,945	6,211	40,000
CO	8-hr	2,250	3,135	10,000
PM_{10}	24-hr	71	149	150
$PM_{2.5}$	24-hr	15	33	35
$PM_{2.5}$	Annual	1.0	6.6	12

Notes:
[a]Background concentrations obtained from Idaho Department of Environmental Quality for model and monitoring data from July 2014 through June 2017 (IDEQ; accessedAugust 14, 2020). Location-specific 1-hour NO2 background concentrations provided by Ecology via the online Storymap tool for Quincy, WA.
[b]Cululative concentrations are calculated for pollutants where project-related contributions are above the significant impact level.
[c]Reported values represent the 1st – highest modeled impacts over 5 years.
[d]Reported values represent the 6th – highest modeled impacts over 5 years.
[e]Monthly maintenance operations are expected to occur on each engine for up to 1 hour per engine. Multiple sequential tests may occur within the same day for up to 6 hours per day.
[f]Reported values represent the average of the maximum 3 years of 1st- highest modeled impacts at each receptor.
[g]Reported value is based on the Monte Carlo assessment for NO_2.

b. Toxic Air Pollutants

In accordance with WAC 173-460-040, new TAP sources must meet the requirements of Chapter 173-460 WAC, unless they are exempt by WAC 173-400-110(5).

As shown in Table 2, minor NSR is required for the 12 new emergency generators and eight cooling tower units. As such, the new emission units must comply with WAC 173-460-070 (ambient impact requirement). The facility may demonstrate compliance with the ambient impact requirement by either showing that the emissions increase is less than the small quantity emissions rates (SQER) or through dispersion modeling. Table 4 includes the estimated emissions increases associated with the project and the applicable SQER.

Table 4. TAP Analysis

TAP	Estimated Increase	SQER	Modeling Required?
NO_2	57	0.87	Yes
DEEP	1,276	0.54	Yes
CO	152	43	Yes
1,3-Butadiene	0.73	5.4	No
Acrolein	6.7E-03	2.6E-02	No
Benzene	15	21	No
Dibenz(a,h)anthracene	6.5E-03	8.2E-02	No
Formaldehyde	1.5	27	No
Naphthalene	2.4	4.8	No
Arsenic	1.1E-02	4.9E-02	No
Vanadium	6.5E-04	7.4E-03	No

For NO_2, CO, and DEEP modeling was performed to satisfy the requirements of Washington's state toxics rule in Chapter 173-460 WAC. The modeling demonstrates that the emissions increases as a result of the project will not exceed the acceptable source impact level (ASIL) screening thresholds, with the exception of NO_2 and DEEP. The modeling results are included in Table 5.

Table 5. TAP Modeling Results

TAP	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	ASIL ($\mu g/m^3$)
NO_2	1-hr	919	470
CO	1-hr	4,945	23,000
DEEP	year	0.37	0.0033

As shown in Table 5, all TAPs except NO_2 and DEEP are below the associated ASIL. A Second Tier Health Impact Assessment (HIA) was conducted for NO_2 and DEEP and submitted separately from the NOC application, per WAC 173-460-090. Ecology

reviewed the assessment and recommended approval of the project because, "the health hazards are considered to be acceptable." Ecology's analysis and recommendations are included in the document titled, Second Tier Review Recommendation for: H5 Data Center, October 25, 2021.

Appendix A – Response to Comments

Response to Comments for H5 Data Centers - Proposed Expansion
Comment Period: November 10 – December 12, 2021

Comments from Danna Dal Porto, Quincy, Washington

Comment 1:

The location of the H5 Data Center is within the boundary of the City of Quincy, Washington. This small Eastern Washington community has been the preferred location for many Data Centers. The supporting documents for this facility suggest the location of these Data Centers is because of the reliable electrical power from Grant County Public Utility. Other reasons for this choice are the land is relatively inexpensive, the community accepts the construction of these industrial plants within the City limits, and the City government is delighted with the tax income for community projects. Most importantly, because these buildings are within the City limits, the Data Centers can use City Water. These Data Centers do not have to apply for permits to drill wells and withdraw enormous amounts of precious, clean ground water.

I bring up the question of water use because I think it is extremely important. I have mentioned this before in statements to Ecology but I suspect I will receive the same message that this permit is for air quality, not water use. I consider this tunnel vision, especially in this time of drought and limited water. I will comment for the record that the excessive water use by Data Centers should be a concern to Ecology and local officials. Not only the millions of gallons of water used but the corresponding problem of what to do with the resulting millions of gallons of used, contaminated water.

The water use is a murky issue. I repeat this background information just in case someone reading this document might not know some of these details. I suspect Ecology is all too aware of the problem with water. The first Data Centers constructed in Quincy made some kind of arrangement with the Bureau of Reclamation to discharge the used water into the West Canal. This canal is one part of the enormous 1930's project that provided Columbia river water to irrigate the desert in this part of eastern Washington State. Turns out that the millions of gallons of water taken from Quincy City wells can only be used once in the evaporative towers to cool the many servers inside the Data Center. The water starts out very hard, full of minerals, and the use in the cooling towers adds other materials to make the water unusable for agriculture without treatment. Recently, the Bureau of Reclamation has rescinded their

permission to discharge into the West Canal and this huge amount of used water needs a place to go. Many of the creative suggestions to "use" the water are not feasible and currently the City of Quincy is working with Microsoft to recycle the used water in some kind of closed loop system. Each of the Data Centers is working on their own plan for water use. Considering the projected life of these facilities is measured in decades, not to consider water use is irresponsible. I do not want the aquifer below Quincy to be depleted like the Omak aquifer

Response to Comment 1:

For Water Resources questions, please contact Kevin Brown at: 509-329-3422 or pabr461@ecy.wa.gov.

Discharge of wastewaters to waters of the state is regulated by State Department of Ecology and the State Department of Health. The Department of Ecology, through the water quality program regulates the City of Quincy for two treatment facilities, Quincy Industrial and the Quincy Water Reclamation Facility. Permitting of Data Center discharges to the City of Quincy's facilities is delegated by Ecology to the City. The City's delegated permitting is regulated, inspected, and audited on a regular basis by the Department of Ecology.

For further information regarding Data Center discharges to the City of Quincy, please contact Travis Kirk, Operations Manager, at: 509-237-3378 or tkirk@woodardcurran.com.

For more information about Ecology's oversight of the City's permitting program, please contact Vijay Kubsad at: 509-329-3473 or vkub461@ecy.wa.gov.

Comment 2:

I will describe Quincy to explain why I consider the location of these industrial facilities a violation of Environmental Justice. Environmental Justice is the careful inclusion of all people in decision making regarding their surroundings and advocates for land use and use of renewable resources responsibility and ethically. The Environmental Justice movement came in the 1980's when it became obvious that minority communities were many of the places where industrial, therefore potentially dangerous, facilities were located. Environmental Justice became an issue to distribute environmental burdens among all people regardless of their background. A basic principle of Environmental Justice is that your health should not suffer because of the environment where you live, work, play or learn. I believe the residents of Quincy and the surrounding area are being negatively impacted by the emissions of the Data Centers, including H5. I am asking if Ecology knows about the principles of Environmental Justice and applies these ethical considerations to the permitting of potentially hazardous facilities. Just looking at the construction of these data center facilities in a very small low-income community, it appears that the State of Washington can do better for its low-income citizens.

Reading through the H5 documents, it is obvious that this facility has some potential to damage the health of Quincy citizens. The two items of gravest concern are DEEP and NO2. The largest part of the permit application discusses the dangers of these, and other TAPs, such as CO, VOCs, NOx and SO2. Looking at modeled emission maps, most of these materials drift over most or some of Quincy. All of the schools are covered in emission clouds with Quincy High School and Quincy Middle School being around one mile from many of the emitting facilities. (H5 Second Tier Review Recommendation, Figure 1, October 2021, page 21) As one of the principles of Environmental Justice is that a citizen should not "suffer because of the environment where you live, work, play or learn", the clouds of dangerous emissions over the town does affect all of those conditions for adults and children where they live, work, play or learn.

Quincy Statistics…

City numbers from the US 2020 census.
School numbers from the 2021 Office of Public Instruction report for K-12

Population	8,033
City Hispanic	80.3%
Poverty level	21%
Per Capita income	$18,952
No health insurance	20.6%

Quincy Students	3,171 (The School District draws from a large area, not just the City)
Minority	87.9%
Low-income	81.1%
Homeless	2.3%
Migrant	11.7%

As you can see, Quincy does qualify as a low-income, minority community. This is the type of community that is the focus of Environmental Justice. The residents of Quincy should not be subject to environmental hazards because they live in Quincy. The various arms of the State and National environmental agencies should be protecting this community, but they do not. The Washington State Department of Ecology has permitted 361 diesel engines to be placed in Quincy and makes, in my opinion, little effort to protect the residents.

Response to Comment 2:

We recognize that Quincy is a highly diverse community with a significant Latinx population, and environmental justice is a consideration in our permitting process. Our efforts to meaningfully engage the Latinx community, combined with our data collection and scientific evaluation of the airshed, show our high level of commitment to the community.

- We strive to ensure our public participation opportunities are accessible to as many members of the community as possible; this includes reducing barriers to engagement for the Latinx community. For example, we advertise comment periods in both English and Spanish in the local Quincy newspaper, translate information for online access and in-person events, and provide interpretation services at our public meetings.

- We perform scientific analyses required by state and federal law in order to issue Notice of Construction permits for the Quincy community. As part of the permitting process, we review the application and local air quality data to ensure the project will meet ambient air quality standards that are intended to protect public health. We also make sure that the project complies with the air toxics rule, which minimizes increased risk to the community.

- We placed a monitor within Quincy at 330 3rd Avenue NE. This monitor is operational with data available 24 hours a day each day of the week. You can view the information from this monitoring site at: https://enviwa.ecology.wa.gov/home/map. Currently the site records weather and PM 2.5 data, and we measured NO_x and black carbon starting in August 2017 through December 2018. Data show PM 2.5 and NO_2 levels meet the National Ambient Air Quality Standards. PM2.5 levels found in the Quincy area are similar to Moses Lake and the Wenatchee area.

- We recently performed an analysis of the data center impacts in the Quincy area and have finalized the report – see Health Risks from Diesel Emissions in the Quincy Area (wa.gov). While the data centers potentially represent a sizable portion of the total diesel emissions in the Quincy area, the risks from these emergency engines is somewhat offset by:
    - Less frequent engine use than permitted.
    - Higher stacks (release points) than other diesel sources (i.e., farm equipment, trucks, locomotives, etc.) so emissions disperse before they enter the breathing zone.
    - Lower population density in areas immediately surrounding data centers.
- We have translated and published the Executive Summary in Spanish. Riegos a la salud por emisiones de diésel en el área de Quincy (wa.gov)

- We developed a visual tool summarizing the information in the report that the community can access online. Data centers - Washington State Department of Ecology

If you want to learn more about Ecology's environmental justice efforts, you can visit our websites:

- Environmental Justice at Ecology
- Improving air quality in Overburdened Communities and sign up for our email list

Comment 3:

The H5 permit is allowing the best available control technology (BACT) to be the emission limitations consistent with EPA's Tier 2 emission standards. The document reads: "The basis for this recommendation is that the cost of EPA Tier 4-compliant emission controls is disproportionate to the benefit (i.e., emission reduction) achieved." (Revised Notice of Construction Application Supporting Information Report, Landau, July 15, 2021, page 1-2) Landau repeats the assertion that the controls are too expensive in the Revised Second-Tier Health Impact Assessment, H5 Data Center, Quincy, Washington, Landau, July 15, 2021, page 4-1. The same reference, page 4-1, writes the cost of controls: "The BACT/tBACT analyses concluded that all of the add-on control technology options…are technically feasible, but each of them failed the BACT cost-effectiveness evaluation".

To summarize, the evaluation of additional controls for the permit is that there are controls that would help reduce emissions but the controls are too expensive for the benefit. Who is the benefit for? The benefit for Quincy residents would be healthy air, the benefit for the Data Center developer is the ability to construct a facility in the cheapest possible way. I have read almost all of the permitting documents for Quincy data Center construction and all of the 361 permits use excessive cost as the rationale for allowing the Tier 2 engines to be the controls. In other plain language, emission controls can be added to reduce hazardous emissions but those are disregarded because they cost too much money for the developer. It is true that the additional emission controls are expensive but the developer of these facilities knew the costs before they applied for the permit. The developer also knew that historically the Washington State Department of Ecology would allow the Tier-2 (cheaper) engines to be the BACT. The developer is betting that they can get by on the cheap. These Data Centers are built to last for a very long time. I do not have the monetary amounts available to figure out how the "excessive cost" would average out over time, but I do know that purchasing emission controls is a small price to pay to protect human health and the environment. Allowing these massive amounts of hazardous material to drift over a community, knowing that those emissions can be controlled to some extent, is a dereliction of duty and dark spot on the reputation of the Washington State Department of Ecology.

Response to Comment 3:

We carefully evaluate all data center Notice of Construction applications against federal and state regulations. In reviewing this permit request, Ecology has not put on hold or relaxed any of these regulations and evaluation standards as a result of COVID-19. We continue to protect Quincy's air quality through our evaluation of control technology and review of health impacts:

- Performing a cost evaluation is part of the BACT process, as defined in WAC 173-400-030: "Best available control technology (BACT)" means an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70.94 RCW emitted from or which results from any new or modified stationary

source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant."

- Diesel engine controls that cost more do not necessarily perform better than lower cost options. Some controls are designed to work more effectively when the engines run at a high load, and work less efficiently at lower engine loads. The engines typically do not run very long at high loads for the Tier IV controls to operate. Most of the engine run-time occurs during maintenance and at lower loads where the Tier IV controls are not effective. So, engine operations are a consideration in our evaluation of best available control technology.

- The health impact analyses that data centers perform and we evaluate are required under the Washington State's Clean Air Act (Chapter 70.94 RCW) and the toxics rule (Chapter 173-460). Our rule builds on EPA's rules to provide increased stringency and a more thorough review of new sources of toxic air pollutants. Our regulation of toxic air pollutants, such as diesel engine exhaust particulate, limits the risk posed by hazardous air pollutants emitted by emergency engines. Whereas EPA's rules rely on available technological controls to minimize health risks. Our toxics rule's increased stringency results in permit requirements, such as:

    - Exhaust stack location, height, dimension, etc. (Some data centers in other states have engines with horizontal exhausts at only a few meters height.)

    - Routine maintenance and testing of emergency engines only during daytime hours to ensure enhanced pollutant dispersion.

    - Lower limits on hours of emergency engine use restricting how facilities use emergency engines. (New Source Performance Standards allow up to 100 hours for routine maintenance and testing of emergency engines.). For example, we do not allow engines to be used for non-emergency situations to supply power as part of a financial arrangement with another entity. EPA's NSPS allows emergency engines to be used for up to 50 hours per year for this purpose.

Comment 4:

I want to point to a statement in the H5 documents. "Revised Second-Tier Health Impact Assessment, H5 Data Center, Quincy, Washington, Landau, July 15, 2021, page 3-1."

> "In evaluating a second-tier petition, background concentrations of the applicable TAPs must be considered. Ecology sets no numerical limit on cumulative impacts from a facility, local background and regional background levels."

This has always bothered me about the Ecology permitting process. Quincy has 361 locomotive sized diesel engines. The many data centers built in Quincy are so close together that a person can stand in various places in town and see almost all of these industrial structures at ground level. Each facility is permitted but, as the statement above notices, Ecology has not set a limit on the cumulative impacts of these facilities on one another. The emission plumes overlap. Several emission plumes overlap each other in a sandwich of emissions. How can Ecology not set a limit on the cumulative effects of these emissions? The permit allows for a death rate of a set number out of a thousand /million, per facility, but those numbers are not added up as far as I can tell. If Vantage's death rate is 6 out of a thousand/million, and Yahoo! (forgot new name) is 8 out of a huge number, why aren't these numbers added together to really see the damaging effect of these emissions as a whole? Ecology acts as if the emissions are separate, each cloud not intersecting with another, but they are not separate in the air. Logic tells me these clouds do mingle and make one BIG cloud. How can Ecology contend that a specific facility can cause specific harm but that the cumulative harm does not result from the aggregate of the cloud? Very confusing for me. (I will remind Ecology that many years ago the death rate was an arbitrary number to limit emissions. As far as I know, no study was made to verify that number.) Explain to me how you can allow each of these data centers to have a specific death rate and not add them all together to form a whole picture of the emissions over Quincy.

Response to Comment 4:

Our air toxics rule (WAC 173-460) allows a new source of emissions if the applicant demonstrates that:

- Emission controls for the new and modified emission units represent best available control technology for toxics.
- The increase in emissions of toxic air pollutants (TAPs) is not likely to result in an increased cancer risk of more than one in one hundred thousand (10 in one million) and Ecology determines that the noncancerous hazard is found to be acceptable.

The rule also states that "Background concentrations of TAPs will be considered as part of a second tier review", but the rule does not specify a cumulative risk at or beyond which a project proposal should be denied. In past data center permitting efforts in Quincy, Ecology considered a cumulative diesel exhaust risk of over a hundred in one million to be a point at which we would consider additional reductions in diesel emissions from data center emergency engines.

In the case of the H5 data center expansion, increased emissions of diesel particulate matter result in a lifetime increased risk of cancer of about nine in one million for the maximally impacted residential receptor. So Ecology may recommend approval under our toxics rule since it is less than an increase of 10 in one million. As part of the second tier health impact

assessment, Landau Associates also considered background exposures at the same location. The cumulative risk from exposure to diesel particulate emitted by all local and regional diesel engines was about 42 per million at the same location.

It is important to note that the location of maximally impacted receptor depends on the location of the new proposal, so the location of the maximally impacted receptor typically differs for each new data center project. To date, none of the residential receptors in Quincy exceeds a diesel exhaust – related risk of over 100 in one million.

Comment 5:

Several additional items in my comments. (Revised Second-Tier Health Assessment, H5 Data Center, Quincy, Washington, Landau, July 15, 2021, page 6-3) The document reads that "possible" chemicals in DEEP will build up in food crops and drinking water sources downwind. I believe that statement should read that DEEP "WILL" build up on surfaces and crops. Most housewives will tell you that the dust in local houses is black, not brown like it was years ago. The black stuff is DEEP. Apples in and around Quincy have dark material around the stem of the fruit. I have been told that dark stuff is DEEP. The data center emissions are affecting the health of people, animals and crops in this valuable agricultural area.

Response to Comment 5:

Ecology can consider other non-inhalation routes of exposure under second tier review. Generally, chemicals that may pose a multi-pathway exposure are those that persist in the environment and potentially accumulate. To consider these other pathways of exposure, Ecology often uses guidance provided by California and EPA.

- California Environmental Protection agency: Office of Environmental Health Hazard Assessment. Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. February 2015. Available at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf
- US Environmental Protection Agency. Air Toxics Risk Assessment Reference Library Volume 2: Facility-Specific Assessment. April 2004. Available at https://www.epa.gov/sites/default/files/2013-08/documents/volume_2_facilityassess.pdf

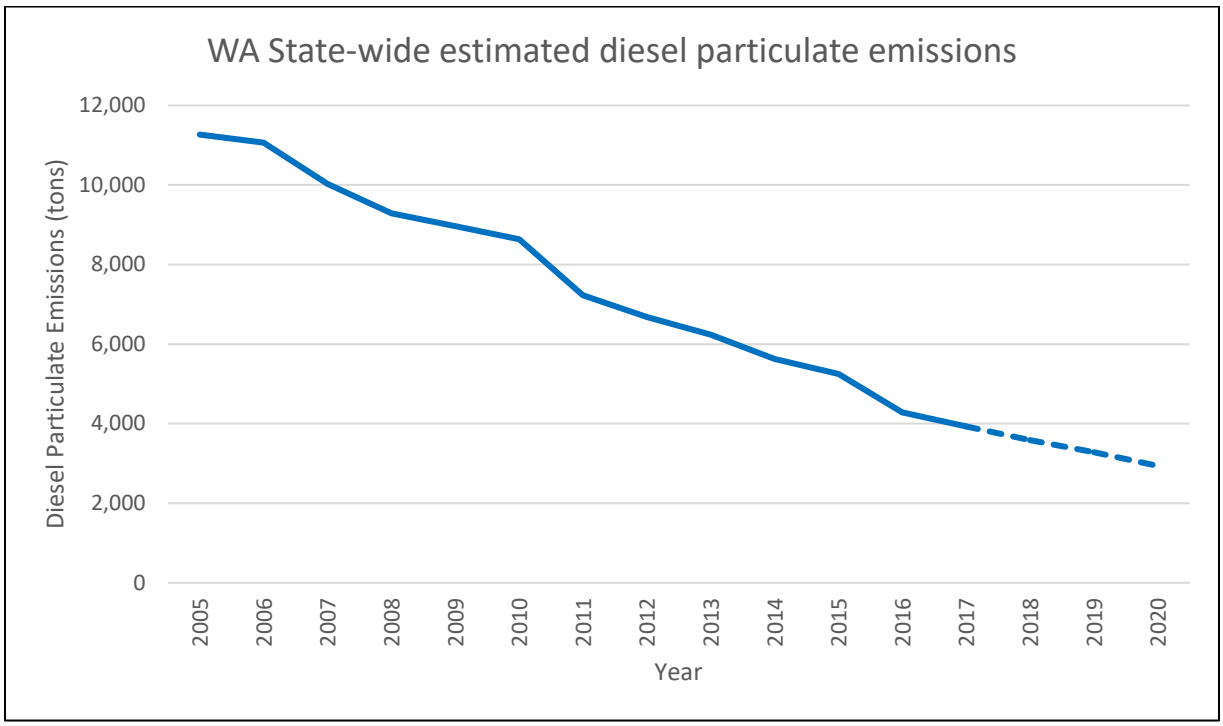
These guidance documents provide a list of chemicals in air emissions for which multi-pathway risk assessment may be warranted. Diesel engine exhaust particulate is not among the listed chemicals. The following table shows the chemicals identified by California and EPA for which multi-pathway assessments should be considered:

Chemicals where multi-pathway assessments should be considered	Table 5.1 OEHHA Air toxics hot spots guidance manual	Exhibit 6 EPA Air Toxics Risk Assessment Reference Library, Volume 2.
Arsenic & inorganic arsenic compounds	X	
Beryllium & beryllium compounds	X	
Cadmium & cadmium compounds	X	X
Chlordane		X
Chlorinated dibenzo-p-dioxins	X	X
Chlorinated dibenzofurans	X	X
Chromium VI & soluble chromium VI compounds	X	
Creosotes	X	
DDE		X
Diethylhexlphthalate	X	
Heptachlor		X
Hexachlorobenzene	X	X
Hexachlorcyclohexane (all isomers)	X	X
Lead compounds	X	X
Fluorides	X	
Mercury & inorganic mercury compounds	X	X
Methoxychlor		X
4,4’-methylene dianiline	X	
Nickel & nickel compounds	X	

Chemicals where multi-pathway assessments should be considered	Table 5.1 OEHHA Air toxics hot spots guidance manual	Exhibit 6 EPA Air Toxics Risk Assessment Reference Library, Volume 2.
Polychlorinated biphenyls	X	X
Polycyclic organic matter - PAHs	X	X
Selenium & selenium compounds (other than selenium selenide)	X	
Toxaphene		X
Trifluralin		X

While it is possible that some components of diesel particulate may be deposited on, or potentially build up in food crops, soil, and drinking water sources near diesel emission sources, quantifying exposure to these chemicals from these media is impractical and very unlikely to yield significant concerns. Inhalation is the only route of exposure to DEEP that has received sufficient scientific study to be useful in human health risk assessment.

Finally, we cannot be certain that the presence of black dust in homes or on agricultural produce is due to any single source of emissions. Given that emissions of diesel particulate have declined substantially over time throughout Washington (see figure), other sources of air pollution (e.g., increased prevalence of wildfires) may be responsible for (or contribute to) more recent observations of black dust.



Comment 6:

Revised Second-Tier Health Impact Assessment, H5 Data Center, Quincy, Washington, Landau Associates, July 15, 2021, page 6-2. (6.1.2 Overview of NO2 Toxicity) has a section specific to NO2. The opening sentence is important. “NO2 is a red-brown gas that is present diesel exhaust.” This section of Overview of NO2 Toxicity continues to explain how the introduction of NOx into the air “produces a chain of reactions responsible for the formation of ground-level ozone”. The remaining section of the Health Impact Assessment continues to describe the short and long-term effects of NO2. Working through the details, the result is NO2 is dangerous stuff, dangerous to adults as well as children. From my home south of Quincy, I have seen the red-brown clouds over the town of Quincy. I have tried to photograph these sightings but digital images do not capture the semi-transparent cloud of gas. Since this is an electronic transmission of my comments, I will mail in my photographs to Ecology as a record of my observations. As an aside, two people have asked me about those clouds. Those clouds of NO2 are over town, especially in times of weather inversions, specifically during the summer.

Photo taken from I-90, 20 miles South of Quincy. September 20, 2021, 4pm.

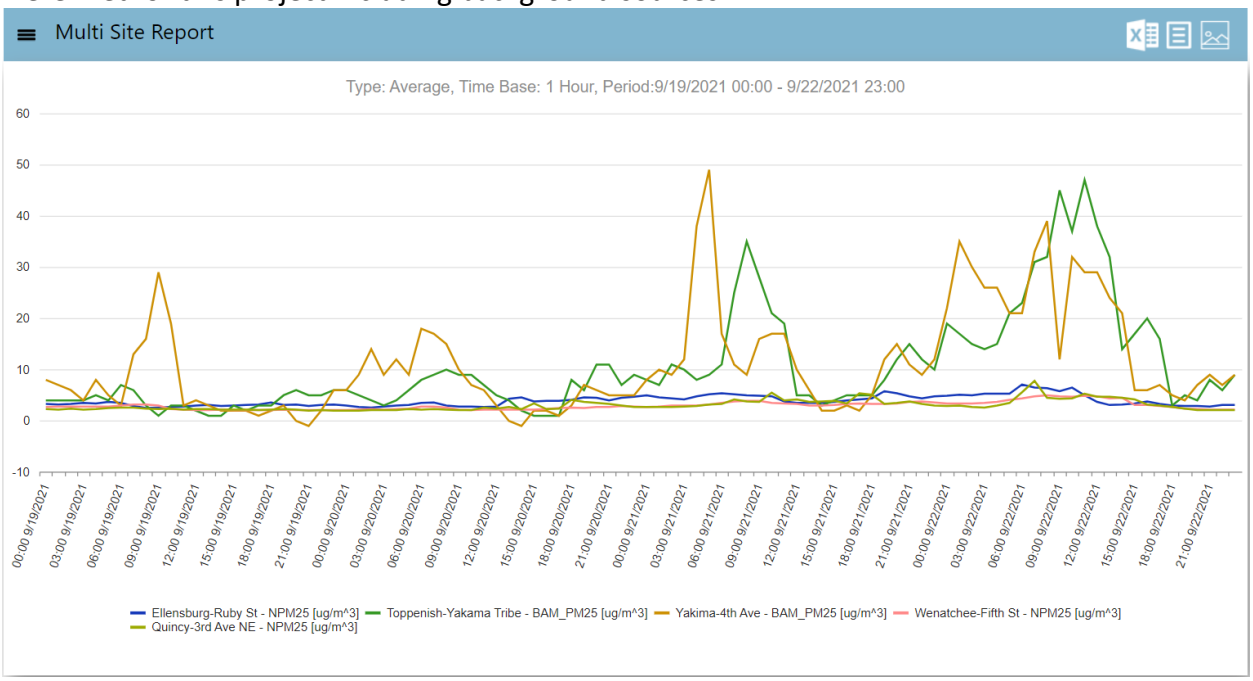
Response to Comment 6:

After viewing the submitted photo taken "9/20/2021 at 4 pm 20 miles south of Quincy", it is difficult to determine the source of the haze from the photo alone. August and September 2021 were months with excessive wildfire smoke throughout central and eastern Washington. The Quincy monitor showed good air quality, but values went up slightly starting in the evening of the 9/20/2021 and into the next couple days. The Ellensburg, Yakima, Yakima-Toppenish monitors showed the same trend of values starting good to moderate during the day of 9/20/2021 and then increasing in the evening and over the next couple days to unhealthy for sensitive group levels in Yakima and Toppenish. This pattern suggests some stagnation over a large area with elevated sources of emissions, likely wildfire smoke. (See figure below)

After reviewing the smoke blog, rain predicted the weekend of September 18th and 19th likely helped most areas clear out quite a bit, but some smoke from the Schneider Springs fire in western Yakima County that severely affected Yakima and Toppenish, likely remained. The haze in the photo may have come from being downwind of the fire in Yakima County, although the monitor in Quincy showed good air quality in general.

Nitrogen dioxide is a pollutant emitted during combustion of any type of fuel, such as diesel, natural gas, gasoline, and wood. During inversion events and stagnant conditions, all pollutants emitted from industrial sources, agricultural, transportation, wildfires, and other wood burning can become trapped in an air shed. Nitrogen dioxide and particulate matter can both contribute

to reduced visibility during inversions and calm wind conditions. The one-hour and annual National Ambient Air Quality Standards (NAAQS) for Nitrogen dioxide are set at levels intended to protect public health and the environment. The application submitted by Landau Associates for H5 Data Center, demonstrated that both the one-hour and annual Nitrogen Dioxide NAAQS were met for this project including background sources.



Comment 7:

I looked at the supporting documents for sections of this report and I was interested to see that many of the references are from many years ago.

CalEpa Document… 1998
EPA Diesel Exhaust …2002
EPA Diesel Exhaust…2003
Office of Environmental Health Hazard Assessment… 2008
Ecology Health Effects …2008

I certainly would not accept documents this dated if I was going in for a medical procedure. Giant advances in technology and research have been made over the intervening years. I think Ecology should look for the latest in research for permiting diesel engines.

Response to Comment 7:

While research into the health effects of diesel exhaust is ongoing, the key EPA, Ecology, and California EPA / Office of Environmental Health Hazard Assessment summary and review documents are still relevant for assessing health risks posed by diesel engine exhaust.

EPA noted in their 2002 health effects evaluation of diesel exhaust that the human exposure-response data were too uncertain to derive a confident quantitative estimate of cancer risk based on existing studies. Since that time, more studies have been published, and in 2015, the Health Effects Institute concluded that newer studies of mine and truck workers could be used to develop or update toxicity values based on these studies with greater confidence.

To date, no agency has updated quantitative toxicity values based on these newer studies, but California's OEHHA determined that their unit risk value for diesel particulate (used by Ecology to assess cancer risk) "can continue to be applied" to newer technology engines. This means that California OEHHA's unit risk value may be used to assess risk from exposure to diesel exhaust from EPA Tier II compliant engines (such as those proposed at H5 Data Center) and engines equipped with diesel particulate filters and other controls.

- Health Effects Institute. Diesel Emissions and Lung Cancer: An Evaluation of Recent Epidemiological Evidence for Quantitative Risk Assessment. Special Report 19. 2015. Available at: https://www.healtheffects.org/publication/diesel-emissions-and-lung-cancer-evaluation-recent-epidemiological-evidence-quantitative
- Budroe JD, Salmon AG, and MA Marty. Office of Environmental Health Hazard Assessment. A Risk Assessment Evaluation of New Technology Diesel Engine Exhaust Composition 2012. Available at: https://oehha.ca.gov/media/downloads/air/document/sot2012dieselra.pdf

Comment 8:

In summary, I offer some statistics.

2020 US Census Quincy population	8,033
2021 total Data Center Diesel engines	361
Number of Quincy Residents per Engine	22.52 Engines for every town resident
2020 Quincy District Students	3,171
2021 total Data Center Diesel engines	361
Number of Quincy Students per Engine	8.7 Engines for every school student

To look at those numbers is to realize how the number of permitted locomotive sized diesel engines has almost out-numbered local residents. The future looks about the same with continued development of Data Centers in Quincy. The conditions here are perfect for these wealthy international companies: cheap land, good electrical connectivity, almost free water and compliant officials at every level to continue this environmental invasion.To conclude, I object to the H5 permit on the grounds that this permit from the WashingtonState Department of Ecology does not do enough to protect the residents of Quincy,
Washington. I believe that additional emission controls must be added to any construction to reduce environmental hazards for local low-income people.

Response to Comment 8:

Please see response to comment 2 and 3.

Comment 9:

I have specific questions. I am asking the question if Ecology is considering the principles if Environmental Justice in permitting hazardous facilities. What is the policy of permitting hazardous stuff in low-income communities?

Response to Comment 9:

Please see response to Comment 2.

Comment 10:

I am asking if Ecology is considering the addition of advanced emission controls to any permit applications. If not, why not?

Response to Comment 10:

Considering additional controls is part of the Best Available Control analysis required by any project above New Source Review thresholds. Additionally, all project emissions that trigger New Source Review must meet the National Ambient Air Quality Standards and Washington State Toxic Rule requirements. If a source's proposed project did not meet these standards initially, additional control options or emission limits may need to be considered in order to meet the required standards. Please see response to Comment 3.

Comment 11:

I am asking if Ecology is considering the cumulative emissions of TAPs over Quincy. The current practice of considering each facility separately does not give the public an accurate picture of the total emission cloud. I want the cumulative emission cloud data.

Response to Comment 11:

Analyses of all projects that trigger Second Tier review, such as H5 Data Center's Expansion project, must also consider existing background levels of the toxic air pollutants that are above their Acceptable Source Impact Level. In the Revised Second Tier Health Impact Assessment, Landau Associates presented impacts from H5's increased Diesel Engine Exhaust Particulate and Nitrogen Dioxide emissions in addition to existing background levels from regional and local emission sources.

Comment 12:

Does Ecology have a plan to compensate local farmers for damage to crops resulting from emission particulate. Does Ecology have any data on crop damage from particulate?

Response to Comment 12:

EPA derives the secondary NAAQS to protect against environmental effects such as decreased visibility and damage to animals, crops, vegetation, and buildings. Since the data center applicants must first determine compliance with primary and secondary NAAQS before they can obtain a permit, we do not anticipate damage to crops from H5's emissions.

Comment 13:

Does Ecology have any plans to moderate the development of Data Center construction in Quincy in light of the density and danger of these facilities to human health and the environment?

Response to Comment 13:

Moderating development is not part of our role as an environmental permitting agency. Ecology's role is to assess projects for compliance with applicable rules and regulations, assess environmental impacts, and put in place requirements and conditions that are protective of environmental values and ensure that regulated entities can operate within the required parameters.

Comment 14:

I am asking for a map of emissions that covers the entire City of Quincy. I would like the schools identified, the Senior Center, and the Hospital. Identify the data centers on this map.

Response to Comment 14:

Page 49, Figure 6-3 of the Health Impact Assessment displays the cumulative Diesel Engine Exhaust Particulate Impacts. The hospital, and Quincy Middle School (MIIR) are identified on the map. The map highlights maximum impacted receptors in the following categories, residential, commercial, and institutional.

Comment 15:

Comments in addition to the specific information regarding H5.
The H5 permit documents were very complete. The Landau documents were full of numbers and facts, overwhelming in their complexity, almost as if the excessive details were designed to confuse. I was told several years ago that the permitting documents were supposed to be

understandable by the "average" person. The Ecology documents were much more comprehensible and easier to read.

Response to Comment 15:

Thank you for the feedback regarding Ecology's permitting documents. Ecology relies upon all the numbers and details provided by Landau to process the application. We take into consideration all this information to ensure the project complies with the state and federal regulations. Our goal is make sure our permitting documents are understandable, so that the public can meaningfully comment, track, and contribute to the permitting process.

Comment 16:

Quincy has an air monitor in place. Unfortunately, I do not know how to use it to access data, specifically data from the summer of 2021. The AQI was really high during the summer of 2021 with huge numbers. Most of that was caused by local wildfires but I would like to know how to use this website. Please give me a reference person in Ecology to teach me how to use the air monitor. I complained for many years that Quincy did not have a monitor and I thank you for installing this device. I apologize for not learning more about this useful tool.

Response to Comment 16:

You may contact Jenny Filipy (jenny.filipy@ecy.wa.gov) to set up an appointment to discuss how to use the monitoring website Interactive Maps (wa.gov).

Comment 17:

I am asking if Ecology is monitoring the water use by the Data Centers in Quincy. I know this is an air quality permit but I would like a reference to the person in Ecology to reach for answer my question. Water will become a big problem in the future and Washington residents must do everything necessary to preserve and protect existing water.

Response to Comment 17:

Please see response to Comment 1.

Comment 18:

I and others have observed that Ecology has a habit of asking for Comments during a busy time for citizens. This Comment period bracketed Thanksgiving. In the past, Comments were due right after Christmas. I trust this an accidental and not a purposeful attempt to discourage comments. Please, pay attention to the time periods requesting citizen Comments.

Response to Comment 18:

Comment periods must begin within 60 days after an application is determined complete. For 30-day comment periods, it is difficult to avoid any holidays at some point during the comment period. However, Ecology does not begin or end comment periods on a holiday. This particular comment period was 32 days (November 10 to December 12) and ended on a Sunday, allowing an extra weekend to submit comments.

Comment 19:

I am learning about the "StoryMapStorymap" and how to access this new feature of the Ecology website. Thank you for this additional program to share Ecology data.

I want to complement Jenny Filipiy for her help in assembling information for my comments. I want to thank Gary Palcisko for his continued service to the citizens of Washington.

Response to Comment 19:

Thank you for the feedback.

Appendix B – Federal Rule Applicability

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

Example: 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(b)(2)	Manufacturer emission standards	Specifies that 2007 model year and later emergency stationary CI ICE with a maximum engine power ≥ 37 kW and ≤ 2,237 KW be certified to the emission standards specified in 40 C.F.R. 89.112 and 40 C.F.R. 89.113.
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.