

Department of Environmental Quality
Air Quality Program

GENERAL
AIR CONTAMINANT DISCHARGE PERMIT
ASSESSMENT REPORT

ELECTRICAL POWER GENERATORS

SOURCE DESCRIPTION AND QUALIFICATION

1. General Permit AQGP-018 is designed to regulate air contaminant emissions from Electrical Power Production at stationary and portable facilities with up to 5 or 15 megawatts (see qualification conditions in the permit) combined generating capacity, powered by reciprocating internal combustion engines. Engine/Generator sets operated **only** during periods of loss of utility power (and brief periods for testing and maintenance) are generally exempt from the requirement to obtain a permit unless a permit category of OAR 340-216-8010 Table 1 otherwise applies to the source.
2. For the purposes of AQGP-018 and this report, the emissions units being referred to are the engines specifically, though in some cases the engine and generator are inherently connected. A generator will be rated in electrical units, like kilowatt (kW or kWm) or megawatt (MW or MWm). An engine will be rated in mechanical units like horsepower (HP).
3. For the purposes of AQGP-018 and this report, Electrical Power Production (OAR 340-216-8010 Table 1 Part B #27) means either or both of the following:
 - a. Supplying electrical power to a utility grid at any time; or
 - b. Producing electrical power for use by the owner or operator at any time other than during loss of utility power, routine maintenance, or readiness testing.
4. The facilities assigned to AQGP-018 have no other air pollution sources which require regulation beyond what is specified in the permit or have other pollution sources that qualify for General Permit Attachments issued pursuant to OAR 340-216-0062. Facilities eligible for assignment to the permit have not experienced recurring or serious compliance problems.
5. A General Air Contaminant Discharge Permit is a construction and operation permit issued by DEQ. According to DEQ's rules, a permit must be issued or assigned before crossing or exceeding an applicable permitting threshold under OAR 340-216-8010 Table 1. This can result in some owners or operators applying for, and obtaining, a permit before meeting or exceeding the criteria on Table 1.

- a. For the purposes of AQGP-018, this may mean that an owner or operator applies for assignment while operating emergency-only engines and expects to conduct electrical power generation in the future, or operates emergency backup generator sets rated at less than 500 kilowatts and expects to install additional units. An owner or operator may elect to apply for assignment to this permit in cases when they expect to produce power for themselves or the grid in the future.

ASSESSMENT OF EMISSIONS

6. Facilities assigned to AQGP-018 are sources of criteria pollutant (PM, PM₁₀, PM_{2.5}, SO₂, CO, NO_x, and VOC), Toxic Air Contaminant, and Hazardous Air Pollutant emissions.
7. DEQ has assessed the level of emissions of air pollutants from these activities. Facilities that comply with the requirements of this permit will have emission levels below the Significant Emission Rates listed in OAR 340-200-0020.
8. NAAQS Compliance: Sources assigned to this General ACDP typically operate their engines sporadically, approximately 10 hours/year. As DEQ is establishing a requirement to operate only one engine at a time for maintenance checks and readiness testing (M&R) in most cases, DEQ is confident that the permit will be protective of the NAAQS. This is based on previous modeling exercises conducted with other facilities that have more, and larger, engines on site.
9. Risk Screening. DEQ performs a generalized risk screening for some General ACDPs upon renewal. For the purposes of AQGP-018, DEQ staff looked at the information available for internal combustion engines, including source test data, annual reports, and completed risk assessments under the Cleaner Air Oregon program. DEQ determined that diesel particulate matter emissions from diesel-fired engines are the primary risk driver for acute cancer risk from this industry or activity.
 - a. DEQ assumed the following:
 - i. 5-meter stack height;
 - ii. ~1 Mw – ~1.75 Mw generator;
 - iii. Approximately 170 gallons per hour (gph); and
 - iv. 50 meters to exposure location (the default distance used with other risk screening exercises for General Permits).
 - b. To reduce the overall potential risk from this industry/activity under the AQGP-018, a fuel limit of 20,000 gallons/year of diesel fuel has been added to ensure sources remain below the ‘community outreach’ Risk Action Level under OAR 340-245-8010 Table 1. Based on available annual report data, sources do not utilize their emergency engines for enough hours to meet or exceed this fuel limit. The average fuel use per engine at a permitted site is 1,921 gallons per year (2022 data); while the ‘largest’ source currently assigned to this General ACDP has three engines. Therefore, a 20,000 gallons/year limit on fuel still allows the largest emitting source (~5,763 gallons/yr) in the category to increase hours of operation or fuel use substantially, if necessary.

- i. Other fuel types were provided alternative limits based on the BTU value of the fuel when compared to the 20,000 gallon/yr diesel fuel limit. The approximate BTU value of 20,000 gallons of diesel fuel is 2,593,118,000. DEQ used this BTU value to establish comparable limits for the other fuel types that may be used at a permitted facility.
 - ii. While this fuel limit is based on a diesel fuel limit derived from the Toxicity Reference Value of diesel particulate matter, there is minimal annual report data from permitted sources regarding other fuel usage. Due to this lack of actual use data, DEQ does not have enough information to determine the largest emitting source in the category (AQGP-18, OAR 340-216-8010 Table 1 Part B #27) to create a PSEL for these other fuels. Therefore, these BTU-equivalent fuel amounts were used to establish PTE and the PSEL.
10. AQGP-018 uses conservative generic emission factors rather than engine specific annual certification data from EPA to account for variables associated with fuel consumption rates (gallons per hour), engine load, fuel types, and engine size. These emission factors and limitations should not necessarily be used for source specific permits as more accurate information is likely available for specific equipment.
11. Emission factors are included below. All emission factors are from the ‘South Coast Air Quality Management District’ (SCAQMD) in California.

Pollutant	Natural Gas Emission Factor (lbs/mmscf)	LPG, Propane, and Butane Emission Factor (lbs/mgal)	Diesel Emission Factor (lbs/mgal)	Gasoline Emission Factor (lbs/mgal)
VOC	120.00	83.00	37.50	206.00
NO _x	4162.00	139.00	469.00	102.00
SO ₂	0.60	0.35	0.21	5.30
CO	323.00	129.00	102.00	3940.00
PM/PM ₁₀ /PM _{2.5}	10.00	5.00	5.025	6.50

- a. Calculated emissions were based on the amounts of each fuel type equivalent to a BTU value of 2,593,118,000 (20,000 gallons of diesel fuel). These are:
 - i. Natural Gas: 2.50 million standard cubic feet
 - ii. Gasoline: 21,000 gallons
 - iii. Propane: 29,000 gallons
 - iv. Butane: 20,000 gallons
 - v. Liquified Petroleum Gas (LPG): 29,000 gallons
 - b. Calculated emissions, using these fuel amounts are as follows (tons) per mmscf or mgal, as appropriate:

Pollutant	Diesel Emissions	Natural Gas Emissions	Gasoline Emissions	Propane Emissions	Butane Emissions	LPG Emissions
VOC	0.38	0.15	2.16	1.20	0.83	1.20
NO _x	4.69	5.20	1.07	2.02	1.39	2.02
SO ₂	0.00 ¹	0.00 ¹	0.06	0.01	0.00 ¹	0.01
CO	1.02	0.40	41.37	1.87	1.29	1.87
PM	0.34	0.01	0.07	0.07	0.05	0.07

- c. A permittee may elect to utilize any of these fuel types. As such, the PSEL was set based on the highest emission rate for each pollutant emitted at more than the de minimis levels defined in OAR chapter 340 division 200. This results in a PSEL for VOC, NO_x, and CO.

Pollutant	Limit	Units
NO _x	5	Tons per year
CO	41	
VOC	2	

The Significant Emission Rate (SER) pursuant to OAR chapter 340 division 200 for these pollutants are:

- Nitrogen Oxides (NO_x): 40 tons per year.
- Carbon Monoxide (CO): 100 tons per year.
- Ozone Precursors (Volatile Organic Compounds; VOC): 40 tons per year.

SPECIFIC AIR PROGRAM APPLICABILITY

- Owners and operators assigned to AQGP-018 are subject to the general visible emissions standards, nuisance requirements (control of fugitive dust and odors), particulate matter standards, and fuel sulfur limits in OAR Chapter 340, Divisions 208, 226, and 228. The permit contains requirements and limitations to ensure compliance with these standards.
- Owners and operators assigned to this permit are operating Reciprocating Internal Combustion Engines (RICE) which are classified as ‘emergency engines’ pursuant to 40 CFR part 63 subpart [ZZZZ](#) and/or 40 CFR part 60 subpart [IIII](#) or [JJJJ](#). These engines are allowed to operate an unlimited number of hours in the event of an emergency. Outside of emergencies, there is an annual limit of 100 hours of operation per engine for all other purposes.
- Although not currently a requirement under federal or state law, DEQ has determined that

¹ Rounded value. The value is non-zero, but equal to or less than 0.004

a requirement for some engines to install and operate an oxidation catalyst (catalyst) and diesel particulate filter (DPF) is appropriate for sources that opt to apply for assignment to this General ACDP. See the qualification conditions (1.1) for more information.

COMPLIANCE ASSURANCE

15. Permittees are required to maintain records of hours of operation of each engine for all purposes, the amount of fuel used, maintenance activities, notifications, the engine manufacturer's documentation, malfunctions and upset conditions, and complaints received at the facility. Most of these items are reported to DEQ annually or upon occurrence.
16. DEQ staff perform site inspections of the permitted facilities on a routine basis, and more frequently if complaints are received.

REVOCATION OF ASSIGNMENT

17. Any permittee that fails to demonstrate compliance or fails to conform to the requirements and limitations contained in the permit may have assignment to the General Permit revoked. The facility would then be subject to a more stringent level of permitting under a source-specific Simple or Standard ACDP.

PUBLIC NOTICE

18. General Air Contaminant Discharge Permits are incorporated into the Oregon Administrative Rules by reference and are part of the State Implementation Plan. As part of the General ACDP reissuance or modification process, the public was provided at least 30 days to submit written comments (11/14/2024 – 12/14/2024). DEQ reviewed all comments and modified the permit in response to the comments. The final permit will be issued after approval by the Air Quality Division Administrator.

AQGP-018r, electric power generators
3/6/2025; drd.



Oregon Department of Environmental Quality

General ACDP 18. Electric Power Generation Public Comments and DEQ Responses

March 2025

Background

The Oregon Department of Environmental Quality invited the public to submit written comments on the conditions of a proposed amended air quality general permit for electric power generators, known officially as the General Air Contaminant Discharge Permit 18 for electric power generation. The public comment period was open from 11/14/2024 through 12/14/2024.

Copies of the comments in full can be requested by reaching out to Dan DeFehr of DEQ's Air Quality Operations section by email at Daniel.DeFehr@deq.oregon.gov.

Public comment

DEQ received 10 written comments. The comments are summarized or stated below. Comments are grouped in sections with headings that begin with "Comments related to..." followed by the common topic. DEQ responses follow each comment or group of comments.

Comments Related to Portland General Electric's Dispatchable Standby Generator (DSG) Program

Comment 1: Russ Thomas, Director of Public Works, City of Newberg

Comment states general support of PGE's Dispatchable Standby Generator program. Commenter provided no specific recommendations to change or alter the language of the permit.

Comment 2: Chris Voss, Director, Multnomah County Office of Emergency Management

Comment states general support of PGE's Dispatchable Standby Generator program. Commenter provided no specific recommendations to change or alter the language of the permit.

Comment 3: Jeff Schorzman, Facilities Manager, Providence Newberg Medical Center

Comment states general support of PGE's Dispatchable Standby Generator program. Commenter provided no specific recommendations to change or alter the language of the permit.

DEQ Response (Comments 1, 2, & 3)

Thank you for providing comments on this permit action. DEQ did not change the draft permit in response to these comments.

Translation or other formats

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800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

Comments Related to Testing Multiple Engines Simultaneously

Comment 4: Ronald Wierenga, Deputy Director, Water Environmental Services

Condition 4.4e requires the permittee to operate one engine at a time for the purposes of maintenance checks and readiness testing. Please consider modifying Condition 4.4e to allow no more than two engines to operate concurrently for the purposes of maintenance checks and readiness testing. Readiness testing is essential to ensure the engines can be operated during an emergency or to provide power to the grid, including bringing more than one engine online at a given time. Operating engines concurrently during readiness testing ensures operational readiness, ensuring that the engines are ready to operate at any time at the expected load demands, which is critical.

Comment 5: Christopher Bozzini, Director of Environmental Services, Portland General Electric

To provide assurance that emergency backup systems will operate as needed, and to meet other fire, health and safety requirements, it is necessary to periodically test the generation system as a whole, inclusive of the engine, generator and the synchronization of the electrical interconnection systems. Testing of this nature ensures that, during an emergency (i.e., unplanned outage) at the site, the system will be able to function as designed and prevent loss of power...

DEQ Response (Comments 4 & 5)

Thank you for the comment. DEQ made changes to the draft permit in response to these comments.

Condition 4.4e (limit of maintenance checks and readiness testing to one engine at a time) was added to the proposed permit to ensure compliance with short term NAAQS limits. The limitation was intended to be a condition that was easy to comply with and conservatively protective of the NAAQS. Many facilities with engines have opted for this condition in the past several years to limit their Risk Action Level under the Cleaner Air Oregon program's Risk Assessment or to demonstrate compliance with short term NAAQS through modeling. DEQ added this condition assuming it would be reasonable for sources assigned to this General air permit to similarly do this.

Given the information provided by commenters, DEQ agrees that there are instances in which it is appropriate or necessary to test the readiness of multiple engines at the same time such that owners and operators are confident that their emergency power systems will function as intended during an actual emergency.

DEQ has changed the draft permit as follows:

The condition requiring testing of one engine at a time remains in place but includes a reference to the new Condition 4.4f (and 4.4f(i) and (ii)) which provides an avenue for owners and operators, when necessary, to operate multiple engines simultaneously. This includes an aggregated limit of 20 hours per year for simultaneous operations during maintenance and readiness testing.

Simultaneous operation recordkeeping and reporting requirements were also added under Conditions 7.1a(vii) and 8.3e.

Comment Related to Emission Factors & Annual Fuel Restrictions

Comment 6: Christopher Bozzini, Director of Environmental Services, Portland General Electric

PGE believes that DEQ should recalculate the proposed 20,000 gal/year fuel limitation for Tier 2 diesel fired engines taking into account emissions controls required by the General Permit and adjust the subsequent fuel limitations based on the British Thermal Unit content.

In the Review Report (Item 11), DEQ details the proposed emissions factors used to perform a generic risk assessment under Clean Air Oregon protocols. DEQ opted to use the proposed default emission factor for

particulate matter from the South Coast Air Quality Management District but has not applied the 85% control factor that SCAQMD uses when considering controlled emergency engines.

If DEQ opts not to revisit the annual fuel limitation based on the most applicable emission factors, they should, at a minimum, apply the 20,000-gallon per year limitation only to Tier 2 engines. Tier 4 engines, which are certified to meet more stringent emissions limitations, are appropriately permitted to be installed up to a higher site megawatt total. A 20,000-gallon per year limitation, if applied to a site with up to 15 megawatts of Tier 4 generators installed, would limit the annual operations significantly.

DEQ Response (Comments 6)

Thank you for the comment. DEQ made changes to the Assessment Report in response to this comment.

DEQ believes there may be a misunderstanding or unclear explanation in the Assessment Report regarding the Plant Site Emissions Limits, emission factors, risk screening Toxicity Reference Values, and the 20,000-gallon diesel fuel limit.

Item 11 of the Assessment Report clarifies:

- The risk screening found that a diesel fuel limit of 20,000 gallons per year was appropriate to keep facilities below the Risk Action Level of 'Community Outreach'. This limit to remain below the Community Outreach RAL was determined with estimations of risk from controlled engines. This RAL was used with other General ACDPs in the past several years and, for consistency among General ACDPs, DEQ used it here as well.
- Equivalent BTU values were determined for several other fuels based on the BTU value of 20,000 gallons of diesel.

DEQ did inadvertently use uncontrolled emission factors when using these RAL-based fuel limits to calculate Potential to Emit and Plant Site Emissions Limits. The PTE and PSEL calculations were revised to use the controlled emission factor (5.025 instead of 33.50 lbs/mgal) for diesel. This is appropriate, as the commenter points out, because the permit requires particulate matter controls or Tier 4 certified engines with built-in particulate matter controls in most instances.

The proposed permit did not include a particulate matter Plant Site Emissions Limit as the Potential to Emit for this pollutant was below the de minimis level defined in [Division 200](#), in accordance with the PSEL rules in [Division 222](#). The revised emission factor further reduces potential particulate matter emissions, and the permit still will not contain a PSEL for particulate matter.

Regarding the comment requesting a variable fuel limit based on Tier 2 or Tier 4 certified engines, DEQ reiterates that the fuel limit was established from a risk-based calculation of a controlled engine using the Toxicity Reference Value for Diesel Particulate Matter. A site with 15 MWs of Tier 4 engines is appropriately reflected in the risk screening that was conducted to establish the diesel fuel limit.

Comments Related to Qualification Conditions (1.1)

Comment 7: Christopher Bozzini, Director of Environmental Services, Portland General Electric

DEQ should clarify the language in this condition [1.1] to make more explicit the allowable mix of installed engines at a given site.

DEQ Response (Comment 7)

Thank you for the comment. DEQ understands that the request is to provide a further distinction within the qualification conditions such that an existing site with Tier 2 engines would be able to exceed the 5MWm qualification threshold if engines installed moving forward were Tier 4. That was not DEQ's intent with the

condition. The additional generation capacity allowed under this condition was intended to allow increased capacity for sites that have only Tier 4 diesel-fired engines used for the purposes of Condition 4.4c(ii).

An owner or operator may elect to retain existing Tier 2 engines as emergency-only and not used for 4.4c(ii) (i.e., PGE's DSG program). The same owner/operator could then install and use up to 15 MWm of generation from Tier 4 certified engines for the purposes of Condition 4.4.c(ii).

DEQ did not make changes to the draft permit in response to this comment.

Comment 8: Christopher Bozzini, Director of Environmental Services, Portland General Electric

DEQ has established, through a permitting process, a requirement to install costly [Diesel Particulate Filters] for otherwise federally allowable non-emergency purposes.

We urge a reconsideration of this requirement, or, alternatively, provide a mechanism within the permit for relief from the DPF installation requirement.

DEQ Response (Comments 8)

Thank you for your comment. DEQ has established conditions in the General ACDP #18 for electric power generation that the agency believes are appropriate for the activities covered by the General ACDP. Namely, owners and operators who elect to use their emergency backup power generation capabilities to provide power to the electric grid or to power their operations/activities are choosing to use their engines in excess of maintenance and readiness testing for emergency preparedness (Condition 4.4c(ii)). DEQ is essentially allowing the load serving entity to operate a virtual power plant.

While the emissions generated from typical dispatch hours of operation (purposes of Condition 4.4c(ii)) are minimal for each engine, the aggregate emissions are significant. These units are typically dispatched during extreme grid load demands which coincide with extreme heat or extreme cold. Such days are also typically the worst air quality days. The extreme heat day events are high ozone and high particulate pollution days. The emissions reductions in case of an emergency event where engines are used nonstop would have a substantive environmental benefit, which is a factor DEQ considered. While these emergency emissions are not, for the most part, regulated, diesel-fired power generation from stationary reciprocating internal combustion engines is. Oregon DEQ encourages the use of Tier 4 engines for such applications. DEQ believes the additional controls required to use emergency engines for these purposes is warranted. The appropriate cost effectiveness should be viewed as cost of constructing the aggregated generation capacity compared to cost of incremental controls required to qualify for this permit. Additionally, this permit enables voluntary participation. Engines that are not technically feasible for controls or are comparatively more costly to control do not have to be considered for participation programs covered by Condition 4.4c(ii).

DEQ did not make changes to the draft permit in response to this comment.

Comment Related to Alternative Fuels

Comment 9: Christopher Bozzini, Director of Environmental Services, Portland General Electric

The proposed General Permit contemplates multiple non-diesel fuel options but does not explicitly contemplate ethanol as a potential fuel sources. Work is ongoing by many engine manufacturers, and other groups (e.g., EPRI) to certify engines to operate on ethanol. DEQ should clarify that fuel types listed and contemplated in the proposed permit are not exclusive of other fuel types, provided engines meet EPA certification requirements.

DEQ Response (Comment 9)

Thank you for the comment. DEQ provides additional fuel allowances in Condition 2.6d provided the alternative fuels are allowed by the federal regulations that DEQ is implementing within the General permit. If a permittee proposes to use a fuel that is compliant with NESHAP ZZZZ, NSPS JJJJ, or NSPS IIII, as applicable, Condition 2.6d also allows that fuel as long as the fuel does not violate other provisions of Condition 2.6.

DEQ did not make changes to the draft permit in response to this comment.

Comment Related to Reassignment Application Condition 9.2

Comment 10: Christopher Bozzini, Director of Environmental Services, Portland General Electric

Update Condition 9.2 to allow sources 60 days before expiration with which to submit a reassignment application.

DEQ Response (Comment 10)

The timeline established in Condition 9.2 aligns with current Oregon Administrative Rules. An application is due within the 30 days prior to expiration (OAR 340-216-0040(2)(c)). DEQ does not have discretion, within a General ACDP, to deviate from explicit rule requirements. A permittee may elect to submit a reassignment application earlier than the 30 days before expiration. In many cases, a reassignment application received more than 30 days, within reason, before expiration will not be denied.

DEQ did not make changes to the draft permit in response to this comment.

Contact

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Non-discrimination statement

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