Air Quality Program Policy

Guidance/Policy Title: **AQP-POL-2025 Second Tier Review for Emergency Generators greater than 2000 bhp**
Date initially issued**:** **June 20, 2025**
Date last revised**:** NA

Authority: Chapters 173-400 and 173-460 WAC

Policy on second tier review health impact assessment for emergency generators (greater than 2000 bhp)

Purpose:

This policy directs Ecology staff to avoid duplicate health risk considerations for three toxic air pollutants (TAPs), that are also considered criteria air pollutants, when permitting emergency backup generators. This policy provides streamlined permitting for the permittee while also ensuring public health protection.

The intent of this policy is to provide consistency across our regions.

Applicability:

This policy applies to new source review of diesel-powered emergency backup generators in Ecology's air quality jurisdiction with:

- Cumulative brake horsepower (bhp) rating greater than 2000 bhp, and
- Controls that meet Tier IV emission standards (40CFR1039 Subpart B, Table 1 of 1039.101).

The policy applies to the consideration of health impacts of the following three TAPs: carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2). This policy does not allow operation of emergency backup generators to produce power for demand-response arrangements, peak shaving arrangements, nor to provide power as part of a financial arrangement with another entity, nor to supply power to the grid.

General Assumptions:

1. An applicant proposing increased emissions from emergency engines that demonstrates compliance with national ambient air quality standards (NAAQS) for carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2) does not need to consider the impacts of those same pollutants under WAC 173-460-090 second tier toxics review.

    - Beginning in 2009, Ecology has considered several criteria pollutants as toxic air pollutants under Chapter 173-460 WAC. Since then, we have reviewed several emergency engine projects. These engines typically emit CO, SO_2, and NO_2. which have been considered under two separate rules:

        - WAC 173-400-113 – new sources in attainment and unclassifiable areas – review for compliance with regulations. This rule section includes a requirement to demonstrate that allowable emissions from a proposed new source or the increase in emissions from a proposed modification will not cause or contribute to a violation of any ambient air quality standard.

        - WAC 173-460-080 - First tier review - This rule section includes a requirement to demonstrate that a new or modified toxic air pollutant source must include an acceptable source impact level (ASIL) analysis for each TAP emitted by the new or modified emission units with an emission increase greater than the de minimis emission levels specified in WAC 173-460-150.

    - Based on our experiences, applicants have been able to demonstrate that criteria pollutant ambient impacts meet the NAAQS assuming permit conditions stipulating how often multiple engines can operate at one time are met. Additionally, worst-case emissions of SO_2 and CO have met respective ASILs. Worst-case emissions during line power disruption scenarios, however, have the potential to cause ambient NO_2 impacts that trigger second tier review under WAC 173-460-090.

        - We considered these situations at least 18 times under second tier review and acknowledged that project-related NO_2 impacts (Table 1) and facility-wide or cumulative NO_2 impacts (Table 2) may occasionally exceed the acceptable source impact level (ASIL). In these cases, we determined the noncancer hazard acceptable because there has generally been a low probability of a line power disruption coinciding with worst-case dispersion conditions. Therefore, impacts above the ASIL are not likely to occur frequently or be sustained for long periods.

Furthermore, areas most likely to be impacted by nitrogen dioxide emissions at levels of concern (i.e., a concentration greater than the ASIL) are typically near or within the facility boundary (e.g., Cyrus One). People are less likely to be present at these locations compared to residences, so the probability someone is exposed to a level of concern is low.

Table 1. Recurrence interval (years) in which project-related impacts plus background NO_2 levels potentially exceed ASIL, assuming project-related engines operate at worst-case loads during 3 hours of line power outage per year

Project	# Engines	Primary Control Level	MIBR	MIRR	MICR	MFIR	School
Yahoo! Phase 5 (2011)	10	Tier II	8	585	16	–	1462
Sabey IGQ (2011)	44	Tier II	35	Never	45	–	
Yahoo! Genesis (2015)	25	Tier II	731	2086	311	–	585
Vantage (2016)	17	Tier II	10	28	41	–	–
Oxford [MWH 01-02] (2016)	45	Tier IV	1623	Never	Never	–	–
Sabey IGC II (2018)	22	Tier II	188	293	188	–	–
CyrusOne (2018)	42	Tier II	8	58	8	2	–
MWH 03-04-05-06 (2018)	72	Tier IV	3650	3650	4867	103	–
APL (2020)	11	Tier IV	2920	3650	2920	15	–
Sabey IGQ Bldg. D&E (2020)	32	Tier II	38	Never	51	29	–
H5 (2021)	12	Tier II	51	Never	51	29	–
Vantage (2021)	44	Tier IV	3	348	3		–
EAT02 (2021)	21	Tier II	99	385	99	2	–
EAT03-04-05 (2022)	63	Tier IV	75	58	75	6	–
Sabey IGQ Bldg. E expansion (2022)	59	Tier II	16	20	166	–	–
EAT 12-13-14 (2023)	65	Tier IV	281	281	69	2	–
EAT 06 and 09 (2024)	22	Tier IV	1328	2920	1328	812	–
MWH 08 (2024)	34	Tier IV	1460	Never	1460	46	–

MIBR – Maximally impacted boundary receptor
MIRR – Maximally impacted residential receptor
MICR – Maximally impacted commercial receptor
MFIR – Most frequently impacted receptor

Table 2. Recurrence interval (years) in which cumulative data center-related impacts plus background NO_2 levels potentially exceed ASIL, assuming the entire facility's or several facilities' engines operate at worst-case loads during 3 hours of line power outage per year

Project	Cumulative impact sources	MIBR	MIRR	MICR	MFIR	School
Yahoo! Genesis (2015)	East Quincy Data Centers	62	42	17	–	87
Vantage (2016)	East Quincy Data Centers	9	19	36	–	–
CyrusOne (2018)	West Quincy Data Centers	5	22	5	2	–
EAT 06 and 09 (2024)	EAT - entire facility	86	45	86	67	–
MWH 08 (2024)	MWH - entire facility	457	Never	457	5	–

MIBR – Maximally impacted boundary receptor relevant to project
MIRR – Maximally impacted residential receptor relevant to project
MICR – Maximally impacted commercial receptor relevant to project
MFIR – Most frequently impacted receptor relevant to project

Public Health Considerations

1. EPA develops the primary NAAQS with the intent of providing public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. The NAAQS are not required to be set at a zero-risk level, but they are designed to reduce risk with an "adequate margin of safety."

    - In developing the short-term NAAQS for NO_2, EPA judged that the level (100 ppb) and form (the 98th percentile of the annual distribution of daily maximum 1-hour NO_2 concentrations, averaged over 3 years) provides appropriate public health protection while providing regulatory stability(83 FR 17226 April 18, 2018).[1]

    - The 1-hour standard for SO_2 is set at a level of 75 parts per billion (ppb) and a form consisting of the 3-year average of the annual 99th percentile of daily maximum 1-hour average SO_2 concentrations. EPA judged that this standard provides the requisite protection for at-risk populations, such as people with

[1] https://www.federalregister.gov/documents/2018/04/18/2018-07741/review-of-the-primary-national-ambient-air-quality-standards-for-oxides-of-nitrogen

asthma, against the array of adverse respiratory health effects related to short-term SO_2 exposures, including those as short as 5 minutes (84 FR 9866 March 18, 2019).[2]

- In EPA's 2011 review of the CO NAAQS, they elected to keep the existing standards set at 9 parts per million (ppm), as an 8-hour average, and 35 ppm, as a 1-hour average, neither to be exceeded more than once per year. They concluded that these standards provide the requisite public health protection with an adequate margin of safety from effects of ambient CO (76 FR 54294 August 31, 2011).[3]

2. Ecology's ASILs are screening levels at or below which ambient impacts are considered acceptable. If the emissions of a pollutant are estimated to cause an ambient impact that exceeds the ASIL, an applicant submits a refined health impact analysis under second tier review. Under second tier review, Ecology determines whether the cancer risk or noncancer hazards meet acceptability criteria.

    - Because the potential impacts to public health from exposure to CO, SO_2, and NO_2 are factored into establishing NAAQS, Ecology would not recommend against approval of new emergency engine projects based on second tier review of CO, NO_2, and SO_2 ambient impacts if the applicant demonstrates compliance with the NAAQS. Therefore, the review of these criteria pollutants under WAC 173-460-090 is duplicative and not likely to provide additional benefit.

3. Table 3 shows a comparison of NAAQS levels and ASILs for carbon monoxide, nitrogen dioxide, and sulfur dioxide. In the cases of nitrogen dioxide and sulfur dioxide, the NAAQs level is lower than the ASIL.

[2] https://www.federalregister.gov/documents/2019/03/18/2019-03855/review-of-the-primary-national-ambient-air-quality-standards-for-sulfur-oxides
[3] https://www.gpo.gov/fdsys/pkg/FR-2011-08-31/pdf/2011-21359.pdf

Table 3. Carbon monoxide, sulfur dioxide, and nitrogen dioxide NAAQS compared to ASILs

Pollutant	Averaging Time	NAAQS Level	NAAQS Form	WA TAP ASIL
Carbon monoxide	8-hr	9 ppm	Maximum, not to be exceeded more than once in a year	NA
Carbon monoxide	1-hr	35 ppm	Maximum, not to be exceeded more than once in a year	23,000 μg/m^3 [20 ppm]
Nitrogen dioxide	Annual	53 ppb	Annual Mean	NA
Nitrogen dioxide	1-hr	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	470 μg/m^3 [250 ppb]
Sulfur dioxide	1-hr	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	660 μg/m^3 [250 ppb]

Deviation from this Policy:

There may be situations where Ecology management or toxicologist recommend deviating from this policy such as, but not limited to, instances where line power is not reliable, etc.

Policy Document History:

This policy rescinds all previous policy documents related to second tier toxics review for gensets (engine and generator) with cumulative brake horse rating (bhp) greater than 2000 bhp. For projects with cumulative brake horse rating (bhp) rating greater than 500 bhp up to and including 2000 bhp, see Ecology's guidance titled: Guidance on Permitting Emergency Generators (>500 – 2000 bhp) on file with Ecology (public records request).[4]

[4] https://ecology.wa.gov/footer-pages/public-records-requests

Approval Authority:

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[5] https://ecology.wa.gov/About-us/Accountability-transparency/Our-website/Accessibility