



**Seattle Public Utilities**



# **2022 GREENHOUSE GAS EMISSIONS REPORT**

**RELEASED: MAY 2025**

Annual report that tracks Seattle Public Utilities' greenhouse gas emissions from service delivery and operations.

# 2022 Greenhouse Gas Inventory

## Seattle Public Utilities

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## Executive Summary

Seattle Public Utilities (SPU) has pledged to be carbon neutral in its operations by 2030, in line with the Green New Deal for Seattle Executive Order released in 2020. The annual operational greenhouse gas inventory – covering the year 2022 – provides an update on SPU’s progress towards carbon neutrality through all of our Lines of Business.

As in previous years, SPU tracked emissions related to the combustion of fossil fuels, the purchase of electricity, and the fugitive emissions released from air conditioners and historic landfills. These emissions relate to the delivery of essential services that SPU provides on a daily basis.

**In 2022, SPU’s emissions declined to their lowest level recorded since we began measuring our emissions in 2019, finishing with a total of 13.3 ktCO<sub>2</sub>e in 2022, compared to a total of 14.4 ktCO<sub>2</sub>e in 2021.** This decline is related to shifting patterns of electricity consumption, as well as modest declines in our fleet fuel consumption and historic landfill emissions. While encouraging, SPU continues to pursue strategies that would reduce our emissions more aggressively to achieve our goal of carbon-neutral operations by 2030.

Table 1: Overall Emissions by Percent of Total

Emissions Type	% of SPU Emissions
Purchased Electricity <i>for infrastructure and workforce facilities</i>	44.5%
Vehicle Fleet Fuel	34.9%
Landfill Gas from 3 Historic Landfills <i>that no longer accept solid waste</i>	10.9%
Facility Fossil Gas Combustion <i>that heats infrastructure and workforce facilities</i>	5.3%
Fugitive Emissions <i>from HVAC systems</i>	4.4%
Total	100%

## Key Trends

SPU’s 2022 inventory revealed a few important results:

**Electricity:** As in past years, purchased electricity remained our largest source of emissions, generating 5.9 ktCO<sub>2</sub>e. However, we recorded a decline of 0.7 ktCO<sub>2</sub>e (10.6%) compared to 2021. Shifting electricity consumption patterns helped to reduce overall emissions. SPU consumed more total electricity than in years prior – a total of 35.6 million kwh, compared to 33.6 million kwh in 2021 – but consumed a higher proportion of electricity from Seattle City Light’s carbon-neutral grid: a total of 22.0 million kwh, or 62% of all electricity consumed by SPU. This difference, combined with modest reductions in carbon intensity for electricity from Puget Sound Energy, allowed SPU’s emissions associated with purchased emissions to decline.

*Fleet Fuel:* Fuel emissions declined commensurate with fuel consumption, producing 4.6 ktCO<sub>2</sub>e (34.6% of total emissions) in 2022 compared to 4.9 ktCO<sub>2</sub>e in 2021. While it is likely too early to determine what to attribute the decrease in fuel consumption to, SPU saw a consistent decline, with months of both high fuel consumption and low fuel consumption being lower than in 2021.

*Historic Landfills and Facility Fugitive Emissions:* Emissions from our closed historic landfills declined to 1.5 ktCO<sub>2</sub>e (11.3% of total emissions) in 2022, compared to 1.6 ktCO<sub>2</sub>e in 2021. This decrease in emissions is on par with expectations; methane emissions from these closed landfills are projected to slowly decline in the long term as the organic waste stored in these facilities decays. Fugitive emissions from facilities remained consistent at the equivalent of 211 metric tons of carbon dioxide.

*Facility Fossil Gas:* Fossil gas utilized to heat SPU's facilities generated just shy of 700 metric tons of carbon dioxide in 2022, which is a very modest decline from 2021's total of 776 metric tons of carbon dioxide. However, this amount is still higher than the 611 metric tons of carbon dioxide emissions we recorded in our baseline 2019 inventory, which remains the lowest year for facility fossil gas emissions on record.

These results suggest that SPU continues to see overall declines in emissions compared to our 2019 baseline inventory. While this trend continues to be encouraging, SPU will need to continue its work to reduce the greenhouse gases generated by its operations in order to ensure that future emissions years do not rebound.

## Introduction:

Climate change represents a notable and urgent risk to SPU, to Seattle, and to our region. Risks like coastal flooding, extreme heat and smoke events, and shifting precipitation patterns are already putting increased strain on SPU's drainage and wastewater, water, and solid waste infrastructures; these strains are projected to increase in severity in the coming years as the region continues to warm.

As part of its ongoing commitment to environmental stewardship, Seattle Public Utilities conducts an annual greenhouse gas inventory – starting with the 2019 emissions year - to account for the emissions that the utility generates while delivering its essential services. SPU is committed to attaining carbon-neutral operations by 2030 – a goal which aligns with our One Water, Zero Waste, and Community Centered vision. The inventory as described in this report is part of our commitment to measure our emissions on an annual basis, and provide regular updates on how our actions are driving progress towards a carbon neutral SPU.

In line with our previous inventories, which can be read [here](#), this report analyzes all emissions associated with the day-to-day operations that SPU undertakes to deliver clean drinking water, convey and treat wastewater, and collect and transfer solid waste. These emissions encompass all Scope 1 emissions – generated by the combustion of fossil fuels and the escape of warming gases from landfills and refrigeration systems – as well as Scope 2 emissions – generated to create the electricity SPU purchases. This report does not include Scope 3 emissions related to SPU's supply chain.

Our inventory captures the day-to-day activities of SPU operations, reflecting the work our staff conducts across our workforce facilities, offices, pump stations, water treatment facilities, transfer stations, and watersheds. These activities are essential to provisioning essential water, wastewater, and solid waste services to residents throughout Seattle reliably and affordably.

## Overall Emissions Inventory Results

In 2022, SPU's essential operations and service delivery activities generated the equivalent of 13.3 thousand metric tons of carbon dioxide (ktCO<sub>2</sub>e). Of this total, 5.9 ktCO<sub>2</sub>e (approximately 44.4% of SPU's total emissions) was generated through the purchasing of electricity to power SPU's facilities and electric fleet, while 4.6 ktCO<sub>2</sub>e (34.6% of total emissions) was generated through the combustion of liquid fuels to power SPU's vehicle fleets.

Historic landfills that are closed to solid waste collection – but still emit methane – generated 1.5 ktCO<sub>2</sub>e (11.3% of total emissions), while other fugitive emissions generated 0.6 ktCO<sub>2</sub>e (4.5% of total emissions). Facility fossil gas emissions also contributed 0.7 ktCO<sub>2</sub>e (5.3% of total emissions).

Together, this represents a 7.6% decline from 2021's emissions total of 14.4 ktCO<sub>2</sub>e, with most of the emissions decline attributed to lower liquid fuel and purchased electricity emissions.

Fig. 1: Annual Overall Emissions



## Overall Key Takeaways

- **Overall Trends:** Emissions declined slightly in 2022, which represents an improvement from the relatively flat emissions trends present between 2020 and 2021. The most noteworthy declines could be attributed to reductions in purchased electricity and fleet fuel emissions.



- *Purchased Electricity*: Emissions from purchased electricity declined from 2021 to 2022, despite the fact that SPU consumed more electricity than during prior years. SPU consumed 35.6 million kilowatt hours (kwh) of electricity in 2022, compared to 33.6 million kwh in 2021. This represents a significant reversal of prior trends, which had seen a modest but relatively consistent year-over-year decline on energy consumption from 2019 through 2021. However, despite this increase, purchased electricity emissions dropped from 6.6 ktCO<sub>2</sub>e to 5.9 ktCO<sub>2</sub>e. This divergent trend is due to shifting consumption patterns. SPU consumed significantly more electricity from Seattle City Light, which supplies electricity with extremely low emissions factors, and continued to reduce the amount of electricity that the utility consumed from the more carbon-intensive Puget Sound Energy. This enabled SPU to continue tracking towards reduced emissions even as total electricity consumption climbed.
- *Fuel*: Fuel consumption throughout 2022 was notably lower on a month-by-month basis, with only January of 2022 having a larger total fuel consumption compared to the same month in 2021. This led to similarly low emissions associated with fleet fuel use: 4.6 ktCO<sub>2</sub>e is the lowest annual fuel emissions on record, aside from the pandemic-affected fleet operations that were present in 2020.
- *Historic Landfills*: Emissions from closed landfills continued to modestly decline to 1.5 ktCO<sub>2</sub>e, down from a peak of 2.0 ktCO<sub>2</sub>e in 2020. We expect this trend to continue: historic landfills tend to slowly taper off the amount of methane they generate as organic matter decomposes. As our landfills are now several decades removed from accepting new waste, we project that these landfills will likely continue to decline in the long term.

## Infrastructure, Historic Landfills, and Workforce Facilities

Emissions associated with SPU's infrastructure, historic landfills, and workforce facilities totaled 8.6 ktCO<sub>2</sub>e in 2022, representing an 8.2% decline from 2021's total of 9.5 ktCO<sub>2</sub>e.

Fig. 2: Emissions from Infrastructure, Historic Landfills, and Workforce Facilities, by Year

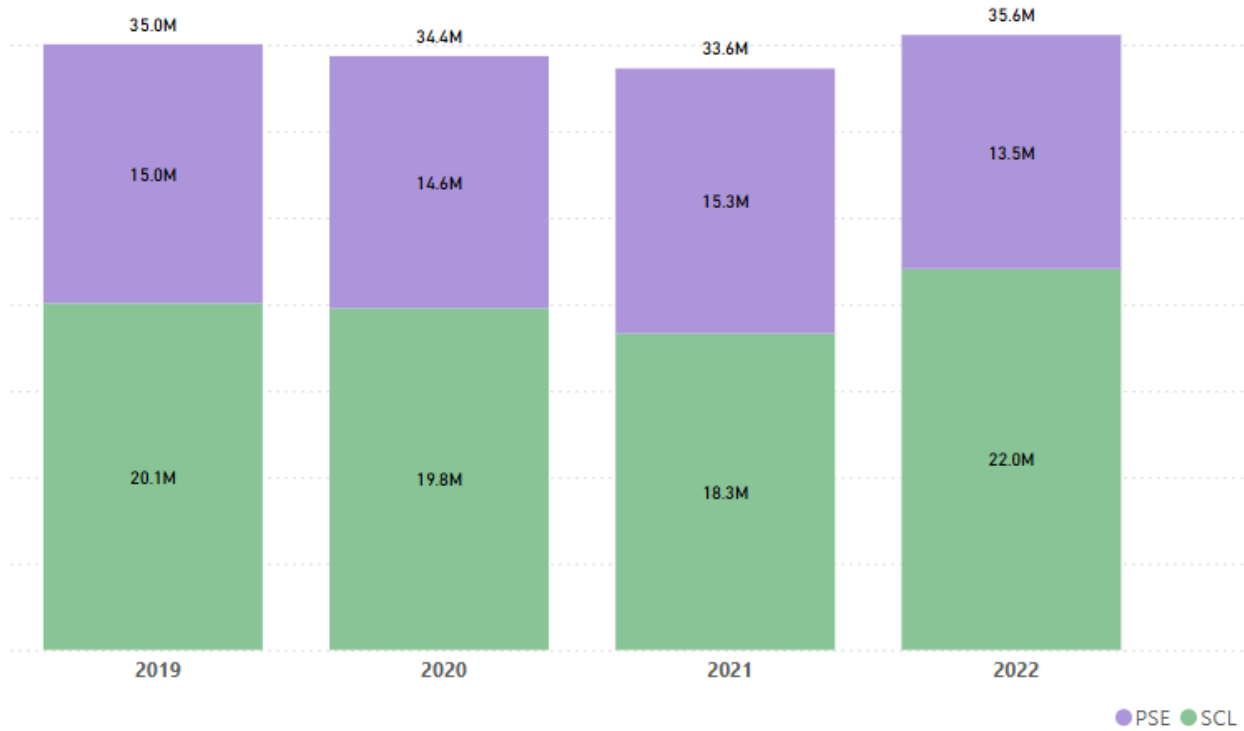


### Purchased Electricity

SPU consumed a total of 35.6 million kwh of electricity in 2022, a 5.76% increase from 33.6 million kwh consumed in 2021. This represented the highest amount of electricity that SPU consumed since the GHG inventory process began recording utility-wide energy consumption.

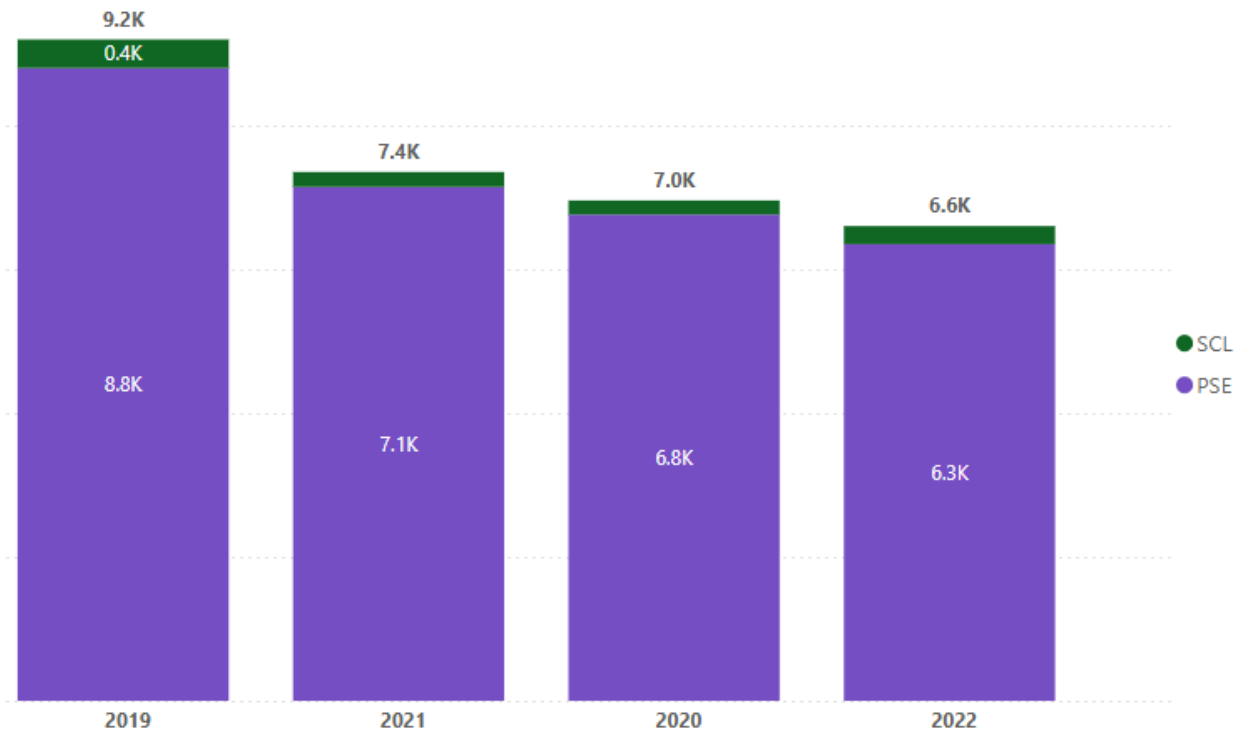


Fig. 3: Electricity consumption in kwh, per electricity provider, by year



However, emissions associated with purchased electricity declined by 10.8% to 5,900.93 metric tons of CO<sub>2</sub>e in 2022, which is the lowest amount of warming emissions for this category on record and down from 2021's total of 6,611.92 metric tons of CO<sub>2</sub>e. This decoupling of emissions was driven by a spike in electricity consumption on SCL's carbon-neutral energy grid, combined with a modest decline in the carbon intensity in PSE's electrical supply.

Fig 4. Emissions from Purchased Electricity, in mtCO<sub>2</sub>e, by year



Similar to previous years, we recorded a significant difference between the carbon intensities of SCL and PSE-supplied energy: in 2022, PSE's grid supplied just 38% of SPU's total electricity consumption, but contributed 95.6% of SPU's total emissions associated with purchased electricity.

Fig. 5: 2022 Electricity Share, by electricity provider

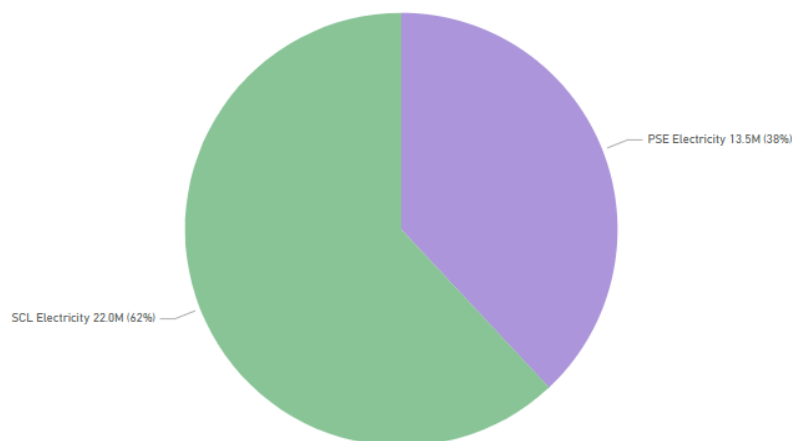
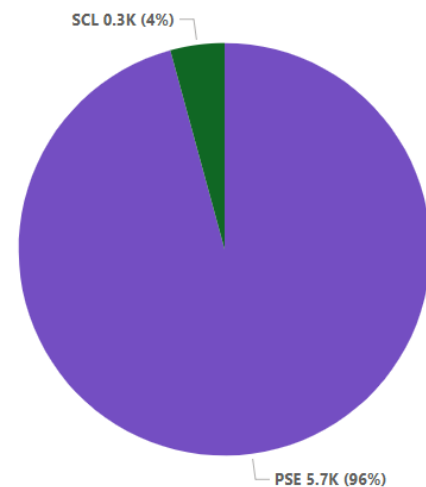


Fig 6. Percentage of emissions, by electricity share



SPU's purchasing habits in 2022 also reversed a trend from previous years. 2019-2021 all saw modest declines in energy purchased from SCL, dropping from 20.1 million kwh in 2019 to 18.3 million kwh in 2021. This rebound is likely attributed to construction projects within the City of Seattle – the Drainage and Wastewater LOB saw electricity consumption jump from 2.6 million kwh in 2021 to 5.6 million kwh in 2022, likely due to construction of the Ship Canal Water Quality Project.

However, the increase in electrical consumption related to both workforce and infrastructure facilities connected to the SCL grid were offset by a notable decline in consumption related to facilities connected to the PSE grid. Electricity consumption for PSE-connected facilities dropped from the highest amount on record in 2021 – 15.3 million kwh – to the lowest on record – 13.5 million kwh. This decline corresponds with the decline in associated purchased electricity emissions, and emphasizes the importance of energy efficiency efforts among PSE facilities. Even modest reductions in energy consumption among these facilities can lead to significant reductions in SPU's broader emissions profile.

Additionally, PSE also recorded improvements in the carbon intensity of their electrical grid, which allowed the utility to record emissions declines by consuming cleaner electricity. In 2022, PSE's emissions factor – a measure of the amount of carbon dioxide that is generated per unit of electricity – declined from 912.44 lbs of CO<sub>2</sub>/mwh to 883.77 lbs of CO<sub>2</sub>/mwh. While still significantly more carbon intensive than SCL's carbon-neutral grid, which has a carbon intensity of 10.46 lbs of CO<sub>2</sub>/mwh, these improvements among PSE's energy supply also contributed to the decline in total purchased electricity emissions in 2022.

## Facility Fossil Gas and Fugitive Emissions

Emissions traced to facility fossil gas combustion stayed consistent between 2021 and 2022. SPU emitted 698.37 metric tons of CO<sub>2</sub> from facility fossil gas combustion in 2022, compared to 739.25 metric tons of CO<sub>2</sub> in 2021. This represents a decline of 40.88 metric tons year over year.

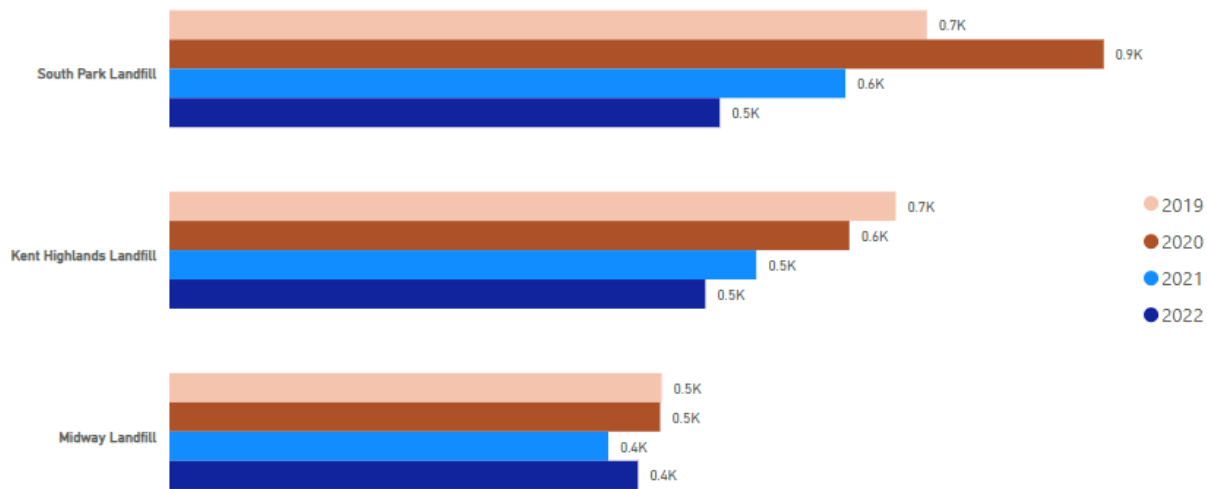
For fugitive emissions associated with SPU's facility and fleet operations, SPU recorded the equivalent of 583.24 metric tons of CO<sub>2</sub> – a 48.88 metric ton increase from 2021's total of 534.36 metric tons.

While neither of these emissions shifts represent significant changes to SPU's overall emissions profile, it is worth noting that this could be an early sign of a potential trend in future years. As SPU replaces traditional fossil-gas powered boilers and heaters to heat pumps, we would expect to see modest increases in fugitive emissions while seeing reductions in facility fossil gas consumption. While it is too early to tell if such a shift contributed to this particular year of emissions changes, it does emphasize the importance of ongoing emissions monitoring related to fugitive emissions in the future.

### *Historic Landfills*

Fugitive emissions associated with historic closed landfills declined modestly, from 1.6 ktCO<sub>2</sub>e in 2021 to 1.5 ktCO<sub>2</sub>e in 2022, a decline of 0.014 ktCO<sub>2</sub>e (8.63%) year over year. While the Midway landfill saw a minor increase in emissions, both the South Park and Kent-Highlands Landfills saw declines to record lows in 2022.

Fig. 7: Emissions from Historic Landfills, in mtCO<sub>2</sub>e, by year



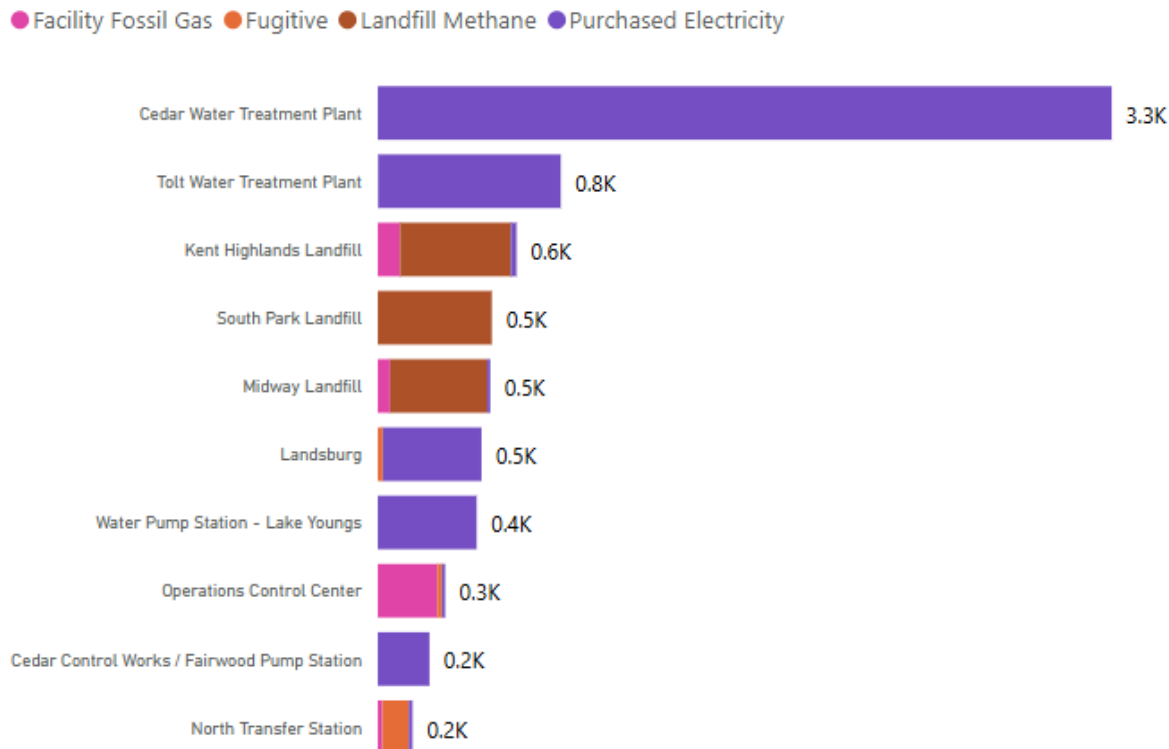
This decline is in line with expectations for these closed landfills. SPU projects that while solid waste stored in these landfills will continue to release methane over the coming years – and there may be individual years where emissions rise – the amount of methane emissions is expected to decline in the long term. SPU has taken steps to mitigate these emissions as much as is feasible, and will continue to monitor these landfills to ensure that declines continue into the future.

An important caveat to note is that all these landfill emissions totals are estimated through modelling that compares the total volume of waste disposed in each site to the Interbay Landfill administered by the Seattle Department of Parks and Recreation. SPU uses this method because we don't have a system to accurately measure exact totals of landfill gas emitted at each landfill site. As such, these totals are estimations. As landfill emissions are widely variable from year to year, it's possible that the true total of emissions from the historic landfills SPU maintains could be significantly different than the amounts estimated in these reports.

## Highest Emitting Facilities

The highest emitting facilities in 2022 remained largely unchanged from 2021. Water treatment facilities and landfills continued to be SPU's largest emitting facilities, followed by landfills and energy-intensive pump stations. Notably, there was a modest decline in emissions across most of the highest-emitting facilities. The Cedar Treatment Facility recorded a 300 metric ton decline in emissions from 2021, for example, while the Tolt Facility recorded a 400 metric ton decline as well. This is likely due to the lower carbon intensity of PSE-supplied electricity, as well as modest declines in most landfill emissions.

Fig. 8: 10 Highest Emitting Facilities



## Key Takeaways

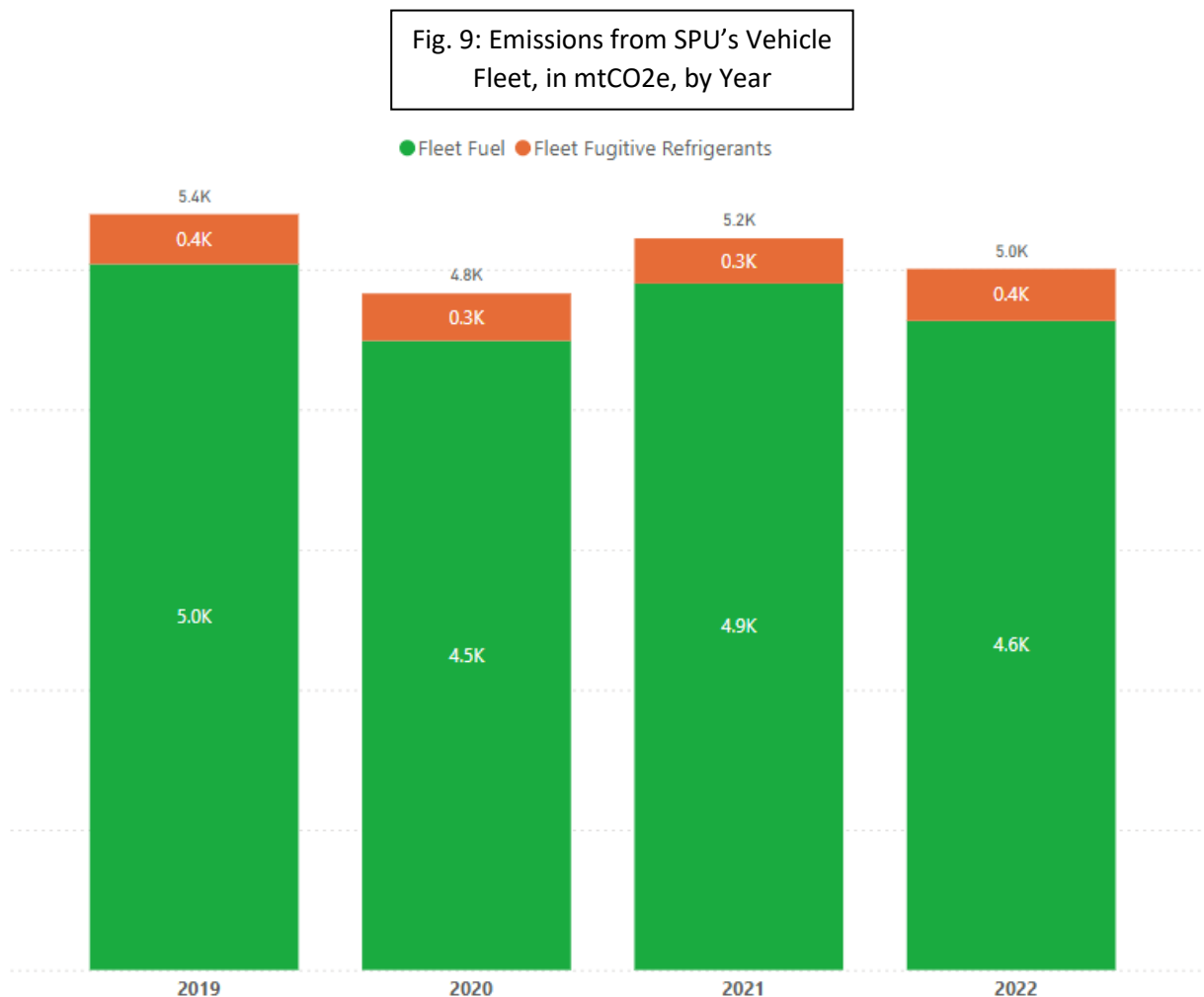
- Purchased electricity emissions are decoupling from electricity consumption:** In past inventories, the quantity of electricity consumed has mirrored electricity emissions – if SPU purchased more electricity in a given year, emissions associated with electricity rose. However, this inventory recorded both the highest amount of electricity purchased in any year in our inventory record, as well as the lowest quantity of emissions associated with that electricity. This can be attributed to both a shift in electricity consumption patterns – in which SPU purchased less electricity from PSE’s carbon-intensive grid and more electricity from SCL’s carbon-neutral grid – as well as to consistent improvements to the emissions intensities of both energy providers. While we cannot be sure that this trend will continue into the future, it is an encouraging sign that decarbonization throughout the region’s energy supply continued into 2022.
- Facility emissions trends are very sensitive to emissions profiles of energy grids:** The past few years have seen a decline in emissions intensities for electricity generated by PSE, which in turn reduced SPU’s purchased electricity emissions, and contributed significantly to the decoupling trend outlined above. However, if this trend were to reverse – if energy utilities were to see their energy generation profiles rely on increased use of fossil fuels – SPU’s emissions could unexpectedly increase in future years. SCL, for example, relies on large quantities of hydropower; if there is a low water year that reduces hydropower production among SCL

facilities, SCL would be required to purchase additional electricity on the spot market, which is far more likely to utilize more carbon-intensive electricity generation methods, and would lead to more purchased electricity emissions.

- **Despite decoupling, energy efficiency efforts remain a priority:** Despite consuming more total electricity than in previous years, SPU consumed less electricity from the PSE grid in 2022 than in previous years. This was driven by notably less electricity consumption at the Tolt treatment facility – which consumed the lowest annual amount of electricity on record – and broad energy consumption improvements throughout the PSE grid compared to 2021. This emphasizes the importance of energy efficiency efforts in future years. Decreasing the total amount of electricity SPU consumes can help insulate SPU from future fluctuations in energy intensity and protect SPU’s declining emissions trend.
- **Fugitive emissions estimation methodologies are imprecise and could lead to inaccurate measurements in coming years.** SPU is working to remove fossil fuel sources of heating and cooling from facilities in the coming years by replacing older boilers and fossil-gas heating elements with electric alternatives and heat pumps. Heat pumps, in particular, rely on refrigerants with very high warming potentials; when refrigerants leak from heat pumps, they become extremely potent greenhouse gases, even if the amount released is small in absolute quantities. SPU currently uses a methodology that estimates leaks, rather than directly measuring them from HVAC systems. This likely overstates the actual amount of refrigerant released from HVAC systems, and results in a less accurate inventory moving forward. SPU will likely need to directly measure escaped fugitive emission in order to better characterize the impact of facility electrification.

## Fleet and Equipment

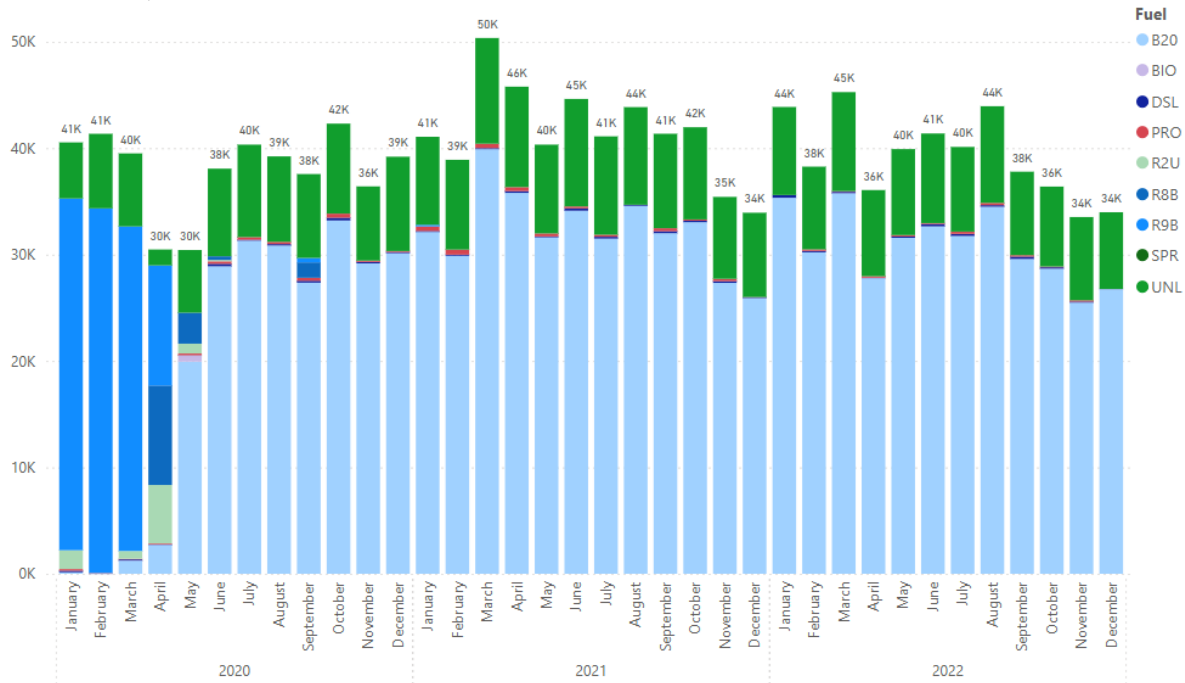
In 2022, SPU's vehicle fleet generated the equivalent of 5,002 metric tons of carbon dioxide emissions, down 4.2% from 5,220 metric tons in 2021. Of the total emissions in 2022, 92.6% was generated through the combustion of liquid fuels, and 7.4% was generated through fugitive emissions from motor vehicle air conditioning (MVAC) systems.



SPU consumed a total of 470,462 gallons of fuel, compared to 498,660 gallons in 2021, representing a 5.7% decrease year over year. A blend of 20% biodiesel and 80% traditional diesel represented 78.7% of total fuel consumption, while unleaded gasoline represented 20.7% and traditional diesel represented 0.4% of 2022 consumption.

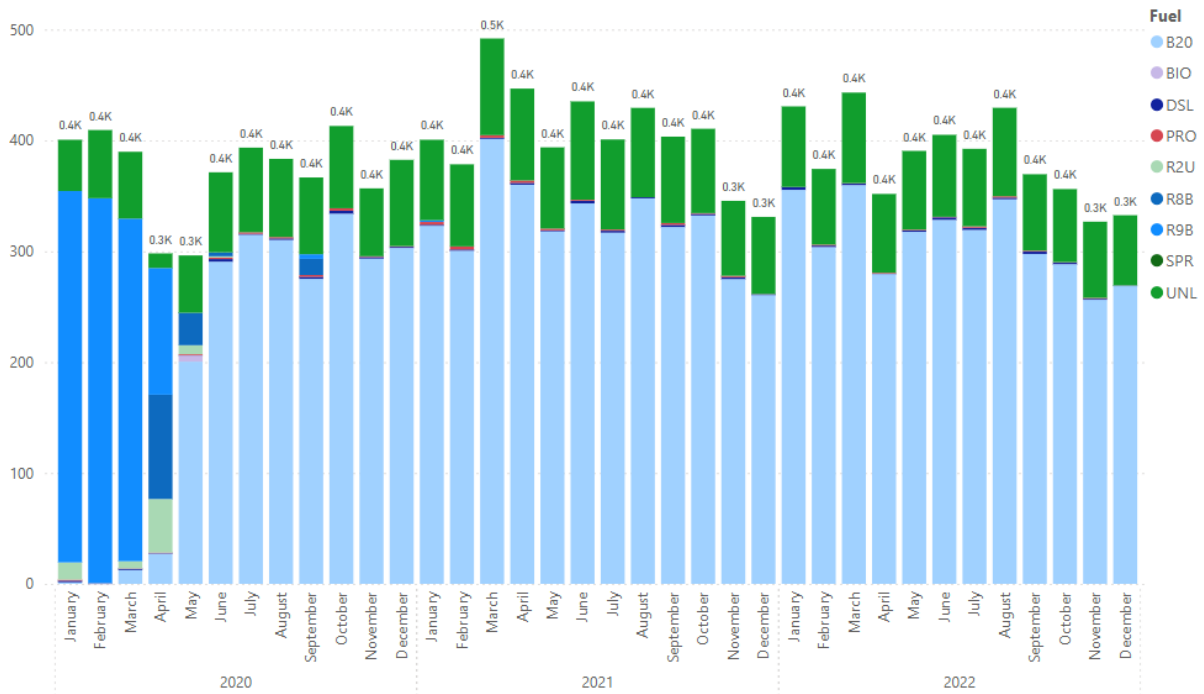


Fig. 10: Vehicle Fuel Consumption per Month, by Fuel Type



Overall fuel consumption and emissions were both down compared to previous years, with at least 6 months of fuel consumption below 40 thousand gallons consumed, compared to just two months with similarly low values in 2021. Additionally, the highest month of fuel consumption totaled 45 thousand gallons of fuel – significantly lower than the 50 thousand gallons at which consumption peaked in 2021.

Fig. 11: Vehicle Emissions per Month, by Fuel Type



This reduced fuel consumption corresponded with lower emissions; 2022 represented the lowest amount of vehicle emissions on record, saving for only the pandemic-influenced 2020. SPU also saw the lowest amount of fuel consumption in a calendar month since the pandemic as well, with November's total of 33,526 gallons of fuel consumed being the lowest amount since May of 2020. This low fuel consumption correlated to the equivalent of 326.69 metric tons of carbon dioxide being generated in November – also the lowest amount of emissions since May 2020 as well.

## Key Takeaways

- Fleet emissions continue a declining trend started in 2021:** At the end of 2021, SPU saw two consecutive months in which total fuel consumption declined below 40 thousand gallons consumed, which contributed to lower emissions levels compared to the 2019 pre-pandemic baseline. This trend continued into 2022, in SPU recorded 6 months in which total fuel consumed was lower than 40 thousand gallons. This trend suggests that SPU's green fleet initiatives, focused on right-sizing the vehicle fleet and implementing electric vehicles when use cases support their deployment, may have started to yield some results in 2022.

# Analysis

## Trends and Future Expectations

With an additional inventory completed, SPU now has four years of data on the utility's GHG emissions profiles, which provides a useful, albeit still limited, sample size with which to examine the utility's progress. While considerable uncertainty remains about future projections of emissions, this inventory suggests several conclusions that can inform future policy making.

- **Purchased Electricity emissions are continuing to decline, even in light of increased energy consumption:** In the 2019 baseline emissions inventory, SPU recorded a total of 8.6 ktCO<sub>2</sub>e from purchased electricity, representing 51.8% of the utility's total emissions that year. By contrast, in 2022, purchased electricity had declined by 31.4% to 5.9 ktCO<sub>2</sub>e, and made up just 44.4% of the utility's total greenhouse gas emissions for the year. This decline is the fastest of all emissions categories in SPU's operational GHG profile, and is driven by significant carbon intensity improvements in PSE's electrical grid, as well as shifting consumption patterns throughout SPU's operations that derive more electricity from SCL's carbon neutral grid. While there is no guarantee that purchased electricity emissions will continue to decline in the future – emissions increased from 2020 to 2021, for example – this represents a noteworthy decline that supports SPU's broader goal of being carbon neutral in our operations by 2030.
- **Fleet emissions continue to decline, but not at a rate that aligns with SPU's sustainability goals:** SPU's fleet emissions in 2022 were the second lowest on record, with only 2020 – which saw significantly lower fleet emissions due to severe operations changes brought on by the onset of the pandemic – recording lower emissions. In 2022, 11 months out of 12 saw equal or less fuel consumption compared to the same month in 2021, with only January of 2022 recording more fleet fuel consumption compared to January of 2021. This suggests that the fuel consumption declines recorded in this inventory might be reflective of durable improvements to SPU's vehicle fleet sustainability as a result of the utility's Green Fleet initiatives. However, while this trend is encouraging, it is still slow – fleet emissions reductions will need to increase in order to comply with SPU's goal of being carbon neutral in its operations by 2030.
- **Fossil Gas and Fugitive Emissions are estimated to be holding steady:** Fossil gas and fugitive emissions – both from landfills as well as from HVAC and MVAC systems – are maintaining their current levels of emissions. While this is not unexpected, these categories of emissions still present obstacles to long-term carbon neutrality.

## Areas of Uncertainty

As SPU continues to monitor its emissions in future years, and works towards its sustainability goals, there remains several areas of uncertainty that could affect the utility's emissions moving forward:

- **SPU's emissions continue to be closely linked to SCL and PSE's electrical emissions profiles:** While the declining trend for purchased electricity is encouraging, a significant portion of this decline is driven by the low or declining emissions intensities of both Seattle City Light and Puget Sound Energy's electrical grid. However, these emissions intensities can fluctuate on any

given year; if either PSE or SCL were to record more GHG emissions associated with generating the electricity they supply to SPU, SPU's emissions would in turn increase. These fluctuations can be driven by market forces, low water years on rivers that supply water for hydropower generation, or surges in demand that requires purchasing additional electricity on the broader spot market. While we continue to believe that the long-term trend favors continued declines in purchased electricity emissions, due to both SCL's and PSE's policies supporting emissions reductions and carbon neutrality goals, SPU remains vulnerable to yearly volatility that creates uncertainty moving forward.

- **Methodological Uncertainties:** It is important to note that the methodology utilized to measure fugitive emissions is likely to be imprecise. All of SPU's MVAC and HVAC systems are measured through simplified estimation methods that assume certain quantities of refrigerants leak each year through normal operation, rather than directly measuring how much refrigerant was lost from maintenance records. Similarly, the historic landfills SPU operates is modelled by comparing the total volume of waste disposed in each landfill to the Interbay Landfill administered by the Seattle Department of Parks and Recreation, as the historic landfills lack the monitoring equipment required to more accurately assess each landfill individually. While these methodologies align with best practices in GHG accounting, it is possible that these methods could be overstating the true amount of fugitive emissions; future improvements to measurement processes could help determine more accurate emissions inventories.

# Appendix

## Appendix 1: Methodology

The 2022 operational emissions inventory uses the same methodology established in the [2019-2020 GHG Inventory Report](#). SPU uses the Local Government Operations Protocol (LGOP) as established by The Climate Registry (TCR). Analysis is limited to Scope 1 and Scope 2 emissions.

Scope 1 emissions are defined as emissions released directly into the atmosphere through the combustion of fossil fuels. These emissions are generated through the operation of our vehicle fleet powered by fossil fuels, as well as through the combustion of fossil gas to heat our facilities. Scope 1 emissions also include fugitive emissions escaping from our facilities; historic landfill emissions as well as HVAC and MVAC emissions are both included in this category.

Scope 2 emissions are related to emissions that SPU is indirectly responsible for through the purchasing of electricity from Seattle City Light and Puget Sound Energy.

Our 2019-2020 GHG Inventory Report included some limited Scope 3 emissions, including analysis on employee commutes, solid waste collection trucks, and business travel. While these analyses were useful as part of our initial analysis, they are not considered part of our operational inventory and are not included in this report.

Emissions factors for liquid fuels and fugitive emissions are derived from The Climate Registry. Emissions factors for electricity emissions are supplied by Seattle City Light and Puget Sound Energy.