*Appendix A – 2024 Sustainability Inventory

Executive Summary

This Appendix presents a detailed analysis of Sound Transit's 2024 Annual Sustainability Progress Report, offering key data snapshots and identifying resource use patterns compared to previous years. The report evaluates 2024 performance metrics in the context of multi-year trends, shedding light on the agency's progress toward sustainability goals.

While service levels in 2024 were close to pre-pandemic levels and ridership increased from 2020 to 2024, total passenger trips and passenger miles traveled (PMT) still remain below 2019 levels. While more workers have returned to the office, the prevalence of remote and hybrid workplaces continues to impact travel patterns moving forward.

Please note that any statements about resource use trends and metrics in this appendix are made in absolute terms unless explicitly stated otherwise; normalized trend analyses and metrics will be explicitly labeled as such (e.g., greenhouse gas emissions per PMT).

Service Levels and Ridership Trends:

- **Service Recovery and Ridership Dynamics:** While Sound Transit's service levels in 2024 approached pre-pandemic levels, total passenger trips and passenger miles traveled (PMT) have yet to fully recover, remaining nearly 13% and 25% below 2019 levels, respectively. That noted, PMT increased 18% from 2023 to 2024, coupled with an 11% rise in unlinked passenger trips. This reflects a positive trend but also underscores the lingering effects of the pandemic and how transit agencies like Sound Transit are adapting to new commuting patterns.
- **Mode-Specific Insights:** The recovery has continued to be uneven across different modes of transport. Notably, Link light rail ridership has not only rebounded but has also surpassed pre-pandemic levels, indicating a shift in commuter preferences toward this mode. In contrast, ridership on ST Express and Sounder commuter rail services has grown more slowly, suggesting a potential long-term shift away from traditional commuter rail and buses.

Energy Use and Efficiency:

- **Balancing Growth and Sustainability:** In 2024, Sound Transit's overall energy consumption increased minimally despite significant service expansion and facility openings, showcasing the agency's efforts to balance service expansion with energy efficiency. Total agency energy use—encompassing electricity, fleet fuel, and natural gas—increased by 4% from 2023 and also 4% when compared to 2018.
- **Fleet Energy Reductions:** The small increase in total revenue fleet energy use of 3% from 2023 to 2024 reflected service expansion but was smaller than otherwise forecasted due to efficiency improvements. For example, the Sounder commuter rail service increased fuel consumption modestly by 3%, and the ST Express bus fleet achieved a 2% reduction, reflecting enhanced fleet efficiency. However, the expansion of Link light rail service led to an 11% increase in traction power consumption, highlighting the trade-offs between Link light rail service expansion and energy use.
- **Transitioning from Standard Diesel to Renewable Diesel:** Total agency standard diesel consumption declined by 30% from 2023 to 2024. Standard diesel consumption is down 49% from 2018 levels due to increased reliance on CNG and renewable diesel.

Greenhouse Gas Emissions:

- **Operational Emissions Reduction:** Total operational emissions increased 9% from 2023 to 2024. The increase is largely driven by increases in electricity use for traction power and facilities due to service expansion in the area serviced by our energy utility with the highest greenhouse gas emissions, as well as a small increase in refrigerant usage.

Water Use:

- **Water Conservation Success:** Total water use increased by 26% from 2023 to 2024, which was likely driven, in part, by a 4% increase in cooling degree days (an indication of hot weather). Increased water use is also due to Sound Transit opening additional light rail stations and adding landscaping in its establishment phase. In addition, there were a few water leaks and increases in pressure washing.

Waste Management:

- **Progress in Waste Diversion:** The amount of waste diverted from landfills increased 4% from 2023 to 2024, but overall waste generation rose by 20% and the diversion rate decreased 14%. Inter-annual variability is evident in Sound Transit's waste generation trend, with 2024 seeing the highest waste generation in Sound Transit facilities since 2014. This increase is largely due to higher service levels and an increase in agency staff. Despite this, the total amount of garbage recycled increased over the same period.

Notes on Appendix A: This document illustrates resource use trends over time from **2018**, to reflect substantial system expansion and the baseline for key performance indicators established in the 2019 Sustainability Plan update. It also shows year-over-year changes from the preceding inventory year, 2023. In the following graphs, solid bars indicate total emissions, resource use, and resource costs. The trend lines show the normalized resources, either per PMT or per VRM, over time. Most graphs include nine years of data to illustrate trends.

Ridership and Level of Service

While Sound Transit's service levels in 2024 approached pre-pandemic levels, total passenger trips and passenger miles traveled (PMT) have yet to recover fully, remaining nearly 13% and 25% below 2019 levels, respectively. The 18% increase in PMT from 2023 to 2024, coupled with an 11% rise in unlinked passenger trips in that same timeframe, reflects a positive trend but also underscores the lingering effects of the pandemic.

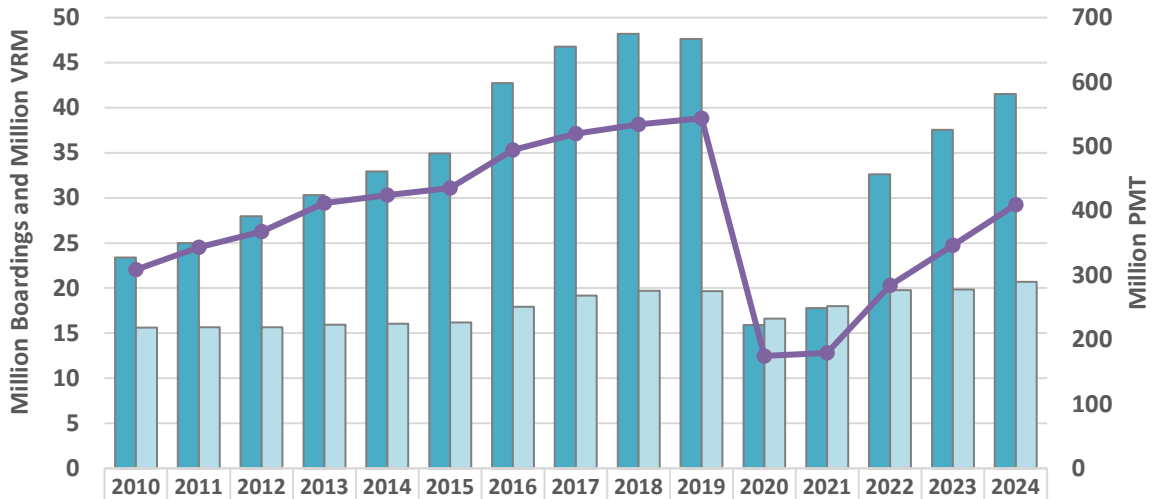
- Compared to 2018, boardings decreased by 13%, and ridership (PMT) decreased by 35%, while VRM remained relatively unchanged (+1%). From 2023 to 2024, boardings increased 11%, and VRM increased 4%.
- While ST Express and Sounder ridership has decreased compared to pre-pandemic levels, Link light rail ridership exceeded pre-pandemic levels in 2023 and increased further in 2024.

Ridership has important implications for resource use. As Sound Transit's network expands, the agency anticipates total resource use will increase. To account for the growth of Sound Transit's service network while also interpreting resource efficiency trends over time, the Sustainability Inventory normalizes data by the level of service provided by the agency (VRM), the number of unlinked passenger trips (boardings), and the volume and distance of overall ridership (PMT).

Boardings and PMT have generally increased year-over-year throughout the agency's history. However, 2020 saw the agency's first steep decline in ridership due to the COVID-19 pandemic. Apart from Tacoma Link, VRM in 2020 fell significantly across all services, and boardings fell across all services. These levels increased slightly in 2021 and more substantially in 2022, 2023, and 2024.

In 2024, ridership rose compared to recent years but remains below pre-pandemic levels. Figure 1 below shows the trends of boardings, VRM, and PMT over time.

Figure 1. Boardings, VRM, and PMT by Year

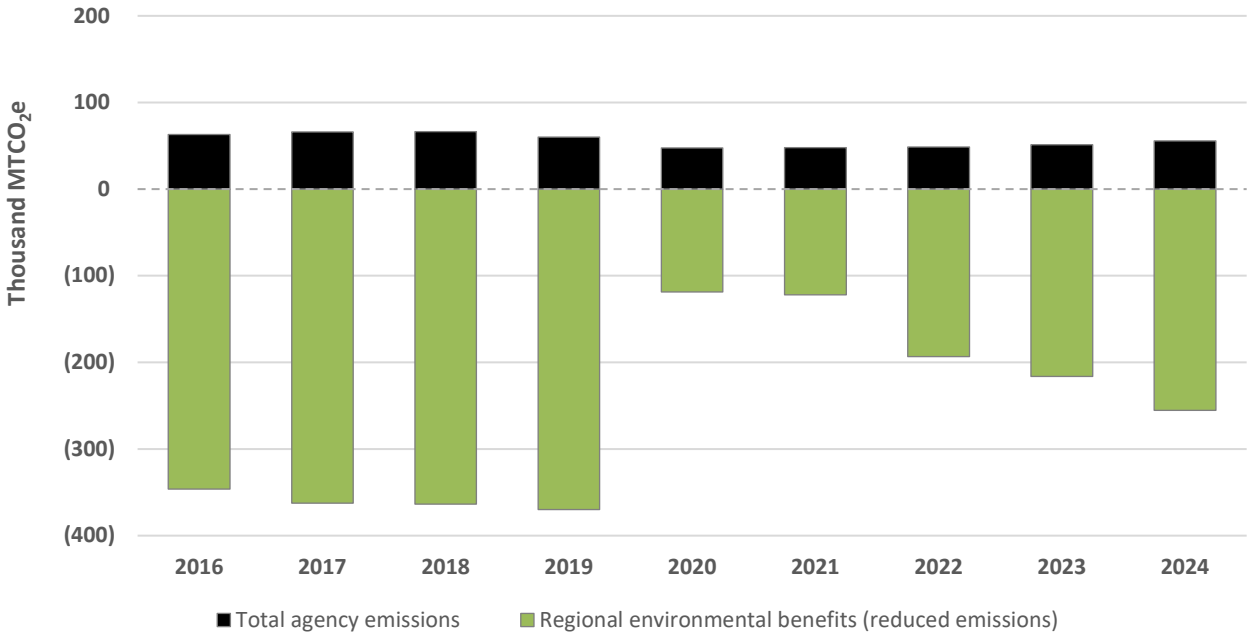


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Boardings (millions)	23.4	25.0	28.0	30.3	32.9	34.9	42.7	46.8	48.2	47.6	15.9	17.8	32.6	37.6	41.5
VRM (millions)	15.6	15.7	15.6	15.9	16.0	16.2	17.9	19.1	19.7	19.6	16.6	18.0	19.8	19.8	20.7
PMT (millions)	308.6	343.2	367.7	411.8	424.6	435.2	494.6	520.0	534.2	543.7	174.6	179.2	284.2	346.3	409.3

Regional Environmental Benefit

Increased transit use reduces regional environmental impacts from passenger vehicles. As more people choose transit over driving, fuel consumption and GHG emissions are reduced. Avoided GHG emissions are a measure of the regional environmental benefit enabled by transit. Sound Transit uses a 2018 methodology developed by the American Public Transportation Association (APTA) to account for emissions avoided due to transit ridership, measured in metric tons of carbon dioxide equivalent ($MTCO_2e$), as shown in Figure 2 and Table 1.

Figure 2. Regional GHG Emissions ($MTCO_2e$) Avoided by Sound Transit Services



As seen in Figure 2 above, even though Sound Transit has had lower ridership since the start of the pandemic in 2020, its transit services still displace more GHG emissions than they emit from operations. For every ton of GHG emissions Sound Transit produced from operations in 2024, the region avoided 4.6 times the metric tons of emissions through the benefits of transit. The regional environmental benefits shown in green in Figure 2 include the benefits from people taking transit instead of driving (mode shift) and reduced emissions associated with denser land use patterns supported by transit. Prior to the pandemic-induced decline in ridership, these benefits were 5 to 6 times the agency's operational emissions, in black.

Table 1. Regional GHG Emissions ($MTCO_2e$) Avoided by Sound Transit Services, 2024

Regional $MTCO_2e$ Reduced		
Mode Shift Benefits	Land-Use Benefits	Total Benefits
48,045	207,361	255,406
Avoided Emission Ratios – CO_2e units reduced in the region per unit of CO_2e from Sound Transit operations		
Mode Shift Benefits	Land-Use Benefits	Total Benefits
0.86	3.72	4.59

The definitions for each of the identified types of benefits are below:

- **Mode shift benefits** measure the reduced GHG emissions (amount avoided) resulting from shifting from one mode of transportation (single occupancy vehicle) to another (transit), measured on a PMT basis.
- **Land use change benefits** measure the reduced carbon emissions due to the denser land use patterns supported by transit systems.

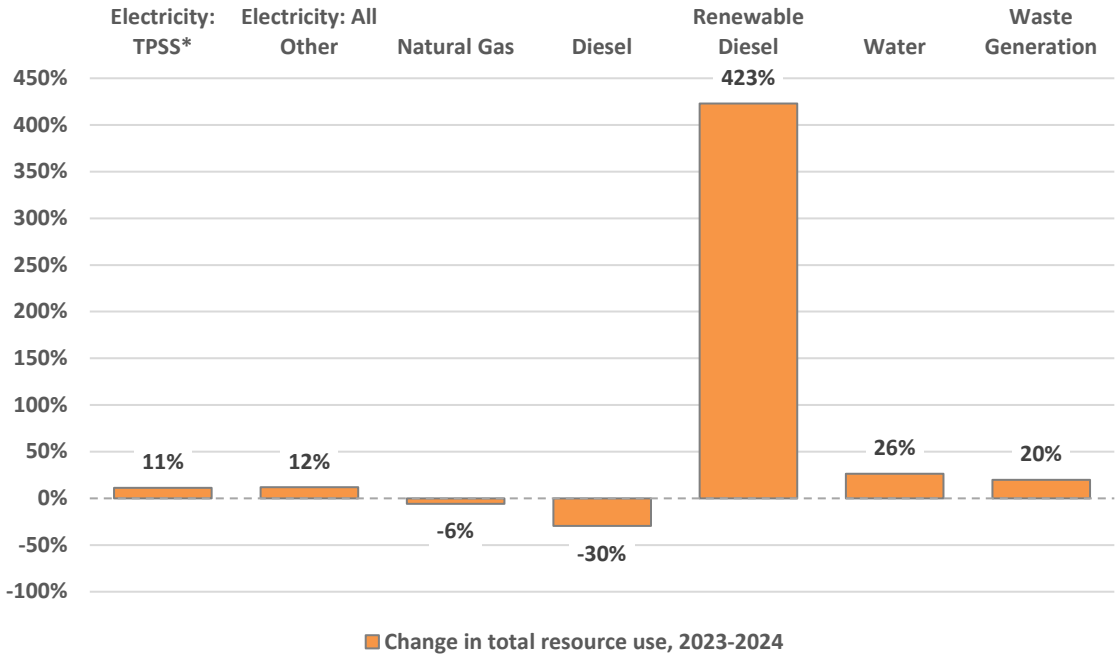
Resource Use

Total agency resource use has generally increased over time, reflecting the expansion of the Sound Transit system. In 2024, Sound Transit's overall energy consumption increased 4.2% from 2023 after achieving a small reduction in overall energy consumption in 2023. Total agency energy use—encompassing electricity, fleet fuel, and natural gas—increased by 4% from 2023 and by 4% compared to 2018.

Most increases in resource use are directly in line with increased service levels and the use of revenue fleet vehicles. In response to public health restrictions and diminished ridership during the COVID-19 pandemic, Sound Transit reduced service levels significantly in 2020, and resulting resource use declined across most metrics. As ridership and service levels rose from 2021 through 2024, resource use rebounded. Moreover, when this data is normalized by PMT, Sounder, ST Express, and Link light rail resource uses have all decreased in recent years, indicating that resource efficiency is also increasing. Figure 3 below shows the change in total resource use from 2023 to 2024.

- Total traction power electricity consumption (for Link light rail propulsion) remained relatively stable, increasing by 11% from 2023 to 2024, while facility electricity consumption increased by 10%.
    - Since 2018, traction power electricity usage has increased 98% and facility electricity usage has increased 79%, reflecting increased service levels from Link light rail service expansion, including the Hilltop Tacoma Link Extension in 2023, and the first segment of the Link 2 line and expansion of Line 1 in 2024.
    - Increases in facility electricity consumption are driven by higher usage in administrative facilities (particularly at 705 Union Station), new customer facility accounts for the Central Link's downtown tunnel stations, and the opening of new stations for the new extensions.
- Total agency standard diesel consumption declined by 30% from 2023 to 2024. Standard diesel consumption is down 49% from 2018 levels due to increased reliance on CNG and renewable diesel.
- Facility natural gas consumption decreased 6% from 2023 to 2024. This reduction is a result of warmer weather reflected by fewer "heating degree days." This measure of how cold it was during the heating season decreased 8% from the previous year. Facility natural gas consumption has increased 64% since 2018, largely attributable to the openings of maintenance facilities such as the OMF East Link in 2021.
- Total water use increased by 26% from 2023 to 2024, while cooling degree days (an indication of hot weather) increased by 4%. Water use has increased by 11% since 2018, reflecting expansion of service and the opening of new extensions.
- Waste generation (recycling, compost, and waste to landfill) increased 20% from 2023 to 2024. Waste generation has increased 16% since 2018. The diversion rate (recycling and compost as a percentage of total waste generation) in 2024 was 30%, down from 34% in 2023. Diversion at office buildings, where the majority of agency staff work, was much higher than the agencywide rate, at 72% in 2024.

Figure 3. Change in Total Resource Use, 2023-2024



Fleet Energy Use

A small increase in total revenue fleet energy use of 3% from 2023 to 2024 was driven by service expansion and would have been higher if not for energy efficiency improvements. For example, the Sounder commuter rail service increased fuel consumption by 3%, while the ST Express fleet achieved a 2% reduction, reflecting enhanced fleet efficiency. However, the expansion of Link light rail service led to an 11% increase in traction power consumption, highlighting the trade-offs between service expansion and energy use.

- Relative to 2018, total fleet energy use has decreased by 3%, reflecting a post-pandemic dip in overall ridership, and from 2023 to 2024, total fleet energy use increased by 3%, reflecting expansion in service.
- Total revenue fleet energy use decreased by 4% in 2024 from 2018, reflecting energy efficiency improvements and decreased ridership following the COVID-19 pandemic.

Prior to the COVID-19 pandemic, total fleet energy use (standardized in MMBTU) across Sound Transit's three modes—ST Express bus, Sounder commuter rail, and Link light rail—had been increasing slowly over time as more service was provided. Service became more efficient per PMT as system ridership grew faster than level of service (VRM). From 2021 to 2024, fleet energy use per PMT has trended downward, slowly returning towards pre-pandemic levels.

- Per VRM, total fleet energy use has declined 1% since 2023, largely due to service level increases.
- Also reflecting increases in efficiency, total fleet energy use per PMT decreased 13% from 2023 to 2024, as ridership returned from pandemic lows.

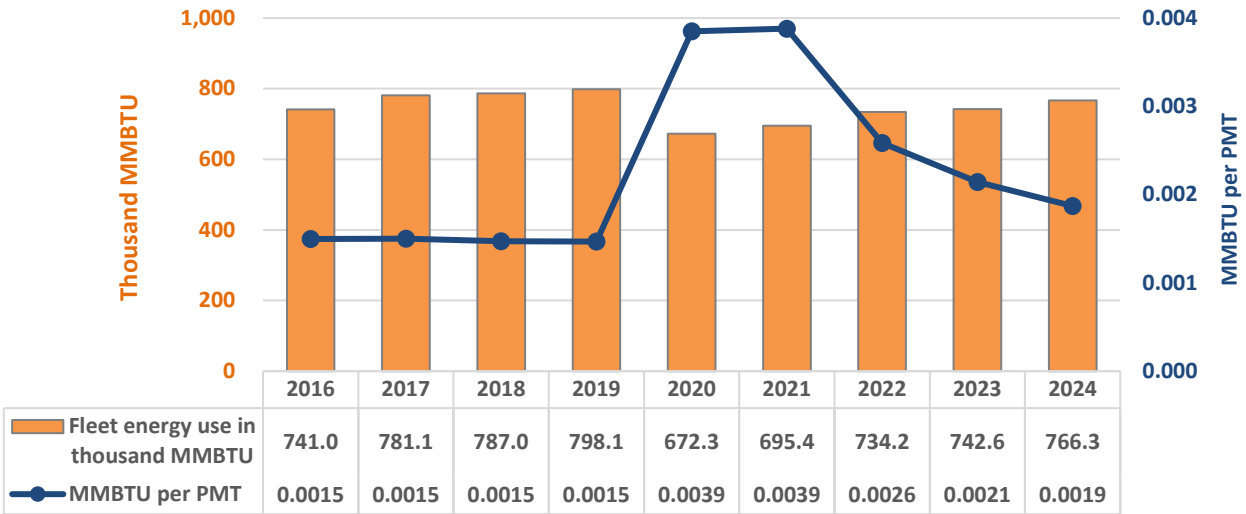
Fleet Energy Use by Mode. In 2024:
Traction power electricity use for Link light rail increased 11% from 2023 and increased 98% from 2018. Diesel fuel use for Sounder commuter rail was up 3% from 2023 but has decreased 7% from 2018. Starting in March 2020, Sounder reduced service levels and suspended special event service (e.g., for sporting events). Service levels have increased since that time to 90% of pre-pandemic levels.*

* Note that replacement "bus bridge" service is now categorized with ST Express (including for previous years), rather than Sounder, per updated guidance.

- Standard diesel fuel consumption for ST Express buses decreased 50% from 2023 and decreased 67% from 2018. This significant decrease was driven primarily by the switch to renewable diesel (R99).
    - When normalized by Passenger Miles Traveled (PMT), ST Express standard diesel consumption decreased by 54% from 2023, indicating that efficiency improved. When normalized by Vehicle Revenue Miles (VRM), ST Express diesel consumption increased by 1%, indicating that efficiency per VRM remained stable during this timeframe.
    - The composition of the ST Express fuel mix has changed over time. CNG used in ST Express buses has increased from 11% of total ST Express fleet energy consumption in 2018 to 17% in 2024, as a result of a growing prevalence of CNG buses in the Pierce Transit-operated portion of the ST Express fleet. R99 has also seen a significant increase in consumption since its introduction to the fleet in 2023. In 2023, R99 was 8% of ST Express' fuel mix but was 45% of the fuel mix in 2024.
    - In 2024, standard diesel buses reduced energy consumption by 50% from 2023 levels as a result of switching to R99, and CNG buses reduced energy consumption by 1%. Using CNG and R99 instead of standard diesel fuel reduces total GHG emissions and most criteria air pollutant (CAP) emissions, including particulate matter (PM), NO_x, and SO_x. However, CNG use does increase carbon monoxide (CO) emissions. (Air pollutants are discussed in more detail starting on page A11.)
    - In 2024, R99 consumption increased significantly by 432% from 2023. In addition to reducing total GHG emissions and CAP emissions, R99 also has less lifecycle emissions when compared to standard diesel, which is not reflected in this inventory due to GHG accounting methodologies and protocols.

Figure 4 and Figure 5 below show the trends in fleet energy use over time. Table 2 below shows the change in energy use by mode, as well as the change in efficiency (fuel use normalized by PMT and VRM for each mode).

Figure 4. Revenue Fleet Energy Use (Normalized by PMT)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fleet energy use in thousand MMBTU	741.0	781.1	787.0	798.1	672.3	695.4	734.2	742.6	766.3
MMBTU per PMT	0.0015	0.0015	0.0015	0.0015	0.0039	0.0039	0.0026	0.0021	0.0019

Figure 5. Revenue Fleet Energy Use (Normalized by VRM)

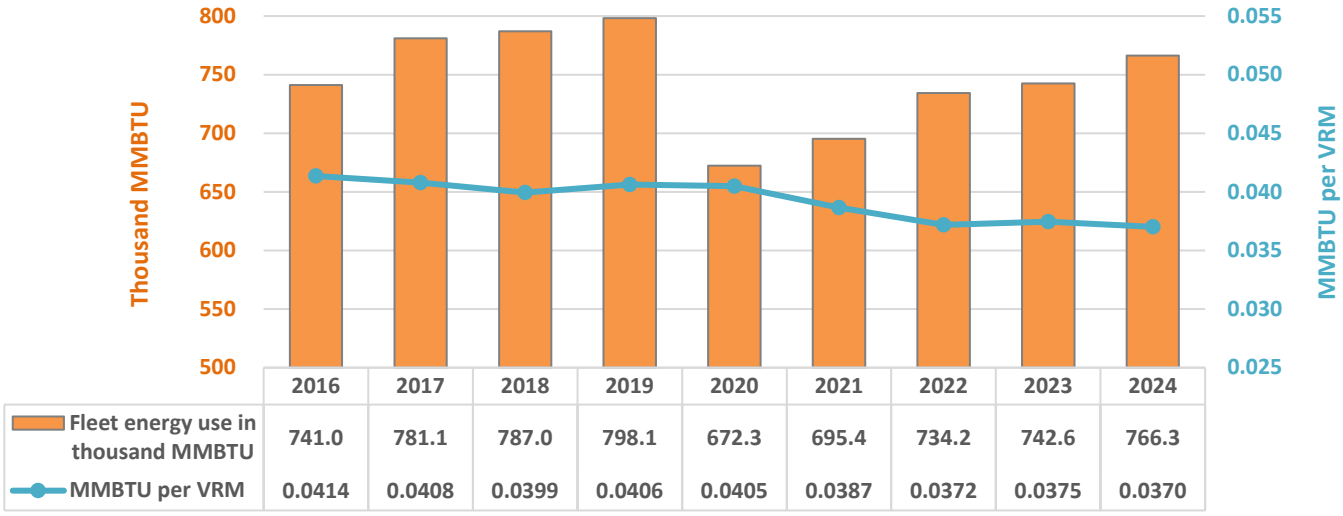


Table 2. Change in Energy Use by Mode, 2023-2024

Mode	% Change in Total Energy Use	% Change in Energy Use per PMT	% Change in Energy Use per VRM
Sounder Commuter Rail (diesel)	3%	-2%	0%
ST Express Buses (diesel, R99, and CNG)	-2%	-11%	0%
Link light rail traction power (electricity)	11%	-12%	-11%

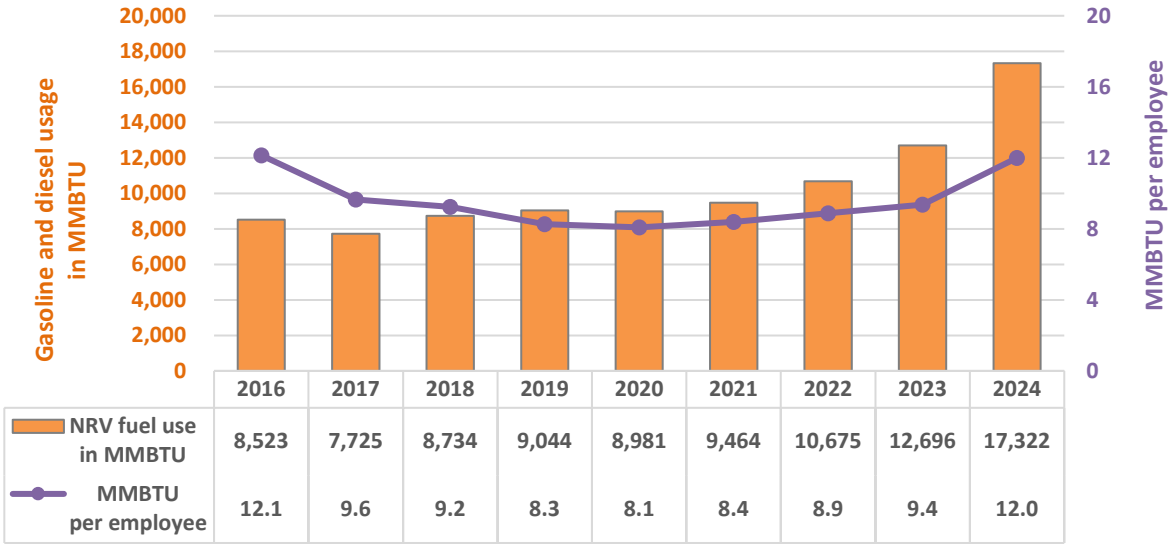
Note: Mode energy use is normalized by PMT and VRM specific to each mode.

Non-Revenue Vehicle (NRV) Fleet Energy Use

- Since 2018, NRV energy use has increased 98% and increased 30% per employee.
- From 2023 to 2024, NRV energy use increased by 36% overall, while increasing by 28% per employee. This is due to more employees resuming office use and increased NRV fleet use in advance of the two new major projects that opened in the summer of 2024 and ahead of other new projects occurring in 2025.

Energy use for the agency's NRV fleet has grown moderately over time, as the NRV fleet and employee headcount has grown, as shown in Figure 6. While the agency's headcount has increased every year, contributing to more driving of NRV fleet vehicles, Sound Transit has also purchased more hybrid and electric vehicles, helping to reduce per-mile and per-employee energy use and air pollutant emissions. The agency encourages employees carpooling or transit whenever feasible.

Figure 6. NRV Fleet Energy Use (in MMBTUs)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
NRV fuel use in MMBTU	8,523	7,725	8,734	9,044	8,981	9,464	10,675	12,696	17,322
MMBTU per employee	12.1	9.6	9.2	8.3	8.1	8.4	8.9	9.4	12.0

Facility Energy Use

- Total facility energy use increased by 88% in 2024 compared to the 2018 baseline.
- From 2023 to 2024, total facility energy use rose 10%, primarily due to increased electricity consumption in customer facilities openings with the opening of the first segment of the Link 2 Line and the opening of four new 1 Line stations.

Facilities built before 2018 decreased energy consumption by 9% in 2024 relative to a 2018 baseline, though usage varied substantially among individual facilities, with some showing large increases (e.g., Kirkland Transit Center, Auburn Warehouse) and others showing decreases (e.g., Tukwila Sounder Station, Edmonds Station, Mercer Island Park and Ride).**

Although many Sound Transit facilities remained operational throughout the pandemic, many of Sound Transit's office staff worked remotely starting in March 2020. Some staff returned to the office in 2021 and more in the years since, though overall office utility consumption has remained lower than pre-pandemic levels. Sound Transit is continuing the process of downsizing and consolidating its office space use.

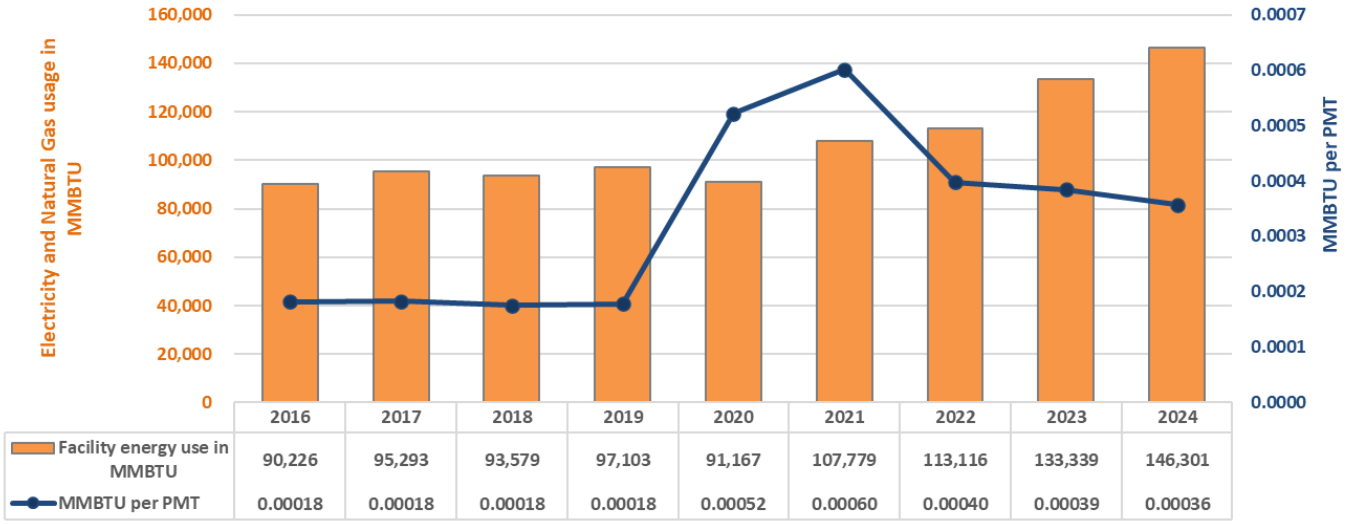
From 2023 to 2024, total facility electricity increased by 13%, but varied by line of business, with minor decreases in ST Express facilities and substantial increases in Link light rail facilities. Sound Transit also took ownership of several new maintenance facilities in 2024. Electricity consumption is also subject to external factors like weather. In 2024, heating degree days decreased 8% from 2023, and cooling degree days increased by 4%.

Changes in electricity by facility type include:

- Link light rail facilities increased electricity consumption by 38% from 2023 to 2024.
- Sounder facilities' electricity consumption increased slightly by 5% from 2023 to 2024.
- Across owned and leased properties, Sound Transit administrative facilities decreased electricity consumption in 2024 by 18%, driven by reduced office space.
- ST Express facilities' electricity consumption decreased by 3% from 2023 to 2024 but still exceeded pre-pandemic levels.

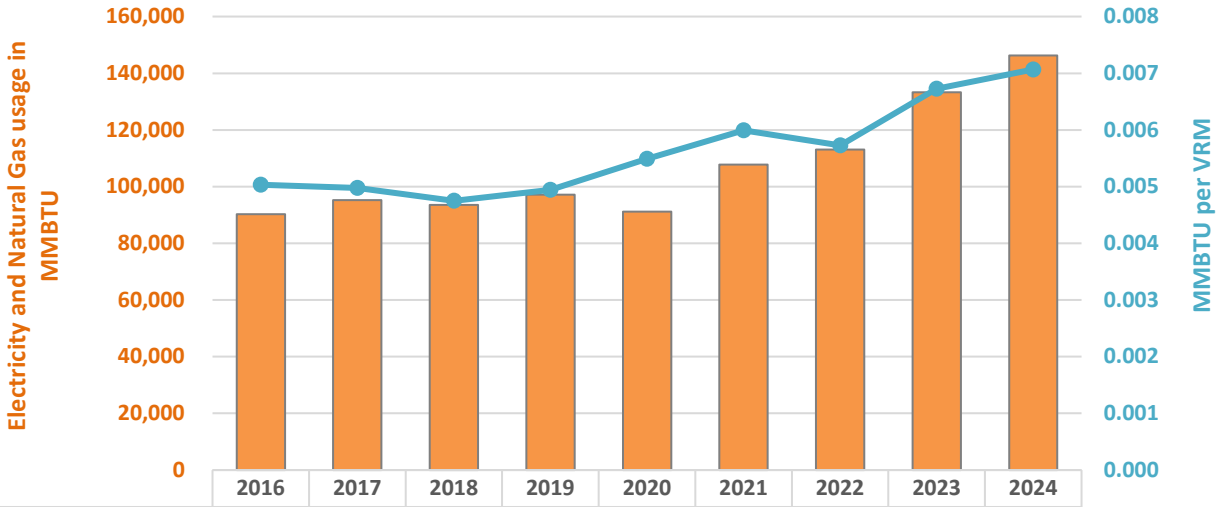
* 2019 Sustainability Plan Key Performance Indicator

Figure 7. Facility Energy Use (Normalized by PMT)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Facility energy use in MMBTU	90,226	95,293	93,579	97,103	91,167	107,779	113,116	133,339	146,301
MMBTU per PMT	0.00018	0.00018	0.00018	0.00018	0.00052	0.00060	0.00040	0.00039	0.00036

Figure 8. Facility Energy Use (Normalized by VRM)

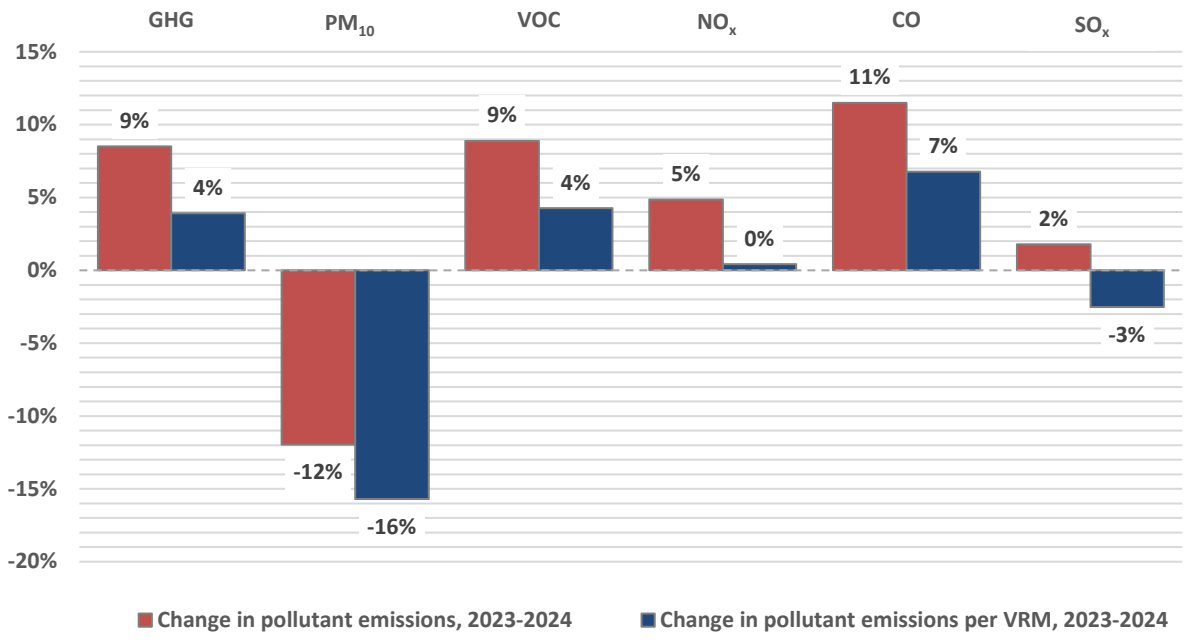


	2016	2017	2018	2019	2020	2021	2022	2023	2024
Facility energy use in MMBTU	90,226	95,293	93,579	97,103	91,167	107,779	113,116	133,339	146,301
MMBTU per VRM	0.0050	0.0050	0.0047	0.0049	0.0055	0.0060	0.0057	0.0067	0.0071

Air Pollutant Emissions

The sections below illustrate the trends in GHG emissions and CAP emissions from Sound Transit vehicle and facility operations. Figure 10 below shows the total percentage change and the change normalized per VRM by pollutant type from 2023 to 2024. As noted above, agency VRM increased by 4% from 2023 to 2024.

Figure 10. Changes in Pollutant Emissions, 2023-2024; Change in Pollutant Emissions per VRM, 2023-2024



GHG Emissions

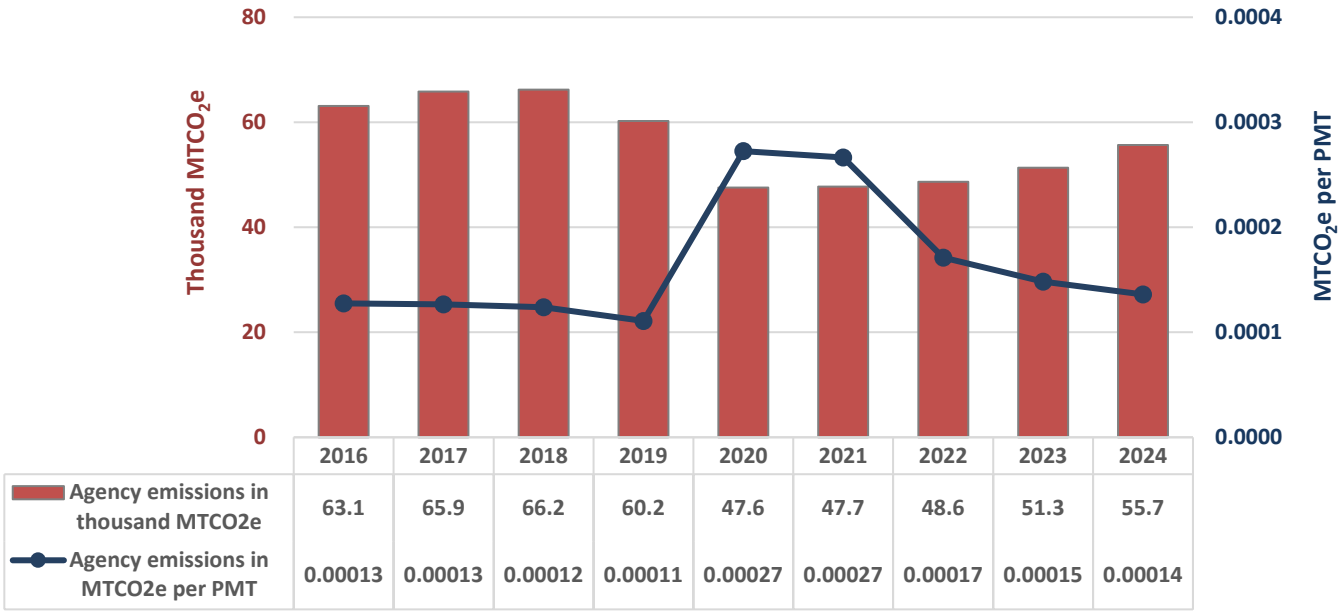
Total operational emissions increased 9% from 2023 to 2024. The increase is largely driven by increases in electricity use for traction power and facilities, as well as rail refrigerant use.

- Relative to 2018, agency GHG emissions have decreased 16%.*
- From 2023 to 2024, agency GHG emissions increased 9% due to increases in electricity use and refrigerants. There was also an increase in fuel consumption due to service expansion.

As Sound Transit service and ridership increased from 2011 through 2019, total agency GHG emissions in $MTCO_2e$ remained relatively stable overall, and normalized emissions were declining as ridership and service increased. In 2020, multiple factors caused a drop in absolute agency GHG emissions and an increase in GHG emissions per PMT as ridership levels dropped, pictured in Figure 11. Decreased service levels led to reduced fuel consumption, while the substantial drop in ridership drove normalized metrics upward. In 2024, total emissions increased 9%, while emissions normalized per PMT decreased by 8% relative to the prior year and emissions per VRM increased by 4%.

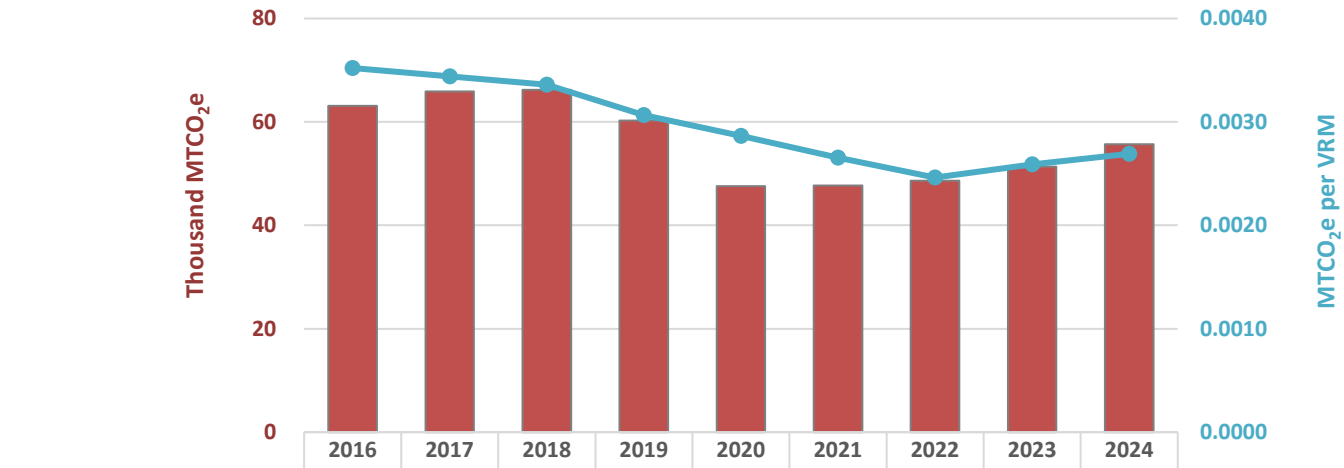
* 2019 Sustainability Plan Key Performance Indicator

Figure 11. Agency GHG Emissions (Normalized by PMT)



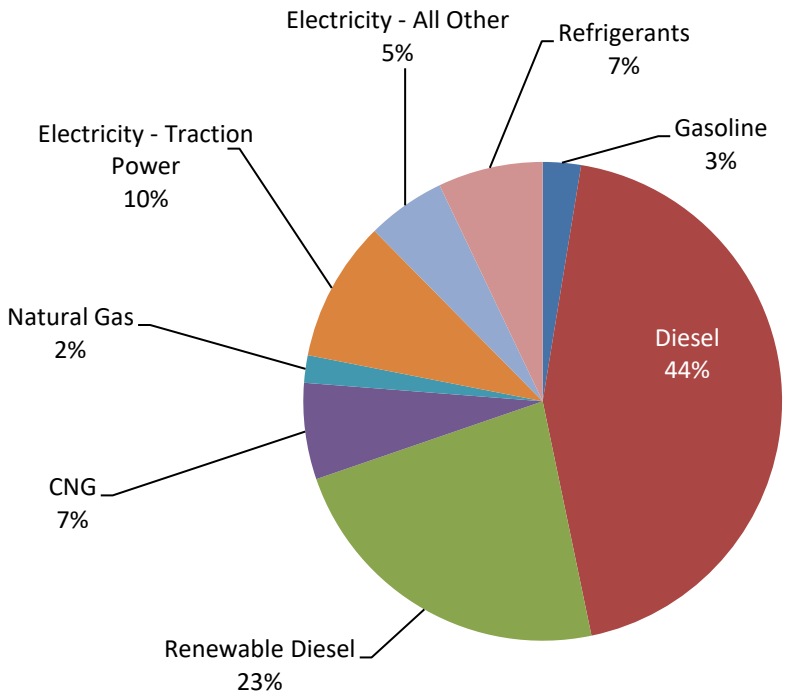
	2016	2017	2018	2019	2020	2021	2022	2023	2024
Agency emissions in thousand MTCO2e	63.1	65.9	66.2	60.2	47.6	47.7	48.6	51.3	55.7
Agency emissions in MTCO2e per PMT	0.00013	0.00013	0.00012	0.00011	0.00027	0.00027	0.00017	0.00015	0.00014

Figure 12. Agency GHG Emissions (Normalized by VRM)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Agency emissions in thousand MTCO2e	63.1	65.9	66.2	60.2	47.6	47.7	48.6	51.3	55.7
Agency emissions in MTCO2e per VRM	0.00352	0.00344	0.00336	0.00307	0.00287	0.00265	0.00246	0.00259	0.00269

Figure 13. GHG Emissions (Scope 1 and 2) by Source, 2024



CAPs

- Since 2018, total combined CAPs have increased by 1%.*
- From 2023 to 2024, total CAPs have increased by 7%.
- Contributions to CAPs varied by mode of transit, and service levels varied from 2023 to 2024.
    - VRM for ST Express Bus service decreased by 2% and Sounder Commuter Rail increased by 3.5%, while Tacoma Link increased 77% and Central Link light rail increased 11%.
- The associated changes in CAP emissions were also mixed.
    - Particulate matter (PM_{10}) decreased 12%, volatile organic compounds (VOCs) increased 9%, nitrogen oxides increased 5%, carbon monoxide (CO) increased 11%, and sulfur oxides (SO_X) increased 2%.

Table 3. Change in CAP Emissions

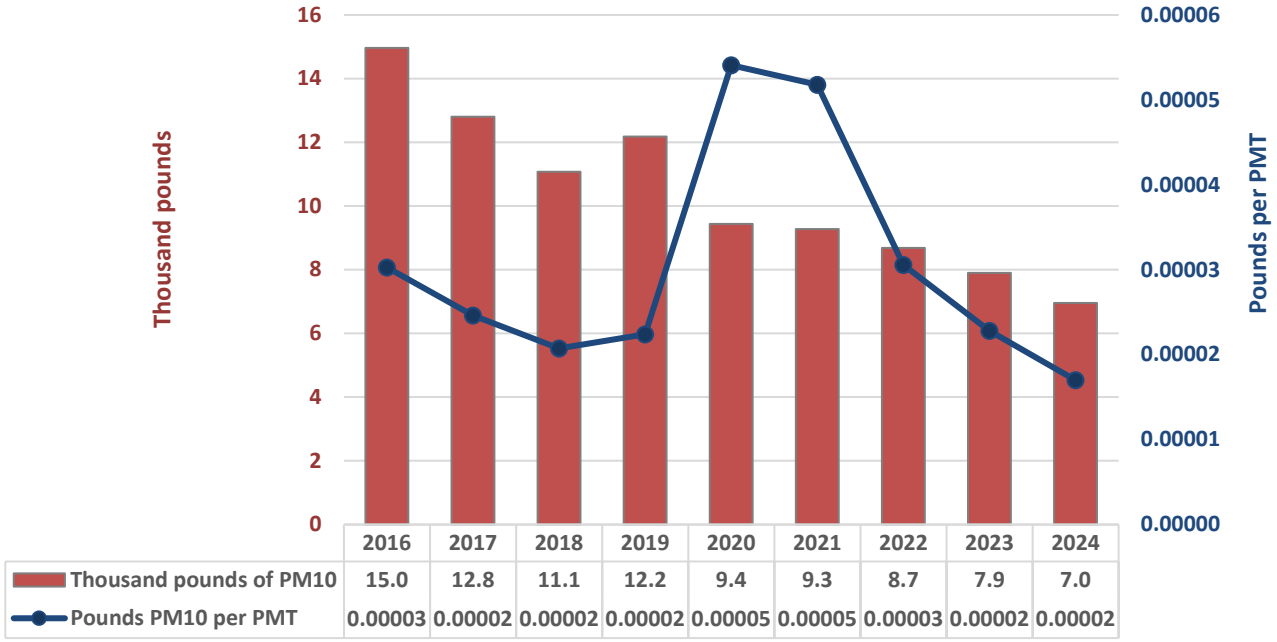
Pollutant	Change 2018–2024 (Absolute)	Change 2023–2024 (Absolute)
PM_{10}	-37%	-12%
VOCs	-19%	+9%
NO_X	-5%	+5%
CO	+19%	+11%
SO_X	-10%	+2%
Total Combined CAPs	**+1%**	**+7%**

* 2019 Sustainability Plan Key Performance Indicator

Sound Transit's long-term reduction in CAP emissions has been driven by ST Express's shift from reliance on diesel buses to diesel-electric hybrids, CNG, and renewable diesel buses, as well as toward clean electrically powered light rail and general improvements in emission controls. The agency has also upgraded all Sounder commuter rail engines to reduce air pollution.

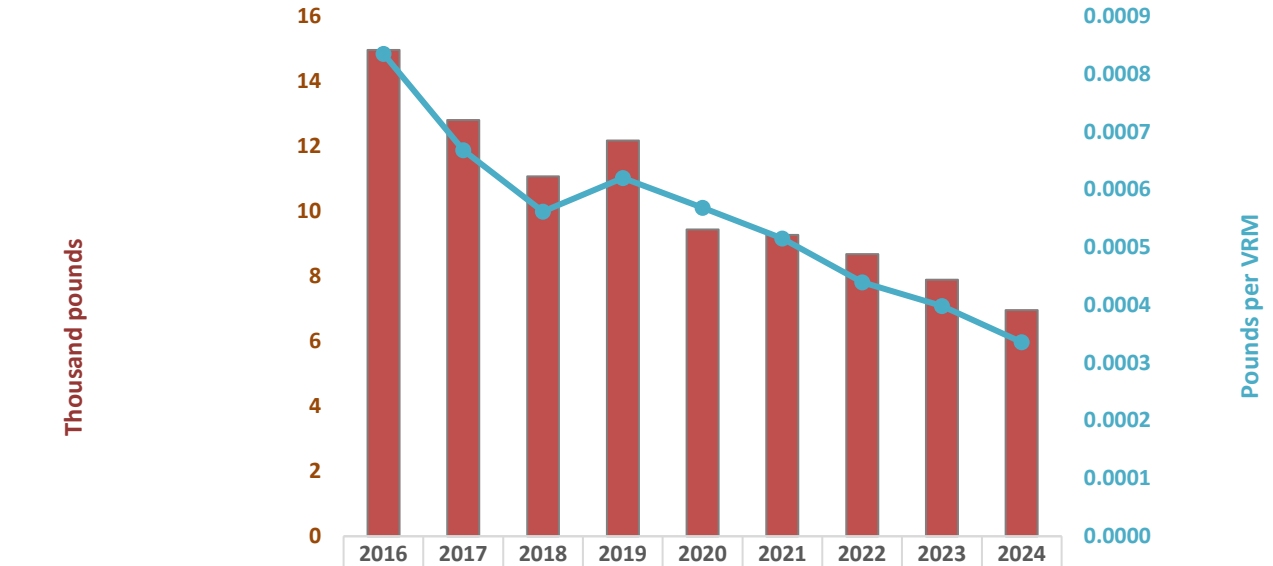
The figures below show the absolute and normalized change in PM_{10} and CO emissions over time. PM_{10} emissions are down 37% and CO emissions are up 19% since 2018.

Figure 14. Particulate Matter (PM_{10}) Emissions (Normalized by PMT)



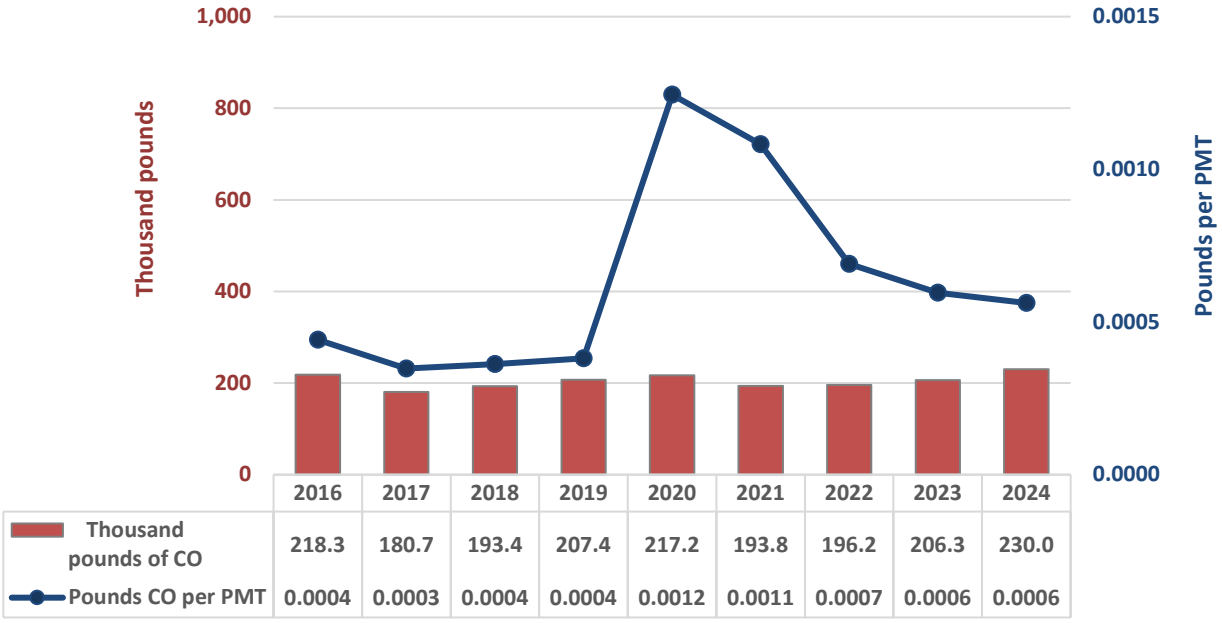
	2016	2017	2018	2019	2020	2021	2022	2023	2024
Thousand pounds of PM10	15.0	12.8	11.1	12.2	9.4	9.3	8.7	7.9	7.0
Pounds PM10 per PMT	0.00003	0.00002	0.00002	0.00002	0.00005	0.00005	0.00003	0.00002	0.00002

Figure 15. Particulate Matter (PM_{10}) Emissions (Normalized by VRM)



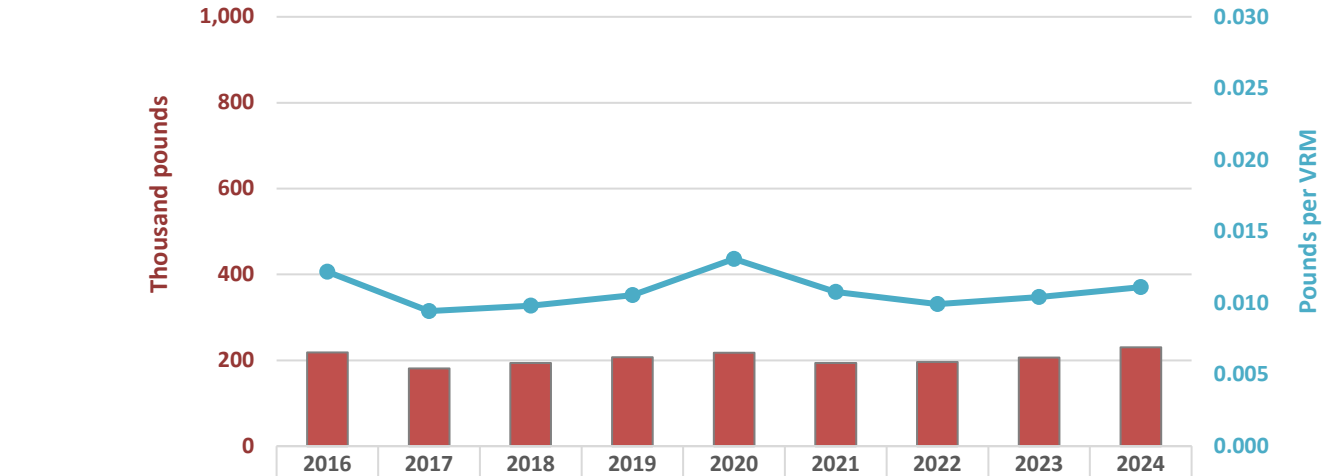
	2016	2017	2018	2019	2020	2021	2022	2023	2024
Thousand pounds of PM10	15.0	12.8	11.1	12.2	9.4	9.3	8.7	7.9	7.0
Pounds PM10 per VRM	0.0008	0.0007	0.0006	0.0006	0.0006	0.0005	0.0004	0.0004	0.0003

Figure 16. Carbon Monoxide (CO) Emissions (Normalized by PMT)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Thousand pounds of CO	218.3	180.7	193.4	207.4	217.2	193.8	196.2	206.3	230.0
Pounds CO per PMT	0.0004	0.0003	0.0004	0.0004	0.0012	0.0011	0.0007	0.0006	0.0006

Figure 17. Carbon Monoxide (CO) Emissions (Normalized by VRM)



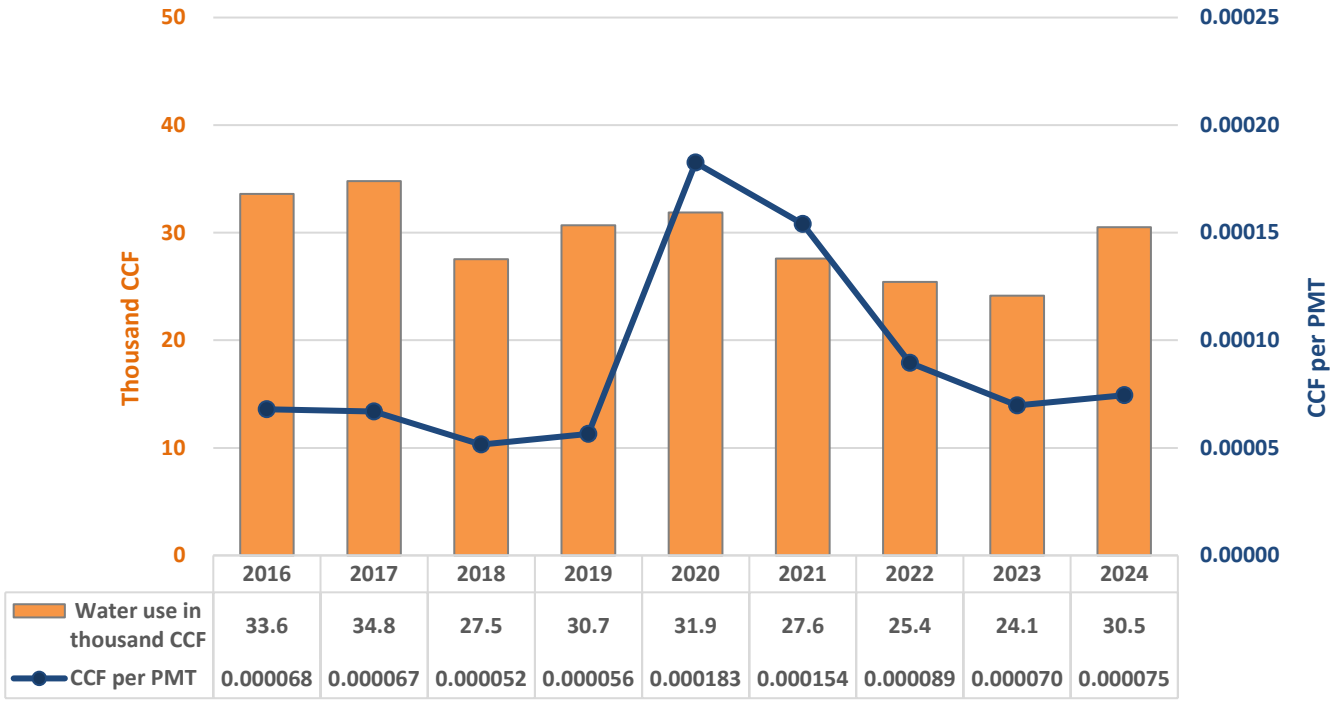
	2016	2017	2018	2019	2020	2021	2022	2023	2024
Thousand pounds of CO	218.3	180.7	193.4	207.4	217.2	193.8	196.2	206.3	230.0
Pounds CO per VRM	0.012	0.009	0.010	0.011	0.013	0.011	0.010	0.010	0.011

Water Use

In 2024, Sound Transit increased water consumption by 26% from 2023 to 2024. While 2024 was a warmer year with increased cooling degree days, Sound Transit also expanded light rail stations and added landscaping in its establishment phase. In addition, there were a few water leaks and increases in pressure washing.

- Since 2018, total water use has increased by 11%.*
- From 2023 to 2024, water use increased by 26%. (Some data quality corrections were made to 2020-2023 data.)
- Total agency water use is primarily driven by landscape irrigation and is therefore variable from year to year, with weather and landscape planting cycles.
- Changes in agency water consumption from the prior year varied across agency functions in 2024. Maintenance facilities increased water consumption by 45% from the prior year. Customer facilities increased consumption by 23%, and administrative facilities decreased water consumption by 9%.

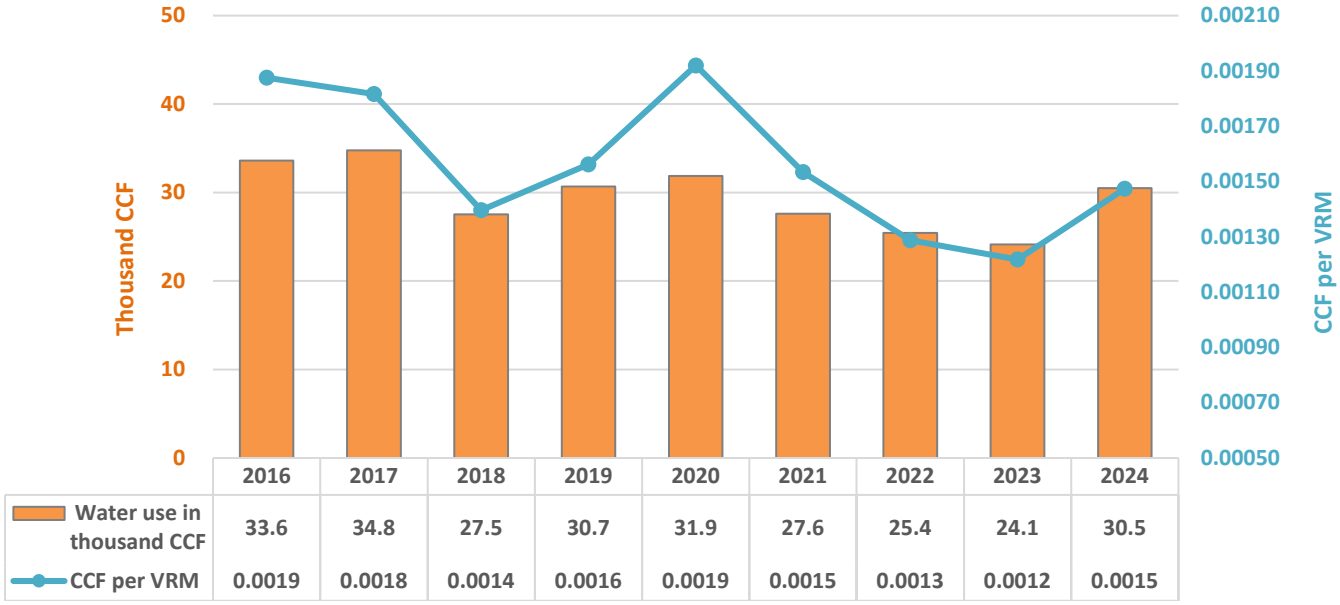
Figure 18. Water Use (Normalized by PMT)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Water use in thousand CCF	33.6	34.8	27.5	30.7	31.9	27.6	25.4	24.1	30.5
CCF per PMT	0.000068	0.000067	0.000052	0.000056	0.000183	0.000154	0.000089	0.000070	0.000075

Note: 1 CCF equals 100 cubic feet, or 748 gallons

Figure 19. Water Use (Normalized by VRM)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Water use in thousand CCF	33.6	34.8	27.5	30.7	31.9	27.6	25.4	24.1	30.5
CCF per VRM	0.0019	0.0018	0.0014	0.0016	0.0019	0.0015	0.0013	0.0012	0.0015

Waste Generation

The amount of waste diverted from landfills increased 4% from 2023 to 2024, but overall waste generation rose by 20% and the diversion rate decreased by 14%.

- Relative to 2018, waste generation has increased by 16%.
- From 2023 to 2024, waste generation increased 20%.
- The diversion rate in 2024 was 30%, down from 34% in 2022. Diversion at office buildings, where the majority of agency staff work, was much higher than the agencywide rate, at 72% in 2024.*

Inter-annual variability is evident in Sound Transit's waste generation trend, with 2024 seeing the highest waste generation in Sound Transit facilities since 2014. This increase is largely due to higher service levels and an increase in agency staff. Despite this, the total amount of garbage recycled increased over the same period. The portion of recyclables and compost diverted from the landfill (diversion rate) has fluctuated, reaching a low of 31% in 2012 and a high of 39% in 2021.

Sound Transit has worked to improve solid waste diversion from landfill, including enhancing employee recycling education and implementing paper towel composting in the restrooms at agency offices. The shift of administrative staff to remote work in 2020 decreased office recycling and composting volumes as a component of the total agency waste stream. However, in 2024, recycling and composting quantities reached back to pre-pandemic levels.

- Composting quantities in 2024 decreased 11% from the prior year, and recycling quantities increased 30%, while the agency's total diversion rate during that period decreased from 34% to 30%.
- Waste diversion rates for central office facilities are substantially higher than for other facilities. As depicted in Table 4 below, the diversion rate for central office facilities remained in the 70-73% range prior to the pandemic but sank to 51% in 2020 with the move of the administrative staff to remote work. In 2021 and 2022, the central office diversion rate rose to 73% as staff returned to office.

* 2019 Sustainability Plan Key Performance Indicator

Figure 20. Waste Generation and Diversion, Tons and Diversion Rate (Percentage)

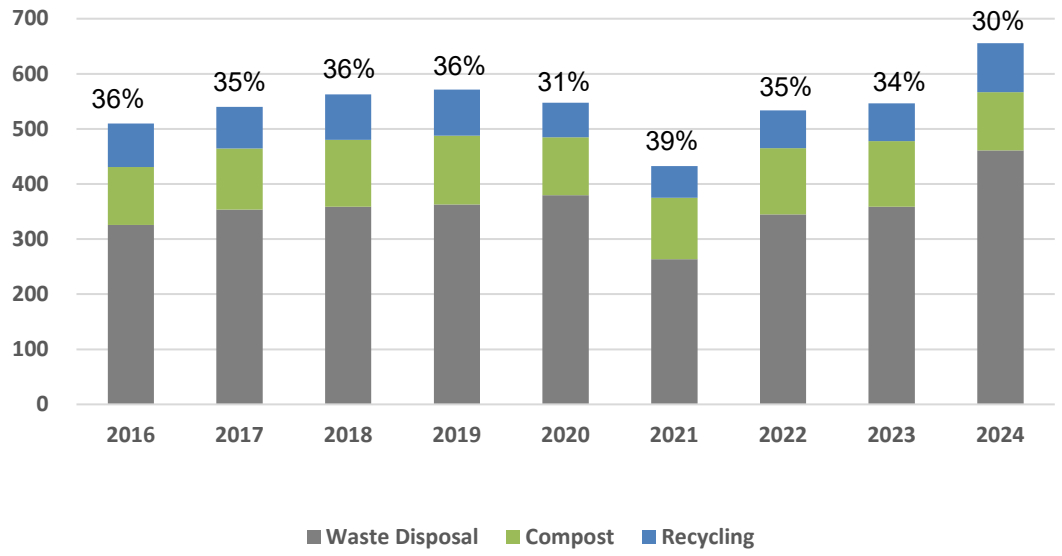


Table 4. Waste Diversion Rates by Facility Type

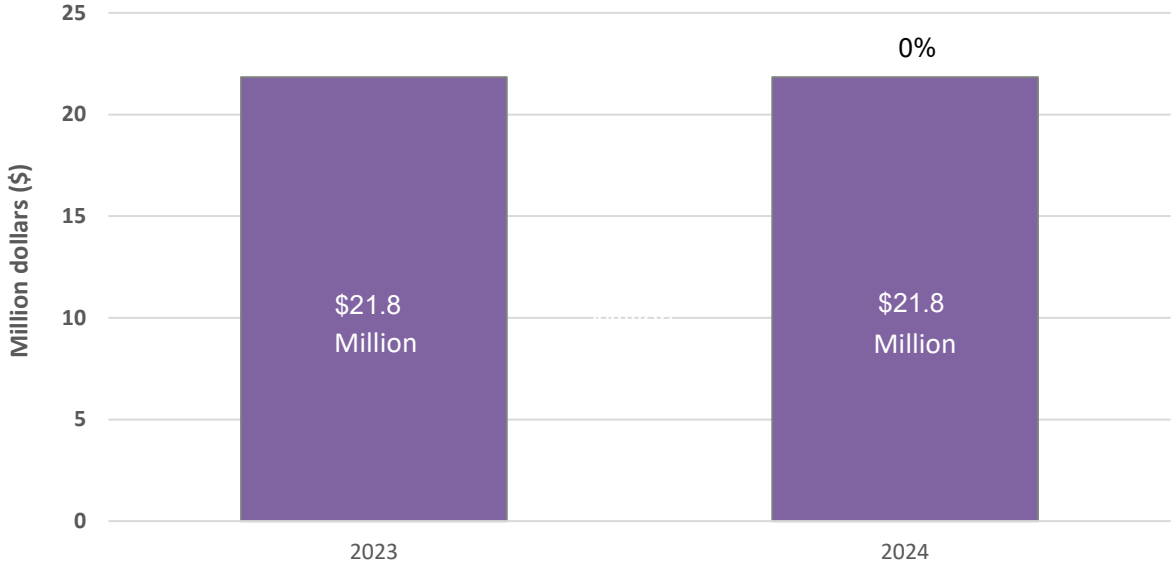
Year	HQ/Office	Other Facilities	Total
2015	64%	25%	35%
2016	67%	24%	36%
2017	60%	24%	35%
2018	64%	24%	36%
2019	64%	24%	36%
2020	51%	23%	31%
2021	73%	29%	39%
2022	73%	29%	35%
2023	70%	23%	34%
2024	72%	25%	30%

Fuel and Utility Expenses

- Relative to 2018, operating expenses have increased by 43%.
- From 2023 to 2024, there was little change in operating expenses (-0.01%)

Resource costs across categories have generally trended upward over time. However, the pandemic initially resulted in a substantial decrease in revenue vehicle fuel expenses in 2020. With rising consumption and fuel prices, agency fuel costs in 2021 rebounded from the 2020 lows, and then in 2022 agency fuel costs increased dramatically due to much higher fuel prices, before decreasing slightly in 2023. VRM increased ~4% from 2023 to 2024.

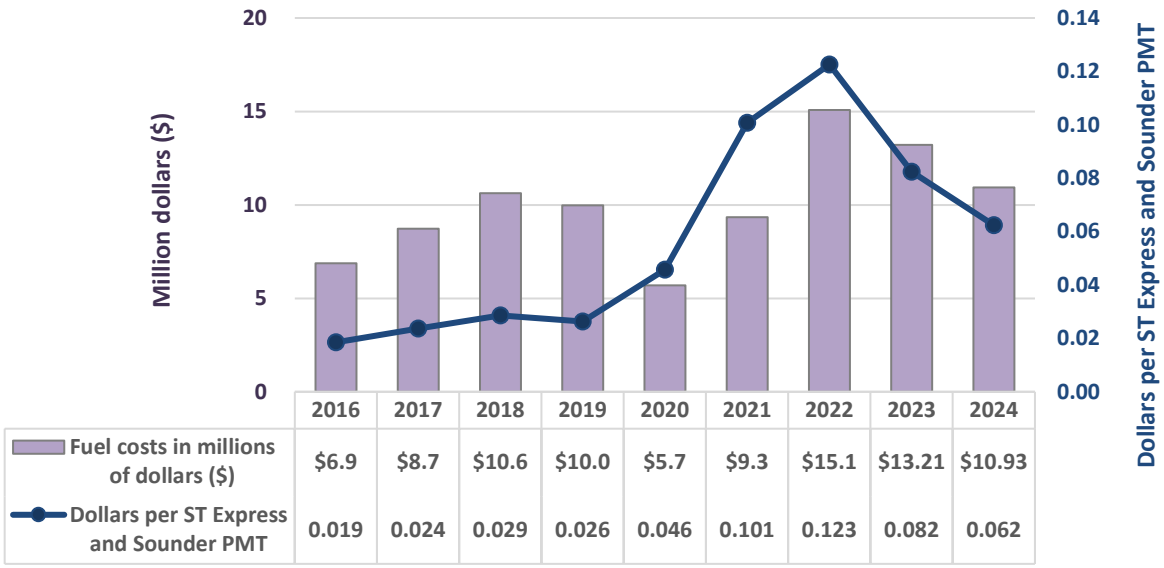
Figure 21. Fuel and Utility Expenses, 2023-2024



Transit Fuel Costs (ST Express and Sounder)

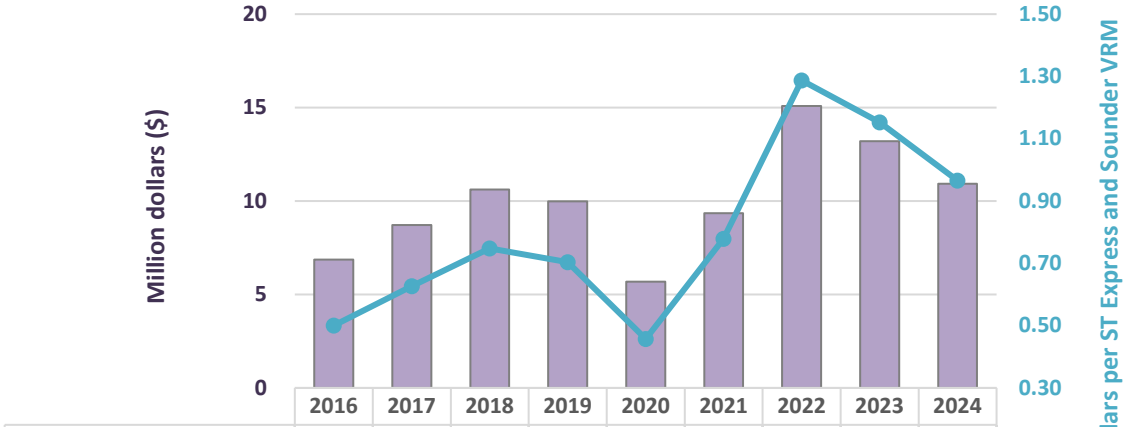
- Relative to 2018, transit fuel costs have increased 3% (down 5% for ST Express and up 20% for Sounder).
- From 2023 to 2024, transit fuel costs decreased by 17% (down 19% for ST Express and down 13% for Sounder).
- Transit vehicle fuel use accounted for 50% of Sound Transit's fuel and utility expenses in 2024, down from 60% in 2023.
- In 2024, transit vehicle fuel expenses accounted for roughly 1.8% of Sound Transit's operating budget, down from 2.8% the prior year.

Figure 22. Sounder and ST Express Fuel Costs (Normalized by PMT)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fuel costs in millions of dollars ($)	$6.9	$8.7	$10.6	$10.0	$5.7	$9.3	$15.1	$13.21	$10.93
Dollars per ST Express and Sounder PMT	0.019	0.024	0.029	0.026	0.046	0.101	0.123	0.082	0.062

Figure 23. Sounder and ST Express Fuel Costs (Normalized by VRM)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fuel costs in millions of dollars ($)	$6.9	$8.7	$10.6	$10.0	$5.7	$9.3	$15.1	$13.21	$10.93
Dollars per ST Express and Sounder VRM	0.50	0.63	0.75	0.70	0.46	0.78	1.29	1.15	0.97

Utility Expenses

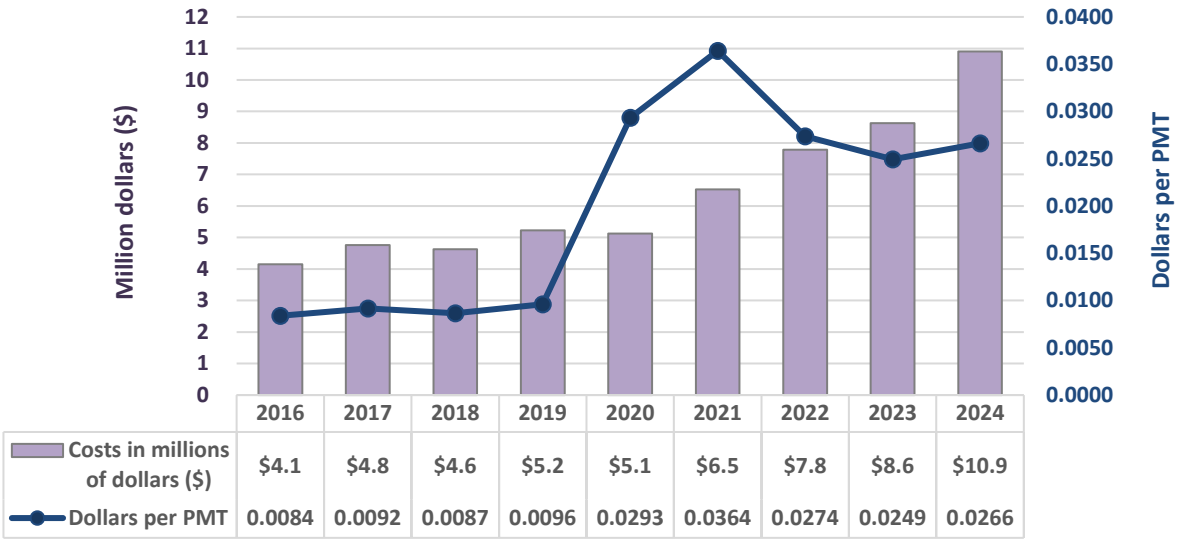
- Relative to 2018, utility costs have increased by 136%.
- From 2023 to 2024, utility costs increased by 26%.

Table 5. Change in Utility Costs

	Change 2018-2024 (Absolute)	Change 2023-2024 (Absolute)
Traction power electricity costs	+171%	+24%
Facility electricity costs	+100%	+32%
Facility natural gas costs	+165%	-2%
Water costs	+63%	+39%
Waste, recycling, and compost costs	+49%	+30%
Combined Utility Costs	**136%**	**26%**

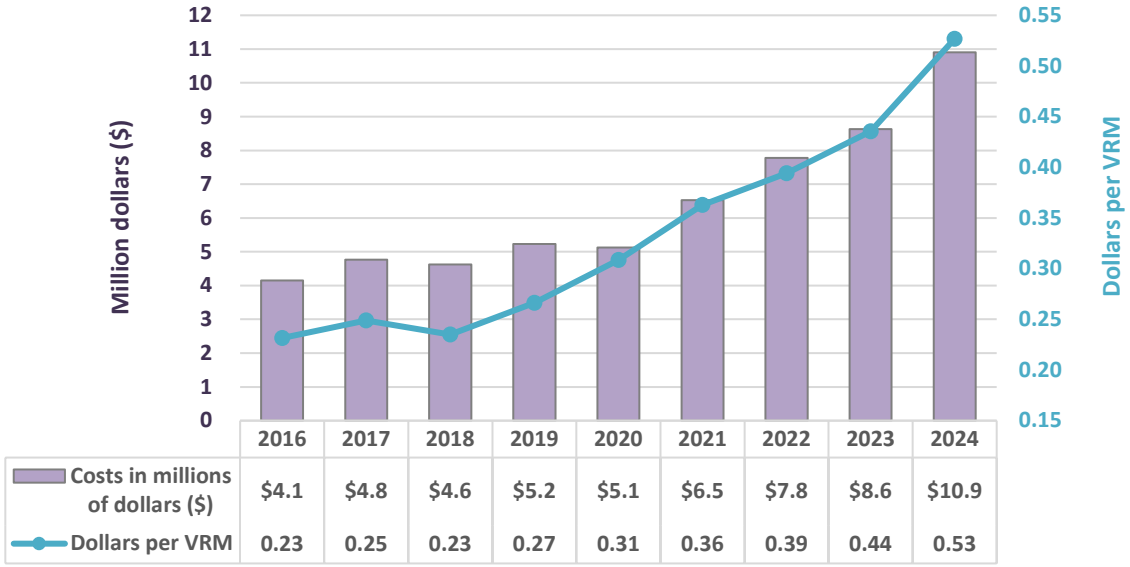
Utility expenses for electricity, water, and waste have increased over time in line with usage trends. Figure 24 below shows the change in resource costs over time. Water costs have increased by 63% during that period but experience inter-annual variability. The agency's fuel expenses have fluctuated with the volatility in petroleum prices, while other resource costs have increased more steadily.

Figure 24. Non-Vehicle Utility Costs (Normalized by PMT)



Note: Stormwater and sewer costs are not included.

Figure 25. Non-Vehicle Utility Costs (Normalized by VRM)



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Costs in millions of dollars ($)	$4.1	$4.8	$4.6	$5.2	$5.1	$6.5	$7.8	$8.6	$10.9
Dollars per VRM	0.23	0.25	0.23	0.27	0.31	0.36	0.39	0.44	0.53

Appendix B – 2024 Sustainability costs and savings

The table below summarizes a sample of costs and savings from resource conservation projects completed as of the end of 2024. This data captures many significant monetary costs and savings. However, projects may have additional sustainability benefits that cannot be represented as financial savings – from reduced maintenance cycles to improved air quality.

Note that the savings figures below do not include labor and material cost savings related to improved operations and maintenance efficiency. Payback year estimates reflect applicable grants and or rebates. Many projects with long payback periods still incur significant labor and material cost savings and reduce the frequency of maintenance.

PROJECT	PROJECT FINISHED	CAPITAL COSTS	2024 SAVINGS	SAVINGS TO DATE, 2024	PAY-BACK YEAR	DESCRIPTION
ST Express mid-day bus storage	2008	$0	$186,720	$2,797,159	2008	This program allows Pierce County buses to stay in Seattle until the afternoon commute to avoid driving back empty.
Mercer Island Park & Ride sewer deduct meter	2008	$0	$1,470	$24,724	2008	This Mercer Island Park & Ride meter reduces water costs by accounting for irrigation water that does not enter the wastewater stream.
Sounder automatic engine start-stop system	2009	$230,596	$195,683	$1,896,540	2013	This equipment was installed to shut down Sounder commuter rail engines when not in use and reduces engine idling time by about 34 percent and significantly reduces air pollution.
Sounder Lakewood-Seattle wayside power	2010	$490,000	$131,436	$1,555,221	2015	Electric wayside power units are used instead of the commuter rail locomotives' diesel engines to heat and power coach cars during layovers, reducing diesel use and air pollutant emissions. Wayside units were installed in Tacoma in 2010 and were then moved to Lakewood in 2013, where more units were added.
Sounder Everett-Seattle wayside power	2011	$315,000	$9,354	$291,842	2026	
Central Link OMF sewer deduct meter	2012	$2,600	$34,514	$406,180	2012	This Central Link light rail Operations and Maintenance Facility meter reduces water costs by accounting for irrigation water that does not enter the wastewater stream.
Union Station HVAC controls upgrade*	2013	$405,778	$25,581	$281,537	2022	The agency upgraded the controls for the Union Station Heating, Ventilation and Cooling (HVAC) system.

PROJECT	PROJECT FINISHED	CAPITAL COSTS	2024 SAVINGS	SAVINGS TO DATE, 2024	PAY-BACK YEAR	DESCRIPTION
Federal Way Transit Center garage lighting upgrades*	2013	$579,334	$32,436	$356,969	2023	Three transit facility garages were retrofitted for LED lighting. These locations included Federal Way Transit Center, Kent Sounder station and Auburn Sounder station.
Kent Station garage lighting upgrades*	2013	$99,773	$5,766	$63,461	2022	
Auburn Station garage lighting upgrades*	2013	$208,985	$11,533	$126,922	2023	
Angle Lake Station solar power	2016	N/A – Installed as part of Design Build project	$1,651	$12,623	N/A	14 KW solar array system on the Angle Lake Station platform canopy and 50 KW solar array system on the Angle Lake Garage pedestrian walkway. These solar panels were installed in the original design build contract for the facility.
Angle Lake Garage solar power	2016		$3,496	$29,357	N/A	
Kent Station lighting upgrades*	2017	$169,849	$10,210	$79,246	2030	Kent, Sumner and Puyallup Stations were upgraded with LED lighting.
Sumner Station lighting upgrades*	2017	$138,967	$10,250	$79,557	2027	
Puyallup Station lighting upgrades*	2017	$169,849	$10,622	$82,444	2029	
OMF interior and exterior LED lighting and EMS controls upgrade*	2018	$1,065,415	$70,944	$482,419	2027	The building control system was upgraded at the Operations and Maintenance Facility, which allows for improved building mechanical operations. The inefficient lighting was replaced with LED in the maintenance shop and exterior parking areas.
Mukilteo Parking Lot lighting upgrades	2018	$13,150	$3,558	$23,444	2021	Parking lot lighting was retrofitted with LED lights near Mukilteo Station.
Issaquah Transit Center lighting upgrades*	2018	$161,514	$8,921	$58,683	2035	Lighting was upgraded to LEDs at the Issaquah Transit Center, Mercer Island Park & Ride, and King St. Stations from parking garages and station platforms to area lighting.
Mercer Island Park and Ride lighting upgrades*	2018	$191,424	$8,402	$55,016	2039	

PROJECT	PROJECT FINISHED	CAPITAL COSTS	2024 SAVINGS	SAVINGS TO DATE, 2024	PAY-BACK YEAR	DESCRIPTION
King St. Station lighting upgrades*	2018	$245,262	$4,966	$29,810	2066	
Sounder Yard solar power	2018	N/A - Installed as part of Design Build project	$109	$1,312	N/A	2.1 KW solar array system on the Sounder Yard facility. These solar panels were installed in the original design build contract for the facility.
Light Rail vehicles lighting upgrades	2019	$137,022	$16,837	$98,300	2025	Interior lighting and headlights on Link Light Rail were upgraded to LED, which reduced lighting energy use by 45%. The project also improved visibility and reduced maintenance requirements for the lighting system.
Light Rail vehicles oil-less compressors	2019	$650,100	$32,034	$179,039	2040	Compressors on 62 Link Light Rail vehicles were upgraded with oil-less compressors as part of their lifecycle replacement. The new compressors do not use any oil, reduce maintenance costs and improve reliability.
Edmonds Station Parking Lot lighting upgrades	2019	$7,620	$1,577	$8,942	2024	Facilities retrofitted (24) 250 watt metal halide parking lot lights with 100 watt LED lights. The new lights use 60% less energy and require significantly less maintenance.
Angle Lake Garage irrigation controls	2020	$1,903	$214	$1,017	2029	Installed smart irrigation controls at four locations.
Everett Sounder Station irrigation controls	2020	$2,562	$403	$1,916	2027	
Issaquah Transit Center irrigation controls	2020	$2,642	$1,307	$5,661	2022	
Mercer Island Park and Ride irrigation controls	2020	$7,363	$1,301	$5,528	2026	
Lynnwood Warehouse lighting upgrades	2020	$52,606	$4,489	$18,116	2028	Replaced interior and exterior linear fluorescent and metal halide lighting with LED.
Beacon Hill Station deduct meter	2020	$533	$275	$2,211	2021	This meter reduces water costs by accounting for irrigation water that does not enter the wastewater stream.
OMF East solar power	2021	N/A - Installed as part of Design Build project	$2,757	$28,705	N/A	100 KW solar array system on the OMF East roof. These solar panels were installed in the original design build contract for the facility.

PROJECT	PROJECT FINISHED	CAPITAL COSTS	2024 SAVINGS	SAVINGS TO DATE, 2024	PAY-BACK YEAR	DESCRIPTION
Union Station Security Operations Center rooftop HVAC unit	2021	$390,329	$22,344	$69,848	2036	Added a dedicated rooftop HVAC unit to the security operations center at Union Station, which operates 24/7. This part of Union Station was previously served by the main building's HVAC, which can now be placed on a more efficient schedule.
Angle Lake Garage irrigation controls - phase 2	2021	$5,160	$1,187	$4,254	2025	Installed flow sensor and master valve. Upgraded irrigation controller.
Bonney Lake Park and Ride irrigation controls	2021	$5,926	$617	$2,212	2031	Upgraded master valves, flow sensors and controllers at four locations.
Kent Garage irrigation controls	2021	$4,346	$435	$1,449	2031	
Union Station irrigation controls	2021	$3,006	$608	$2,026	2026	
Central OMF irrigation controls	2021	$11,000	$2,204	$7,161	2026	
Mt Baker Station deduct meter	2021	$533	$1,080	$8,773	2021	This meter reduces water costs by accounting for irrigation water that does not enter the wastewater stream.
Tacoma Link OMF Solar	2022	N/A - Installed as part of Design Build project	$3,991	$11,652	N/A	65 KW Solar array system on the Tacoma Link OMF
Airport Station LED lighting	2022	$95,189	$8,666	$25,998	2033	Retrofit existing lighting with LED lighting.
Tukwila International Blvd Station LED lighting	2022	$182,260	$8,066	$20,165	2045	
OMFE irrigation controls	2022	$1,929	$4,234	$9,527	2022	Completed a central control upgrade.
Tacoma Link OMF irrigation controls	2022	$1,929	$176	$396	2033	
Othello Station irrigation controls	2022	$4,125	$740	$1,541	2028	Installed smart controller and completed a central control upgrade.
Puyallup Station irrigation controls	2022	$2,434	$976	$2,522	2025	

PROJECT	PROJECT FINISHED	CAPITAL COSTS	2024 SAVINGS	SAVINGS TO DATE, 2024	PAY-BACK YEAR	DESCRIPTION
Mukilteo Station irrigation controls	2022	$2,434	$179	$387	2036	
Federal Way Transit Center irrigation controls	2022	$2,434	$579	$1,255	2027	
Roosevelt Station deduct meter	2022	$533	$787	$1,831	2023	These meters reduce costs by accounting for irrigation water that does not enter the wastewater stream.
University District Station deduct meter	2022	$533	$366	$895	2024	
Mt. Baker Station LED Lighting	2023	$358,914	$9,451	$14,964	2060	Retrofit existing lighting with LED lighting at 5 stations.
SoDo Station LED Lighting	2023	$74,075	$3,383	$4,792	2044	
Columbia City Station LED Lighting	2023	$59,195	$5,159	$5,589	2034	
Rainier Beach Station LED Lighting	2023	$37,865	$3,405	$3,689	2033	
Othello Station LED Lighting	2023	$47,999	$4,432	$4,802	2033	
Kent Garage Turf Removal	2023	$19,900	$853	$1,350	2047	Removed 2,000 sq. Ft. of grass turf and replaced with shrubs and ground cover
Central OMF Turf Removal	2023	$55,460	$2,675	$4,236	2044	Removed 5,000 sq. Ft. Of grass turf and replaced with shrubs and ground cover
Tacoma Link OMF Irrigation Controls Phase 2	2024	$700	$104	$104	2030	Added additional smart irrigation controller and flow sensor.
Auburn Station Irrigation Controls	2024	$2,562	$952	$952	2026	Added additional smart irrigation controls.

* Cost savings figures for projects implemented through an Energy Performance Contract (denoted with an *) represent average, annualized savings based on the project's projected lifetime savings. These projects may ultimately achieve more energy and cost savings than the guaranteed amount.

Appendix C – 2024 Key Performance Indicators

The table below presents the Key Performance Indicators (KPIs), as defined in the 2019 Sustainability Plan. The table also shows the KPIs in relation to their associated Priorities, Long-term goals and Short-term goals, per the Sustainability Plan. The KPIs reflect current progress compared to the 2019 Sustainability Plan's baseline year of 2018. Note that the KPIs below are a subset of the 2019 Sustainability Plan's metrics.

PRIORITY	LONG-TERM GOALS	SHORT-TERM GOALS	KEY PERFORANCE INDICATOR	2018 BASELINE VALUE	2024 VALUE AND/OR PERCENT CHANGE
People	Social equity addressed and implemented as an agency value	Contribute to a revolving loan fund for affordable housing revolving loan fund	# of dollars contributed to affordable housing revolving loan fund	Contributions began in 2019	$4 million
		Build staff awareness and capacity to integrate equity into all business lines	% of staff trained in equity and inclusion	37% of staff trained	• 97% of staff completed Equal Employment Opportunity Training • 75% of staff completed Implicit Bias Training • 55% of staff completed Inclusion Training • 22% of staff completed Microaggressions in the workplace training
		Meet or exceed workforce diversity goals for construction contractors Goals: • 21% people of color • 12% women • 20% apprentices	% of hours worked by diverse communities on ST job sites	• 29% by people of color • 7% by women • 20% by apprentices	• 43% by people of color • 7% by women • 15% by apprentices
	All staff champion sustainability	Certify key staff to green design and building management professional accreditations	# of staff trained to sustainable professional accreditations	• 22 new Envision Sustainability Professionals • 17 new LEED Accredited Professionals • 5 other new sustainability certifications	• 35 Envision Sustainability Professionals • 16 LEED Accredited Professionals • 14 other sustainability certifications

PRIORITY	LONG-TERM GOALS	SHORT-TERM GOALS	KEY PERFORANCE INDICATOR	2018 BASELINE VALUE	2024 VALUE AND/OR PERCENT CHANGE
Planet	Achieve carbon free operations	Reduce greenhouse gas emissions by 10 percent	% change in greenhouse gas emissions	66,230 tonnes of CO2e	55,692 tonnes of CO2e; 16% reduction since 2018
			% change in criteria air pollutants	• Particulate Matter: 11,078 lbs • Volatile Organic Compounds: 15,485 lbs • NOx: 399,828 lbs • CO: 193,411 lbs • SOx: 9,986 lbs	• Particulate Matter: 6,956 lbs; 37% decrease since 2018 • Volatile Organic Compounds: 12,526 lbs; 19% decrease since 2018 • NOx: 380,686 lbs; 5% decrease since 2018 • CO: 230,031 lbs; 19% increase since 2018 • SOx: 8,993 lbs; 10% decrease since 2018
		Increase production from solar panels to 750 KW	# of kW of renewable energy production	• 76,257 kWh produced • 66.1 KW installed total	• 176,085 kWh produced in 2024 • 268 KW installed total
		Purchase available cost-effective, carbon-free electricity	% change in renewable electricity procurement	85% electricity from clean and renewable sources	84% electricity from clean and renewable sources in 2023; 1% decrease since 2018
		Decrease total energy use 5 percent for all facilities built before 2018	% of facility energy reduced	27,008,074 KBtu	24,567,024 kBtu; 9% reduction since 2018
	Enhance ecosystem functions	Achieve 100 percent environmental compliance (zero fineable violations)	# of fineable environmental compliance violations	Four	Zero
		Reduce total water use by 10 percent at all existing facilities and sites established before 2018	% change in agency water use	27,521 CCF used	30,506 CCF used; 11% increase since 2018

PRIORITY	LONG-TERM GOALS	SHORT-TERM GOALS	KEY PERFORANCE INDICATOR	2018 BASELINE VALUE	2024 VALUE AND/OR PERCENT CHANGE
Prosperity	Build resilience to climate change and natural or manmade disasters	Develop staff awareness of individual roles in emergency prepared	% of staff trained in emergency preparedness	Training began in 2019	• 250 staff trained in core safety training • 192 staff trained in a non-revenue vehicle safe driving course • 179 staff certified in First Aid/CPR/AED • 19 staff trained in Stop The Bleed • 82 staff trained in De-Escalation/Personal Safety • 244 staff trained in Safety Management Systems
		Conduct a Climate Vulnerability Assessment as part of each major system capital expansion project	% of projects that include Climate Change Vulnerability Assessments	Assessments began in 2019	100% of eligible projects
	Maximize operational efficiency	Divert 50 percent of office waste to recycling or compost	% of waste diverted	35%	30%
		Include green methods or features in at least 75 percent of all new agency procurements	% increase in # of and dollar value of procurements	• 19% of new procurements • $299M in value	• 75 procurements; 21% of procurements – 10% increase in number of procurements since 2018 • $875M in value – 193% increase since 2018