

PGE requests 8-fold increase in smog-forming pollution at Carty fracked gas-fired power plant in Boardman

DEQ seeks public comment on a proposed modification to PGE’s Air Contaminant Discharge Permit (ACDP) for the company’s coal-fired steam boiler and a natural gas-fired combined cycle turbine, referred to as the Carty Plant. According to DEQ’s public notice, PGE applied for the proposed permit modification to update the carbon monoxide and volatile organic compound (VOC) emission factors to “reflect the manufacturer’s estimates of emissions during startup.” The pollution changes are driven by the Carty Plant - not the coal plant - although the two facilities operate under a single air pollution permit.

Huge Pollution Increase - PGE proposes a massive increase in air pollution from carbon monoxide and volatile organic compound emissions. PGE seeks to increase carbon monoxide pollution by 324%, and VOCs by 808%.

Pollutant	Current Pollution Limit for Carty Plant	Proposed Pollution From Carty Plant	Percentage Increase
Carbon Monoxide (CO)	99 tons/year ¹	321 tons/year ²	324
Volatile Organic Compounds (VOCs)	24 tons/year ³	194 tons/year ⁴	808

The specific reasons for PGE’s proposed increase in pollution deserve more investigation. PGE and its manufacturer failed to account for these emissions when the company obtained its initial permit for the recently completed Carty natural gas-fired power plant. PGE claims that it received new information after construction from its manufacturer about pollution during startup and shutdown. Additionally, PGE may be operating its facility differently than originally planned. PGE planned for Carty to be a baseload 450 MW power plant. Yet, the plant is now anticipating frequent startup and shutdowns, a major contributor to VOC pollution. Operating Carty more like a peaker may be contributing to the pollution.

¹ DEQ’s public notice states that the current CO pollution limit for the overall site is 8980 tons per year. See Public Notice, P. 3. 8881 tons/year are attributable to the coal-fired power plant, according to DEQ’s Permit Review Report, p. 6. Accordingly, 99 tons/year attributable to the Carty Plant under current limits.

² See Permit Review Report, Attachment A, Emission Detail Sheets (p. 26).

³ DEQ’s public notice states that the current VOC annual pollution limit is 116 tons per year. See Public Notice, p. 3. 92 tons per year are attributable to the Boardman coal plant, according to the Permit Review Report, Attachment A, Emission Detail Sheets. The remaining 24 tons per year are attributable to the Carty Generating Station under current limits.

⁴ See DEQ’s Permit Review Report, Attachment A, Emission Detail Sheets (p. 26).

Key Issues of Concern - The underlying public health, environmental, technological, and legal implications of PGE's proposal are complex. The following are a few of the key issues we may address through comments and public testimony:

- ***Public health impacts of increased CO and VOC pollution.*** VOCs are a precursor to low-level ozone formation (smog). VOCs combine with NO_x and sunlight to produce low-level ozone. PGE proposes to increase pollution in an area where DEQ frequently issues air stagnation advisories and alerts.⁵ Low-level ozone is a powerful respiratory irritant.⁶ When ozone spikes on hot summer days, emergency room visits and hospital admissions also rise for respiratory issues including asthma exacerbation and increased severity of chronic obstructive pulmonary disease (COPD) symptoms.⁷ Ozone events could be triggered by the release of large amounts of VOCs during a period when sunlight is strong. The addition of a major VOC source will make them more likely.
- ***Regional haze and smog.*** DEQ's analysis fails to adequately assess impacts to the Gorge National Scenic Area of smog-forming pollution, already one of the most polluted airsheds in the western United States.
- ***Inadequate monitoring and reporting.*** According to DEQ, "The permittee is required to calculate facility-wide emissions and submit an emissions report semi-annually. Onsite inspections will be conducted to assure compliance with emission limitations." Data included in the Review Report ends in 2014.⁸ DEQ must provide results of any monitoring that has already occurred at the Carty Plant and not rely on stale information for the purpose of assessing PGE's proposed pollution increase.
- ***Increased greenhouse gas pollution.*** PGE should be limited in how often it can operate the Carty Plant because it produces more carbon monoxide and VOCs than originally anticipated. If so, increasing the pollution limit will increase the operation of the Carty Plant, resulting in higher levels of greenhouse gas pollution than if the plant were held to current limits for carbon monoxide and VOCs.
- ***Integrity of Oregon's pollution standards.*** PGE obtained a site certificate from Oregon EFSC and an air pollution permit from DEQ based on highly flawed information about the pollution from its facility and the manner in which it will operate. DEQ would be setting a disturbing precedent by allowing PGE to dramatically increase pollution levels

⁵ Oregon DEQ, Air Pollution Advisories, <http://www.deq.state.or.us/aq/advisories/winter.htm>; Air stagnation advisories issued for northern, southern Oregon, The Oregonian (Jan. 27, 2017), http://www.oregonlive.com/weather/index.ssf/2017/01/agencies_issues_air_stagnation.html.

⁶ U.S. EPA. 2016. <https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population>

⁷ Id.

⁸ Permit Review Report. P. 19 of 40.

so soon after the plant has gone into operation. Indeed, PGE asked for these increases within two months of putting the plant into operation in 2016.

- ***Implications for coal plant.*** PGE has considered repowering its coal-fired power plant with biomass feedstock. It is unclear whether an increase in the overall pollution level for the site as a whole (the PSEL is set for both the coal-fired and gas-fired power plants) could change the future use of the coal-fired facility. DEQ should identify whether any changes are expected at the Boardman coal-fired plant. DEQ should not permit any changes that could be used to prolong pollution from this facility.
- ***DEQ fails to assess all options for holding PGE to lower pollution levels.*** DEQ proposes hourly limits on pollution during startup and shutdown events. These startup and shutdown activities are the main driver of pollution at the Carty Plant. PGE's failure to account for these emissions before beginning operations should not be used as a justification for approving a major pollution increase after-the-fact. Specifically, DEQ should:
 - Hold PGE to current annual pollution limits for VOCs and carbon monoxide.
 - Limit startup and shutdown events. DEQ proposes an hourly limit during startup and shutdown.⁹ But these hourly emissions still result in a massive annual increase in smog-forming pollution, based on PGE's expected operations. This is unacceptable.
 - Cold startups are particularly polluting events, according to the emissions summary for the Carty Plant (see tables below).¹⁰ If these events are pushing PGE over its pollution limit, then PGE should limit cold startups.
 - Investigate additional Best Available Control Technologies (BACT) that could reduce VOC and carbon monoxide pollution, including restrictions on how PGE operates its facility.
 - Study the impact of smog-forming pollution on the Columbia River Gorge Scenic Area and nearby communities.
- ***DEQ must enforce the current permit.*** Based on information in the new draft permit, PGE is at serious risk of violating its current annual pollution limits. For example, if the Carty Plant undergoes a shutdown and cold startup roughly 13 times during the year, the resulting VOC pollution would exceed the current 24 tons/year allowed for the Carty Plant in the overall annual limit of 116 tons/year for the entire plant. DEQ must provide a clear assessment of whether the Carty Plant is meeting its current pollution limits and the action it plans to take if PGE is violating the permit.

More Information – Contact Dan Serres, Conservation Director, Columbia Riverkeeper 503.890.2441 – dan@columbiariverkeeper.org

⁹ Draft Permit. P. 6.

¹⁰ Permit Review Report. See p. 34, Attachment A of Permit Review Report.

Tables Showing New Proposed Pollution Levels (Permit Review Report, Attachment A)

TOTAL EMISSIONS

	PM	PM₁₀	PM_{2.5}	SO₂	NO_x	CO	VOC	H₂SO₄	GHG	Pb
Boardman Plant - main boiler	1,014.9	1,014.9	787.0	8,500	5835.9	8880.7	92.0	-- ^a	5,477,556	0.17
Boardman Plant – auxiliary boiler	0.05	0.03	0.01	1.8	0.5	0.1	0	0	564.5	0
Boardman Plant - fugitives	27.9	13.3	2.3							
Boardman Plant - Total	1,042.9	1,028.2	789.2	8,501.8	5,836.4	8,880.8	92.0	-- ^a	5,478,121	0.17
Carty Plant - combustion turbine	56.6	56.6	56.6	22.6	124.0	320.2	193.6	16.1	1,315,111	
Carty Plant - auxiliary boiler	0.02	0.02	0.02	0.03	0.5	0.8	0.05		1,136	
Carty Plant - fire water pump	0.003	0.003	0.003	0.016	0.244	0.053	0.019		9.0	
Carty Plant - cooling tower	1.1	1.1	1.1							
Circuit Breaker –SF ₆ (Carty)									2.8	
Circuit Breaker – SF ₆ (Grassland)									231.8	
Carty Plant - Total	57.7	57.7	57.7	22.7	124.7	321.1	193.7	16.1	1,317,849	
Totals	1100.6	1085.9	846.9	8524.5	5961.1	9201.9	285.7	16.1	6,795,969	0.17

a. All sulfur from main boiler included in SO₂ emissions.

CARTY COMBUSTION TURBINE

Annual Hours of Operation	7840 hr/yr (920 hours of outage)
Average Hourly Heat Input	2868 MMBtu/hr
Hourly Gas Usage	2.81 MMcf/hr
Cold Startups (80)	273.6 hr/yr
Hot Startups (80)	104 hr/yr
Shutdowns (160)	80 hr/yr

Pollutant	Process or Throughput		Emission Factor		Emissions (tons/yr)
	Rate	Units	Rate	Units	
PM/PM₁₀/PM_{2.5}	22,485,120	MMBtu/yr	5.03E-03	lb/MMBtu	56.6
CO - Normal Operation	21,172,723	MMBtu/yr	7.14E-03	lb/MMBtu	75.6
- Cold Startup	273.6	hr/yr	1,194	lb/hr	163.3
- Hot Startup	104.0	hr/yr	774	lb/hr	40.3
- Shutdown	80.0	hr/yr	1,025.7	lb/hr	41.0
Total CO					320.2
NO _x - Normal Operation	21,172,723	MMBtu/yr	7.37E-03	lb/MMBtu	78.0
- Cold Startup	273.6	hr/yr	145.6	lb/hr	19.9
- Hot Startup	104.0	hr/yr	237.5	lb/hr	12.4
- Shutdown	80.0	hr/yr	344	lb/hr	13.8
Total NO_x					124.0
SO₂	22,030	MMcf/yr	3.0	lb/MMcf	22.6
VOC - Normal Operation	21,172,723	MMBtu/yr	2.10E-03	lb/MMBtu	22.2
- Cold Startup	273.6	hr/yr	1,003.84	lb/hr	137.3
- Hot Startup	104.0	hr/yr	412.15	lb/hr	21.4
- Shutdown	80.0	hr/yr	315.2	lb/hr	12.6
Total VOC					193.6
H₂SO₄	22,030	MMcf/yr	1.46	lb/MMcf	16.1
GHG - CO ₂	22,485,120	MMBtu/yr	117.0	lb/MMBtu	1,315,111
- CH ₄ (CO ₂ e)	22,485,120	MMBtu/yr	5.51E-02	lb/MMBtu	619.6
- N ₂ O (CO ₂ e)	22,485,120	MMBtu/yr	6.57E-02	lb/MMBtu	738.6
Carty-SF ₆	1.21E-04	ton/yr	22,800	lb CO ₂ e/lb SF ₆	2.8
Grassland – SF ₆	1.02E-02	ton/yr	22,800	lb CO ₂ e/lb SF ₆	231.8
Total GHG (CO₂e)					1,316,703.4