# 2022 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 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

**Issued:** March 4, 2024

## Reporting Information

**Emissions Year:** January 1, 2022 – December 31, 2022
**Reporting Protocol:** General Reporting Protocol 3.0 and associated updated and clarifications
**Additional Reporting Standards:** None
**Greenhouse Gases (GHGs):** Carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), and sulfur hexafluoride ($SF_6$)[1]
**Global Warming Potential (GWP) Standard:** AR4[2]
**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, 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 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 facilities[3]
- 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 $CO_2$ 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 and were calculated based on net electricity purchased and PSE's calculated percent loss for all electricity used to serve load. For the 2022 inventory, line loss data was calculated from PSE's 2022 Inventory to be 5% of total purchased power.

The attached tables summarize PSE's GHG inventory by scope and source. 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. 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).[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] 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 - 2022 Greenhouse Gas Inventory Summary

| Emission Sources | Energy Amount (UOM)[1] | Emissions (metric ton) | | | | Emissions in $CO_2$ Equivalents ($CO_2e$) - 100-Year Timeframe (metric ton $CO_2e$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | Total $CO_2e$ |
| **Scope I** | | | | | | | | | | |
| Total PSE-owned Electric Operations | 11,198,936,259 kWh | 5,227,670 | 353.6 | 49.390 | 0.319 | 5,227,670 | 8,839 | 14,718.2 | 7,272 | 5,258,499 |
| Total PSE-owned Natural Gas Operations | 1,216,396,802 thm | 4,591 | 2,717.2 | 0.008 | 0 | 4,591 | 67,929 | 2.5 | 0 | 72,418 |
| Total PSE-owned Other Operations | — | 8,905 | 1.1 | 0.145 | 0 | 8,905 | 27 | 43.1 | 0 | 8,975 |
| **Total Scope I** | | **5,241,165** | **3,071.8** | **49.543** | **0.319** | **5,241,165** | **76,796** | **14,763.8** | **7,272** | **5,339,892** |
| **Scope II** | | | | | | | | | | |
| **Total Scope II, Location-Based[2]** | | **219,884** | **0.8** | **0.112** | **0** | **219,884** | **20** | **33.4** | **0** | **219,938** |
| **Total Scope II, Market-Based[3]** | | **219,884** | **0.8** | **0.112** | **0** | **219,884** | **20** | **33.4** | **0** | **219,938** |
| **Scope III** | | | | | | | | | | |
| Total Electricity Purchases | 11,807,868,134 kWh | 3,995,102 | 0.0 | 0.000 | 0 | 3,995,102 | 0 | 0.0 | 0 | 3,995,102 |
| Total Natural Gas Supply | 1,090,927,959 thm | 5,769,577 | 109.1 | 10.909 | 0 | 5,769,577 | 2,727 | 3,251.0 | 0 | 5,775,555 |
| **Total Scope III** | | **9,764,678** | **109.1** | **10.909** | **0** | **9,764,678** | **2,727** | **3,251.0** | **0** | **9,770,657** |

| Emission Sources | Energy Amount (UOM)[1] | Total $CO_2e$ (metric ton) | $CO_2e$ Emission Intensity (lb/kWh) |
|---|---|---|---|
| **Total Electric Operations** | **23,006,804,393 kWh** | **9,464,590** | **0.9078** |

**Global Warming Potential for 100-year lifecycle**

| $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ |
|---|---|---|---|
| 1 | 25 | 298 | 22,800 |

**2021 eGrid Subregion Emission Rate (lb/MWh)**

| $CO_2$ | $CH_4$ | $N_2O$ |
|---|---|---|
| 634.60 | 0.058 | 0.008 |

1 UOM stands for unit of measure.

2 Except for line losses and sold renewable energy credits (RECs) from own electricity generation, purchased energy is calculated using 2021 eGrid subregion NWPP.

3 Except for line losses and sold renewable energy credits (RECs) from own electricity generation, purchased energy is calculated using grid average.

## Puget Sound Energy - 2022 Greenhouse Gas Inventory, Scope 1

| Emission Sources | Energy Amount (UOM) | Emissions (metric ton) | | | | Emissions in $CO_2$ Equivalents ($CO_2e$) - 100-Year Timeframe (metric ton $CO_2e$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | Total $CO_2e$ |
| **Scope I** | | | | | | | | | | |
| *Electric Operations* | | | | | | | | | | |
| Hydro | 758,615,340 kWh | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 |
| Coal | 2,726,665,000 kWh | 2,663,357 | 308.0 | 44.800 | 0 | 2,663,357 | 7,700 | 13,350.4 | 0 | 2,684,409 |
| Natural Gas/ Oil | 6,028,682,020 kWh | 2,564,313 | 45.6 | 4.590 | 0 | 2,564,313 | 1,139 | 1,367.8 | 0 | 2,566,817 |
| Wind | 1,684,973,899 kWh | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 |
| Electrical Transmission and Distribution Equipment | — | 0 | 0.0 | 0.000 | 0.319 | 0 | 0 | 0.0 | 7,272 | 7,272 |
| **Total PSE-owned Electric Operations** | **11,198,936,259 kWh** | **5,227,670** | **353.6** | **49.390** | **0.319** | **5,227,670** | **8,839** | **14,718.2** | **7,272** | **5,258,499** |
| *Natural Gas Operations* | | | | | | | | | | |
| Distribution | 1,216,396,802 thm | 722 | 2,643.1 | 0.001 | 0 | 722 | 66,077 | 0.4 | 0 | 66,799 |
| Underground Storage | — | 3,869 | 74.1 | 0.007 | 0 | 3,869 | 1,852 | 2.2 | 0 | 5,619 |
| **Total PSE-owned Natural Gas Operations** | **1,216,396,802 thm** | **4,591** | **2,717.2** | **0.008** | **0** | **4,591** | **67,929** | **2.5** | **0** | **72,418** |
| *Other Operations* | | | | | | | | | | |
| PSE-owned Vehicle Fleet | — | 8,905 | 1.1 | 0.145 | 0 | 8,905 | 27 | 43.1 | 0 | 8,975 |
| **Total PSE-owned Other Operations** | — | **8,905** | **1.1** | **0.145** | **0** | **8,905** | **27** | **43.1** | **0** | **8,975** |
| **Total Scope I** | | **5,241,165** | **3,071.8** | **49.543** | **0.319** | **5,241,165** | **76,796** | **14,763.8** | **7,272** | **5,339,892** |

## Puget Sound Energy - 2022 Greenhouse Gas Inventory, Scope 2

| Emission Sources | Energy Amount (UOM) | Emissions (metric ton) | | | | Emissions in $CO_2$ Equivalents ($CO_2e$) - 100-Year Timeframe (metric ton $CO_2e$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | Total $CO_2e$ |
| **Scope II** | | | | | | | | | | |
| *Location-Based*[1] | | | | | | | | | | |
| Purchased Heating | 57,875 thm | 488 | 0.0 | 0.006 | 0 | 488 | 1 | 1.8 | 0 | 491 |
| Purchased Electricity | 29,200,581 kWh | 8,405 | 0.8 | 0.106 | 0 | 8,405 | 19 | 31.6 | 0 | 8,456 |
| Sold renewable energy credits (RECs) | 18,600,000 kWh | 8,128 | 0.0 | 0.000 | 0 | 8,128 | 0 | 0.0 | 0 | 8,128 |
| Line Losses[2] | — | 202,862 | 0.0 | 0.000 | 0 | 202,862 | 0 | 0.0 | 0 | 202,862 |
| **Total Scope II, Location-Based** | — | **219,884** | **0.8** | **0.112** | **0** | **219,884** | **20** | **33.4** | **0** | **219,938** |
| *Market-Based*[3] | | | | | | | | | | |
| Purchased Heating | 57,875 thm | 488 | 0.0 | 0.006 | 0 | 488 | 1 | 1.8 | 0 | 491 |
| Purchased Electricity | 29,200,581 kWh | 8,405 | 0.8 | 0.106 | 0 | 8,405 | 19 | 31.6 | 0 | 8,456 |
| Sold renewable energy credits (RECs) | 18,600,000 kWh | 8,128 | 0.0 | 0.000 | 0 | 8,128 | 0 | 0.0 | 0 | 8,128 |
| Line Losses[2] | — | 202,862 | 0.0 | 0.000 | 0 | 202,862 | 0 | 0.0 | 0 | 202,862 |
| **Total Scope II, Market-Based** | — | **219,884** | **0.8** | **0.112** | **0** | **219,884** | **20** | **33.4** | **0** | **219,938** |

## Puget Sound Energy - 2022 Greenhouse Gas Inventory, Scope 3

| Emission Sources | Energy Amount (UOM) | Emissions (metric ton) | | | | Emissions in $CO_2$ Equivalents ($CO_2e$) - 100-Year Timeframe (metric ton $CO_2e$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | $CO_2$ | $CH_4$ | $N_2O$ | $SF_6$ | Total $CO_2e$ |
| **Scope III** | | | | | | | | | | |
| *Electricity Purchases* | | | | | | | | | | |
| Firm Contracts | 9,825,319,110 kWh | 3,128,728 | 0.0 | 0.000 | 0 | 3,128,728 | 0 | 0.0 | 0 | 3,128,728 |
| Non-Firm Contracts | 1,982,549,024 kWh | 866,374 | 0.0 | 0.000 | 0 | 866,374 | 0 | 0.0 | 0 | 866,374 |
| **Total Electricity Purchases** | **11,807,868,134 kWh** | **3,995,102** | **0.0** | **0.000** | **0** | **3,995,102** | **0** | **0.0** | **0** | **3,995,102** |
| *Natural Gas Supply* | | | | | | | | | | |
| Supply to End-Users | 1,087,368,429 thm | 5,769,577 | 108.7 | 10.874 | 0 | 5,769,577 | 2,718 | 3,240.4 | 0 | 5,775,536 |
| RNG | 3,559,530 thm | 0 | 0.4 | 0.036 | 0 | 0 | 9 | 10.6 | 0 | 20 |
| **Total Natural Gas Supply** | **1,090,927,959 thm** | **5,769,577** | **109.1** | **10.909** | **0** | **5,769,577** | **2,727** | **3,251.0** | **0** | **5,775,555** |
| **Total Scope III** | | **9,764,678** | **109.1** | **10.909** | **0** | **9,764,678** | **2,727** | **3,251.0** | **0** | **9,770,657** |

1 Except for line losses and sold renewable energy credits (RECs) from own electricity generation, purchased energy is calculated using 2021 eGrid subregion NWPP.

2 For the 2022 inventory, line loss data was calculated from PSE's 2022 Inventory to be 5% of total purchased power.

3 Except for line losses and sold renewable energy credits (RECs) from own electricity generation, purchased energy is calculated using grid average.