

2021 Greenhouse Gas Inventory

Puget Sound Energy

Description: Puget Sound Energy (PSE) serves more than 1.1 million electric customers and more than 900,000 natural gas customers in 10 counties. Our service territory includes the vibrant Puget Sound area and covers more than 6,000 square miles, stretching from south Puget Sound to the Canadian border, and from central Washington's Kittitas Valley west to the Kitsap Peninsula. PSE's primary sources of direct GHG emissions are due to its role as a power provider and its natural gas operations, including pipeline leaks, gas storage, fugitive emissions, and consumption by the end-user.

Industry: 22 – Utilities

Address: 355 110th Avenue NE
Bellevue, WA 98004

Reporting Information

Emissions Year: January 1, 2021 – December 31, 2021

Reporting Protocol: General Reporting Protocol 3.0 and associated updated and clarifications

Additional Reporting Standards: None

Greenhouse Gases (GHGs): Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and sulfur hexafluoride (SF₆)¹

Global Warming Potential (GWP) Standard: AR4²

Consolidation Methodology: Operational Control and Equity Share

North American Industry Classification System (NAIC) Codes: 221112 (Fossil Fuel Electric Power Generation) and 221210 (Natural Gas Distribution)

Geography: Washington State

PSE Power Generation Fleet Information

Facility Name	Resource Type	Operational Control	Equity Share
Lower Baker River	Hydro	X	100%
Snoqualmie Falls	Hydro	X	100%
Upper Baker River	Hydro	X	100%
Hopkins Ridge	Wind	X	100%
Lower Snake River	Wind	X	100%
Wild Horse	Wind	X	100%
Encogen	Natural Gas/Oil	X	100%
Ferndale	Natural Gas/Oil	X	100%
Frederickson	Natural Gas/Oil	X	100%
Fredonia	Natural Gas/Oil	X	100%
Whitehorn	Natural Gas/Oil	X	100%
Frederickson (Freddy) Unit 1	Natural Gas		49.85%
Goldendale	Natural Gas	X	100%
Mint Farm	Natural Gas	X	100%
Sumas	Natural Gas	X	100%
Crystal Mountain	Oil	X	100%
Colstrip	Coal		25%

¹ The remaining gases, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF₃), are not currently accounted for in the inventory due to a lack of robust data collection on usage at this time.

² Specific GWP values are listed in Table A-4.

Reporting Boundary

PSE inventories its Scope 1, 2, and 3 emissions as follows:

- Scope 1: direct emissions from PSE-owned facilities
- Scope 2: indirect emissions associated with purchased energy for PSE use
- Scope 3: indirect emissions attributed to PSE's activities that are not owned or controlled by PSE

PSE's Scope 1 and 2 emissions are dominated by CO₂ produced during electricity generation. The majority of PSE's Scope 3 emissions are derived from natural gas sales to end-users and electricity purchased from other generators to serve our customer load.

The attached table summarizes PSE's GHG inventory by scope and source. The emission percentages indicated in this table are the percentage of the total emissions of the particular GHG within each scope. Emission intensity is calculated based on PSE's total electric operations, including Scope 1 emissions from PSE-generated electricity and Scope 3 from generation of purchased electricity from firm and non-firm contracts.³ Emissions are adjusted for renewable energy credits bought and sold.

Scope 3 Indirect Emissions Disclosure

Scope 3 emissions from firm contract purchased electricity were calculated using the amount of electricity purchased, broken down by the electricity generation technology (e.g., coal, natural gas, or petroleum). For all firm Bonneville Power Administration transactions and "non-unit-specific" purchases, PSE defaults to the Washington Department of Ecology emissions intensity metric according to WAC 480-109-300(4).

Line losses associated with the electricity purchased to serve PSE customer load were calculated based on net electricity purchased and PSE's calculated percent loss for all electricity used to serve load. For the 2021 inventory, line loss data was calculated from PSE's 2021 Inventory to be 5% of total purchased power.⁴

Natural gas distributed to PSE customers is considered "Direct Use Phase Emissions" and, therefore, emissions can be calculated with the same methodology that is used for combustion emissions.

Exclusion of Miniscule Sources

PSE has not included refrigerants in its GHG inventory because the associated emissions are expected to be insignificant compared to the total Scope 1 and 2 emissions. Refrigerants are used in office spaces and vehicles for cooling and fire suppression, and the associated emissions are judged to be insignificant in comparison with those associated with electricity generation.

³ Emissions and emission rates include transmission losses.

⁴ GHG Protocol, Category 3: Fuel- and Energy-Related Activities Not Included in Scope 1 or Scope 2

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Emission Source	Energy Amount (UOM)	Emissions				Emissions in CO ₂ Equivalents (CO ₂ e) - 100-Year Timeframe (metric tons CO ₂ e)										
		CO ₂	CH ₄	N ₂ O	SF ₆	CO ₂		CH ₄		N ₂ O		SF ₆		Total		
		(metric ton)	(metric ton)	(metric ton)	(metric ton)	(metric ton)	(%) ⁽²⁾	(metric ton)	(%) ⁽²⁾	(metric ton)	(%) ⁽²⁾	(metric ton)	(%) ⁽²⁾	(metric ton)	(%) ⁽²⁾	
Scope I																
<i>Electric Operations</i>																
Hydro	957,818,460 kWh	0	0.0	0.000	0	0	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	
Coal	2,576,702,000 kWh	2,488,604	290.0	42.181	0	2,488,604	43.1%	7,250	0.1%	12,570.0	0.2%	0	0.0%	2,508,424	43.5%	
Natural Gas/ Oil	7,438,031,455 kWh	3,167,733	56.5	5.655	0	3,167,733	54.9%	1,413	0.02%	1,685.3	0.03%	0	0.0%	3,170,831	55.0%	
Wind	2,073,787,240 kWh	0	0.0	0.000	0	0	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	
Electrical Transmission and Distribution Equipment	0 kWh	0	0.0	0.000	0.468	0	0.0%	0	0.0%	0.0	0.0%	10,680	0.2%	10,680	0.2%	
Total Scope I - PSE-owned Electric Operations	13,046,339,155 kWh	5,656,337	346.5	47.837	0.468	5,656,337	98.1%	8,663	0.2%	14,255.4	0.2%	10,680	0.2%	5,689,936	98.7%	
<i>Natural Gas Operations</i>																
Distribution	1,296,344,730 thm	1,296	2530.7	0.002	0	1,296	0.02%	63,268	1.1%	0.7	0.00001%	0	0.0%	64,565	1.1%	
Underground Storage	--	3,787	31.1	0.007	0	3,787	0.1%	777	0.01%	2.1	0.00004%	0	0.0%	4,566	0.1%	
Total Scope I - PSE-owned Natural Gas Operations	1,296,344,730 thm	5,083	2561.8	0.009	0	5,083	0.1%	64,045	1.1%	2.8	0.00005%	0	0.0%	69,131	1.2%	
Total Scope I - PSE-owned Mobile Combustion	--	8,534	0.9	0.1	0	8,534	0.1%	22	0.0%	24	0.0004%	0	0.0%	8,579	0.1%	
Total Scope I		5,669,954	2,909	48	0	5,669,954	98.3%	72,729	1.3%	14,282	0.2%	10,680	0.2%	5,767,646	100.0%	
Scope II																
<i>Location-Based⁽²⁾</i>																
Purchased Heating	65,104 thm	460	0.043	0.006	0	460	7.6%	1.1	0.02%	1.8	0.03%	0	0.0%	462	7.6%	
Purchased Electricity	20,406 kWh	5,553	0.518	0.074	0	5,553	91.8%	13.0	0.2%	22.1	0.4%	0	0.0%	5,588	92.4%	
Total Scope II - Location-Based Indirect Emissions		6,013	0.561	0.080	0	6,013	99.4%	14.0	0.2%	23.9	0.4%	0	0.0%	6,051	100.0%	
<i>Market-Based⁽³⁾</i>																
Purchased Heating	65,104 thm	460	0.043	0.006	0	460	7.6%	1.1	0.02%	1.8	0.03%	0	0.0%	462	7.6%	
Purchased Electricity	20,406 kWh	5,553	0.518	0.074	0	5,553	91.8%	13.0	0.2%	22.1	0.4%	0	0.0%	5,588	92.4%	
Total Scope II - Market-Based Indirect Emissions		6,013	0.561	0.080	0	6,013	99.4%	14.0	0.2%	23.9	0.4%	0	0.0%	6,051	100.0%	
Scope III																
<i>Electric Operations</i>																
Firm Contracts ⁽⁴⁾	7,772,179,353 kWh	2,917,593	296.4	43.117	0	2,917,593	30.3%	7,411	0.08%	12,848.8	0.1%	0	0.0%	2,937,852	30.5%	
Non-Firm Contracts ⁽⁴⁾	1,123,056,874 kWh	507,180	0.0	0.000	0	507,180	5.3%	0	0.0%	0.0	0.0%	0	0.0%	507,180	5.3%	
Total Scope III - Electricity Purchases	8,895,236,227 kWh	3,424,773	296.4	43.117	0	3,424,773	35.6%	7,411	0.08%	12,848.8	0.1%	0	0.0%	3,445,032	35.8%	
<i>Natural Gas Supply</i>																
Supply to End-Users	1,164,379,624 thm	6,178,198	0.0	0.000	0	6,178,198	64.2%	0	0.0%	0.0	0.0%	0	0.0%	6,178,198	64.2%	
Total Scope III - Natural Gas Supply	1,164,379,624 thm	6,178,198	0.0	0.000	0	6,178,198	64.2%	0	0.0%	0.0	0.0%	0	0.0%	6,178,198	64.2%	
Total Scope III		9,602,971	296.4	43.117	0	9,602,971	99.8%	7,411	0.08%	12,848.8	0.1%	0	0.0%	9,623,230	100.0%	
Total Electric Operations⁽⁵⁾	21,941,575,382 kWh													9,124,288	59.3%	0.917 lb/kWh

Data Source:
 [1] EPA GHG MRR Subpart A (40 CFR 98), Table A-1
 [2] 2020 eGrid subregion NWPP

Note(s):
 (1) NC = Not calculated
 (2) Percentage of emissions in CO₂e in scope
 (3) Assuming grid average
 (4) Includes transmission losses
 (5) Refers to electric operations from Scope I and Scope III without electrical transmission and distribution equipment

Time Horizon	CO ₂	CH ₄	N ₂ O	SF ₆
100 years	1	25	298	22,800

CO ₂	CH ₄	N ₂ O
599.97	0.056	0.008