

2021 Greenhouse Gas Inventory



Description: Puget Sound Energy (PSE) serves more than 1.2 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 an electric 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

Issued: Jan 7, 2025 *Updated to include emission intensity for residual mix.*

Reporting Information

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

Reporting Protocol: GHG Protocol

Additional Reporting Standards: The Climate Registry's General Reporting Protocol 3.0

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

Global Warming Potential (GWP) Standard: AR4²

Consolidation Methodology: 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	Equity Share
Lower Baker River	Hydro	100%
Snoqualmie Falls	Hydro	100%
Upper Baker River	Hydro	100%
Hopkins Ridge	Wind	100%
Lower Snake River	Wind	100%
Wild Horse	Wind and Solar	100%
Encogen	Natural Gas/Oil	100%
Ferndale	Natural Gas/Oil	100%
Frederickson	Natural Gas/Oil	100%
Fredonia	Natural Gas/Oil	100%
Whitehorn	Natural Gas/Oil	100%
Frederickson (Freddy) Unit 1	Natural Gas	49.85%
Goldendale	Natural Gas	100%
Mint Farm	Natural Gas	100%
Sumas	Natural Gas	100%
Crystal Mountain	Oil	100%
Colstrip	Coal	25%

¹ The remaining gases, 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. These GHGs are not generally identified as significant emission sources in the electric and natural gas utility sectors.

² Specific GWP values are listed in the attached Greenhouse Gas Inventory tables.

Reporting Boundary

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

- Scope 1: direct emissions from PSE-owned facilities³
- 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.

Line losses associated with the electricity purchased to serve PSE customer load are included in Scope 2. For the 2021 inventory, the percentage of line loss used is from eGrid subregion NWPP (4.4% for 2021).

The attached tables summarize PSE's GHG inventory by scope and source. Emissions are adjusted for RECs bought and sold.

Scope 3 Indirect Emissions Disclosure

PSE currently only calculates three of the 15 Scope 3 categories. These categories are fuel- and energy-related activities (category 3), "Use of sold products" (category 11) and waste generated in operations (category 5). 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).⁴ 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).

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 and small emergency generators in its GHG inventory because the associated emissions are determined to be immaterial and below our *de minimis* threshold compared to the total Scope 1 and 2 emissions (<5% materiality threshold). Refrigerants are used in office spaces and vehicles for cooling and fire suppression, while the small emergency generators provide back-up power if needed.

³ Line losses associated with owned generation are included in Scope 1 emissions to avoid double-counting.

⁴ GHG Protocol, Category 3: Fuel- and Energy-Related Activities not included in Scope 1 or Scope 2.

Puget Sound Energy - 2021 Greenhouse Gas Inventory Summary

Emission Sources	Energy Amount (UOM) ¹	Emissions (metric ton)					Emissions in CO ₂ Equivalents (CO ₂ e) - 100-Year Timeframe (metric ton CO ₂ e)					
		CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	Total CO ₂ e
Scope I												
Total PSE-owned Electric Operations	12,949,383,607 kWh	5,656,345	354.5	48.902	0.481	0	5,656,345	8,863	14,572.8	10,968	0	5,690,748
Total PSE-owned Natural Gas Operations	1,197,259,238 thm	13,320	2,561.8	0.025	0	0	13,320	64,046	7.4	0	0	77,373
Total PSE-owned Other Operations	—	8,534	0.9	0.080	0	0.281	8,534	22	23.7	0	94.6	8,674
Total Scope I		5,678,198	2,917.2	49.007	0.481	0.281	5,678,198	72,930	14,604.0	10,968	94.6	5,776,795
Scope II												
Total Scope II, Location-Based²		274,284	25.1	3.458	0	0	274,284	627	1,030.4	0	0	275,941
Total Scope II, Market-Based		339,722	34.7	4.912	0	0	339,722	867	1,463.8	0	0	342,053
Scope III												
Total Electricity Purchases	15,522,580,354 kWh	4,806,912	521.9	74.901	0	0	4,806,912	13,047	22,320.4	0	0	4,842,280
Total Natural Gas Supply	1,168,742,742 thm	6,277,003	118.3	11.830	0	0	6,277,003	2,958	3,525.3	0	0	6,267,579
Other	—	142,057	0	0	0	0	142,057	0	0	0	0	142,057
Total Scope III		11,083,915	640.2	86.731	0	0	11,083,915	16,005	25,845.7	0	0	11,251,916
Emission Sources	Energy Amount (kWh) ³	Total CO ₂ e (metric ton) ⁴					CO ₂ e Emission Intensity (lb/kWh)		CO ₂ e Emission Intensity (metric ton/MWh)			
Total Electric Operations	20,934,519,115 kWh	9,485,623					0.987		0.448			

Global Warming Potential for 100-year lifecycle (AR4)

CO ₂	CH ₄	N ₂ O	SF ₆
1	25	298	22,800

2021 eGrid Subregion Emission Rate (lb/MWh)

CO ₂	CH ₄	N ₂ O
634.60	0.058	0.008

¹ UOM stands for unit of measure.

² The emission factors used to calculate Scope 2 emissions are from 2021 eGrid subregion NWPP.

³ The energy amount listed excludes wholesale and customer green programs (i.e., Green Direct and Green Power programs).

⁴ The CO₂e metric tons listed represents PSE's electric operation emissions (e.g., generation, electricity purchases and line losses) after excluding the emissions attributed to wholesale, which are determined to be based on PSE's overall electricity portfolio after removing customer green programs (i.e., Green Direct and Green Power programs).

Puget Sound Energy - 2021 Greenhouse Gas Inventory, Scope 1

Emission Sources	Energy Amount (UOM) ¹	Emissions (metric ton)					Emissions in CO ₂ Equivalents (CO ₂ e) - 100-Year Timeframe (metric ton CO ₂ e)					
		CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	Total CO ₂ e
Scope I												
<i>Electric Operations</i>												
Hydro	957,818,460 kWh	0	0	0	0	0	0	0	0.0	0	0	0
Coal	2,576,702,000 kWh	2,488,605	295.6	43.002	0	0	2,488,605	7,390	12,814.7	0	0	2,508,810
Natural Gas/ Oil	7,341,075,907 kWh	3,167,740	58.9	5.900	0	0	3,167,740	1,472	1,758.2	0	0	3,170,971
Wind	2,073,787,240 kWh	0	0	0	0	0	0	0	0.0	0	0	0
Electrical Transmission and Distribution Equipment	—	0	0.0	0.000	0.481	0	0	0	0.0	10,968	0	10,968
Total PSE-owned Electric Operations	12,949,383,607 kWh	5,656,345	354.5	48.902	0.481	0	5,656,345	8,863	14,572.8	10,968	0	5,690,748
<i>Natural Gas Operations</i>												
Distribution	1,183,000,990 thm	9,533	2,530.9	0.018	0	0	9,533	63,272	5.3	0	0	72,810
Underground Storage	14,258,248 thm ²	3,787	31.0	0.007	0	0	3,787	774	2.1	0	0	4,563
Total PSE-owned Natural Gas Operations	1,197,259,238 thm	13,320	2,561.8	0.025	0	0	13,320	64,046	7.4	0	0	77,373
<i>Other Operations</i>												
PSE-owned Vehicle Fleet	—	8,534	0.9	0.080	0	0.281	8,534	22	23.7	0	94.6	8,674
Total PSE-owned Other Operations	—	8,534	0.9	0.080	0	0.281	8,534	22	23.7	0	94.6	8,674
Total Scope I		5,678,198	2,917.2	49.007	0.481	0.281	5,678,198	72,930	14,604.0	10,968	94.6	5,776,795

Scope I Biogenic Sources	Biogenic CO ₂ Emissions (metric ton CO ₂ e)
Electric Operations - Biofuel	0.00

¹ UOM stands for unit of measure.

² Therms listed for underground storage represents the net sum of injections and withdrawals within the calendar year.

Puget Sound Energy - 2021 Greenhouse Gas Inventory, Scope 2

Emission Sources	Energy Amount (UOM) ¹	Emissions (metric ton)					Emissions in CO ₂ Equivalents (CO ₂ e) - 100-Year Timeframe (metric ton CO ₂ e)					
		CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	Total CO ₂ e
Scope II												
<i>Location-Based²</i>												
Purchased Heating	61,206 thm	516	0.0	0.007	0	0	516	1	1.9	0	0	519
Purchased Electricity	20,656,652 kWh	5,946	0.5	0.075	0	0	5,946	14	22.3	0	0	5,982
Sold renewable energy credits (RECs)	15,500,000 kWh	4,462	0.4	0.056	0	0	4,462	10	16.8	0	0	4,489
Line Losses ³	914,922,954 kWh	263,360	24.1	3.320	0	0	263,360	602	989.4	0	0	264,951
Total Scope II, Location-Based	—	274,284	25.1	3.458	0	0	274,284	627	1,030.4	0	0	275,941
<i>Market-Based</i>												
Purchased Heating	61,206 thm	516	0.0	0.007	0	0	516	1	1.9	0	0	519
Purchased Electricity	20,656,652 kWh	5,946	0.5	0.075	0	0	5,946	14	22.3	0	0	5,982
Sold renewable energy credits (RECs)	15,500,000 kWh	4,462	0.4	0.056	0	0	4,462	10	16.8	0	0	4,489
Line Losses ³	914,922,954 kWh	328,798	33.7	4.774	0	0	328,798	842	1,422.7	0	0	331,063
Total Scope II, Market-Based	—	339,722	34.7	4.912	0	0	339,722	867	1,463.8	0	0	342,053

Scope II Biogenic Sources	Biogenic CO ₂ Emissions (metric ton CO ₂ e)
Line losses related to biogenic sources	1,827

¹ UOM stands for unit of measure.

² The emission factors used to calculate Scope 2 emissions are from 2021 eGrid subregion NWPP.

³ For the 2021 inventory, the percentage of line loss used is from eGrid subregion NWPP (4.4% for 2021).

Puget Sound Energy - 2021 Greenhouse Gas Inventory, Scope 3

Emission Sources	Energy Amount (UOM) ¹	Emissions (metric ton)					Emissions in CO ₂ Equivalents (CO ₂ e) - 100-Year Timeframe (metric ton CO ₂ e)					
		CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	CO ₂	CH ₄	N ₂ O	SF ₆	HFCs	Total CO ₂ e
Scope III												
<i>Electricity Purchases</i>												
Firm Contracts	8,564,340,354 kWh	3,696,994	420.5	60.909	0	0	3,696,994	10,511	18,150.8	0	0	3,725,656
Non-Firm Contracts	6,958,240,000 kWh	1,109,918	101.4	13.992	0	0	1,109,918	2,536	4,169.6	0	0	1,116,623
Total Electricity Purchases	15,522,580,354 kWh	4,806,912	521.9	74.901	0	0	4,806,912	13,047	22,320.4	0	0	4,842,280
<i>Natural Gas Supply</i>												
Supply to End-Users	1,165,744,782 thm	6,261,096	118.0	11.800	0	0	6,261,096	2,950	3,516.4	0	0	6,267,562
RNG	2,997,960 thm	0	0.3	0.030	0	0	0	7	8.9	0	0	16
Total Natural Gas Supply	1,168,742,742 thm	6,277,003	118.3	11.830	0	0	6,277,003	2,958	3,525.3	0	0	6,267,579
Other Categories²	—	142,057	0	0	0	0	142,057	0	0	0	0	142,057
Total Scope III		11,083,915	640.2	86.731	0	0	11,083,915	16,005	25,845.7	0	0	11,251,916

Scope III Biogenic Sources	Biogenic CO ₂ Emissions (metric ton CO ₂ e)
Electricity Purchases	36,537
Natural Gas Supply - RNG	15,907
Total Biogenic Sources Scope III	52,444

Scope III Categories	Emissions in CO ₂ Equivalents (CO ₂ e) - 100-Year Timeframe (metric ton CO ₂ e)
Investments	—
Franchises	—
Downstream leased assets	—
End-of-life treatment of sold products	—
Use of sold products	6,267,579
Processing of sold products	—
Downstream transportation & distribution	—
Upstream leased assets	—
Employee commuting	—
Business travel	—
Waste generated in operations	142,057
Upstream transportation & distribution	—
Fuel- and energy-related activities	4,842,280
Capital goods	—
Purchased goods and services	—

¹ UOM stands for unit of measure.

² The other categories are the remaining Scope 3 categories that is not “Use of sold products” and “Fuel- and energy-related activities”.