Fleet Vehicles & Equipment

Strategies

FV1	Use drop-in renewable fuels
FV2	Deploy electric vehicle charging across Port waterfront properties
FV3	Transition to electric vehicles
FV4	Right-size vehicles and fleet
FV5	Use technology to gather data and improve efficiency
FV6	Educate Port drivers on eco-driving and fleet use practices

Emissions: Scope 1

1%

of Port Maritime GHG 2019 emissions

400 Maritime fleet vehicles and equipment assets

Roughly two-thirds of the fleet is powered by gasoline, and one-third by diesel. Assets include 30+ hybrid electric vehicles and equipment (e.g., forklifts and carts) powered by electricity or propane.

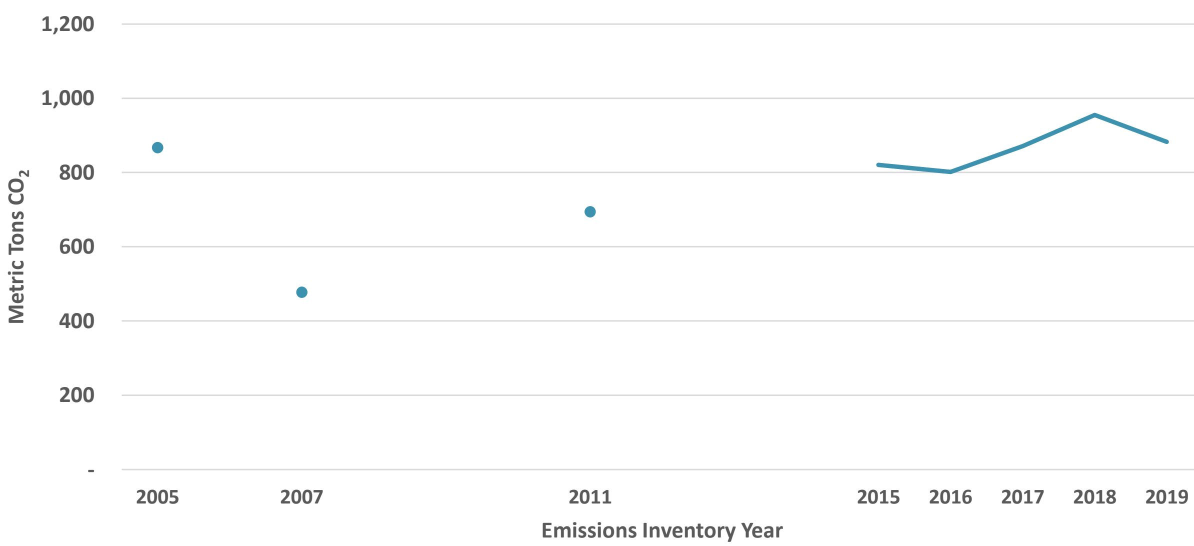
Fleet Vehicles & Equipment

Context

The Port's fleet includes cars, vans, trucks, specialized heavy-duty equipment, small boats, and cargo-handling equipment. Roughly two-thirds of the fleet is powered by gasoline, and one-third by diesel. Assets include about 30 hybrid electric vehicles and equipment units (e.g., forklifts and carts) powered by electricity or propane.

The fleet's fuel use and associated GHG emissions have not declined since 2005. Fuel use has varied from year to year, generally trending upward since 2015. Growth in gasoline use accounts for most of the increased emissions. The demand for diesel fuel, used in larger trucks and heavy equipment, has not decreased, but diesel emissions per gallon have declined as the Port replaced fossil diesel with bio-based blends and renewable diesel. Recognizing the need to address emissions from fleet vehicles, in 2019 the Port developed sustainable fleet recommendations to reduce fleet emissions.

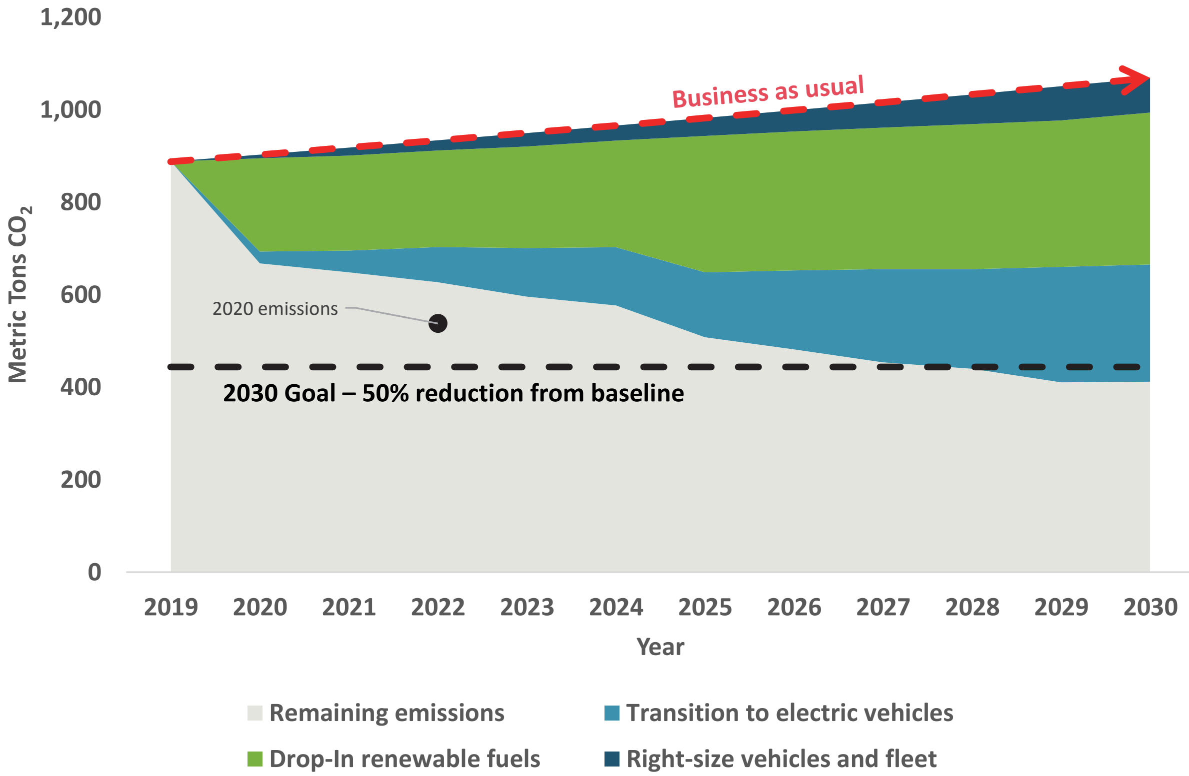
Figure 14. Annual GHG emissions from Fleet Vehicles and Equipment



Emissions have trended upward in recent years.

Strategies to 2030

Figure 15. 2030 GHG emission reduction potential of Fleet Vehicle and Equipment strategies



Strategies this sector can reduce emissions from Fleet Vehicles and Equipment by 50 percent from baseline, meeting the 2030 GHG reduction target. Emission data from the 2020 inventory was not used in the analysis.

FV1

Use drop-in renewable fuels. The Port fleet can achieve immediate emission reductions by switching to drop-in renewable fuels, which are non-petroleum-based fuels like renewable diesel and renewable gasoline, made from sources such as waste cooking oil, grease, tallow, or other renewable feedstocks. A drop-in renewable fuel is lower carbon compared to fossil diesel or gasoline and does not require engine modifications. Because renewable diesel is more readily available than renewable gasoline, the Port will focus on renewable diesel in the near-term for diesel vehicles that fuel onsite. Passage of a low carbon fuel standard in Washington will increase the availability of low carbon fuels and drive cost parity between these fuels and conventional fossil fuels.

MT CO_2 Reduced Annually by 2030

Approximately
300 MT CO_2 per year
by switching to drop-in renewable fuels

Actions

By 2025

- ✦ Dispense renewable diesel at the Port's fleet fueling stations
- ✦ Expand use of renewable fuels as a fossil fuel replacement, such as renewable gasoline
- ✦ Evaluate employee fuel purchase card use and encourage on-site fueling at Port fueling stations that dispense renewable fuels

By 2030

- ✦ Continue to evaluate and expand use of new, lower carbon renewable fuel sources

Success Story: Use Renewable Diesel

In 2008, the Port replaced diesel dispensed on-site with less-carbon intensive biodiesel (B20) and replaced some gasoline powered vehicles with hybrid sedans and SUVs. In December 2019, the Port began piloting the use of renewable diesel (RD99) for on-site diesel fueling. With the same molecular makeup as petroleum diesel, renewable diesel is made from non-petroleum renewable resources such as agricultural waste products, oils, or fats. Renewable diesel can be used in diesel vehicles and equipment without engine modifications, does not emit new carbon emissions into the atmosphere, and can reduce air pollution.

FV2

Deploy electric vehicle (EV) charging across Port waterfront properties. Installing charging stations across Port waterfront properties is a critical step toward reducing air and GHG emissions through the electrification of Port fleet vehicles. A coordinated approach is needed to ensure that charging installations are designed to meet fleet operational needs into the future and to accelerate investment in charging infrastructure as a first step to widespread electrification of fleet vehicles.

MT CO_2 Reduced Annually by 2030
Critical to other efforts

Actions

By 2025

- Complete installation of Level 2 charging stations at the Marine Maintenance South Yard
- Develop an EV readiness plan to expand EV charging stations across Port waterfront properties, in coordination with the SWCES and other energy studies
- Establish an EV infrastructure charging program

By 2030

- Complete installation of EV charging sites at key locations across Port maritime properties

FV3

Transition to electric vehicles. Replacing fossil fuel vehicles with electric vehicles at the end of their useful life can reduce fuel use while providing an emission reduction benefit. Vehicle electrification will focus first on light-duty vehicles where electric models are available or are anticipated in the next few years. Fleet managers will continue to monitor and evaluate the development of electric or hybrid-electric technology for trucks, heavy duty vehicles and specialized equipment.

MT CO_2 Reduced Annually by 2030
Approximately 250 MT CO_2 per year by replacing traditional fleet vehicles with electric models

Actions

By 2025

- Begin fleet asset conversions to EVs, prioritizing sedans and sport utility vehicles
- Pilot use of non-sedan EVs and equipment, including electric light-duty trucks and vans, and electric outboard engines for small workboats
- Track technology developments in heavy-duty EVs and equipment and identify opportunities to electrify Port-owned diesel equipment (e.g., heavy forklifts) at Fishermen's Terminal, Maritime Industrial Center, and Terminal 91

By 2030

- Replace all fleet sedans and sport utility vehicles with EVs
- Expand vehicle electrification efforts to include light trucks and vans
- Pilot heavy-duty electric vehicles, as relevant to Port fleet applications

FV4

Right-size vehicles and fleet. The Port's fleet includes some older, under-utilized vehicles. Right-sizing can be applied by replacing older vehicles with newer, more fuel-efficient models, by eliminating under-utilized vehicles from the fleet, and by pooling vehicles to maximize use per asset.

MT CO_2 Reduced Annually by 2030

Approximately 75 MT CO_2 per year
by right-sizing vehicles

Actions

By 2025

- ✦ Assign lifecycle limits to vehicle types and classes and accelerate replacement of past-due assets
- ✦ Implement asset selector list for fleet managers to standardize and right-size new vehicle purchases
- ✦ Centralize the Pier 69 vehicle pool to increase utilization ad retire older vehicles
- ✦ Maximize vehicle utilization with expanded pooling of vehicles and equipment, reducing 1:1 vehicle assignment, and optimizing pool size

By 2030

- ✦ Manage fleet within useful life cycle limits and maximize

FV5

Use technology to gather data and improve efficiency. Fleet technology, such as telematics and other software, will enable the right-sizing process. Technology will make existing vehicles more efficient by limiting engine idling and providing data on how vehicles operate, including speed, location, and fueling events. Anti-idling technology is available for most vehicle types.

MT CO_2 Reduced Annually by 2030

GHG reduction potential is low, but strategy is critical to support other efforts

Actions

By 2025

- ✦ Pilot telematics on a portion of the fleet
- ✦ Implement new fleet management software
- ✦ Expand telematics to all appropriate assets
- ✦ Install anti-idling technology on targeted assets with high idle uses
- ✦ Use motor pool software and hardware to manage pools for efficiency
- ✦ Incorporate telematics data into fleet management approaches to optimize utilization and maintenance

By 2030

- ✦ Update fleet data management software and capabilities
- ✦ Leverage data to inform fleet management decisions

Success Story: Electric Vehicle Charging Stations

The Port has installed electric vehicle charging stations at Fishermen's Terminal and Shilshole Bay Marina, and additional stations are planned. The stations give travelers, customers, tenants, and employees the ability to charge their vehicle while visiting port-owned locations.

FV6

Educate Port drivers on eco-driving and fleet use practices.	MT CO_2 Reduced Annually by 2030
As new types of vehicles enter the fleet, including electric vehicles, drivers must be trained to operate them safely and sustainably. Telematics data can be used to target specific training needs. Staff will be informed of new right-sizing guidance on motor pool use.	GHG reduction potential is low, but strategy is critical to support other efforts

Actions

By 2025

- ✦ Incorporate eco-driver training into Port employee training modules, including how to charge and drive electric fleet vehicles
- ✦ Establish outreach program for sustainable driver education
- ✦ Use telematics to target training topics and needs
- ✦ Provide department-specific driver training focused on specific vehicle types and use cases
- ✦ Continue employee and public engagement on sustainable fleet issues

By 2030

- ✦ Measure and report on efficacy of ongoing driver training
- ✦ Continue educating port drivers and equipment operators on how to drive and charge electric fleet vehicles

Emissions Remaining after 2030

Strategies and actions above propose a path to achieve at least a 50 percent reduction in GHG emissions from 2005 levels to meet or exceed the Port's 2030 GHG reduction target. Per the emissions wedge analysis, the Fleet & Vehicle Equipment sector will emit approximately 400 MT of GHG in 2030. These remaining emissions will need to be addressed to achieve the Port's longer-term GHG reduction goals through 2050. Continuing sources of Fleet & Vehicle Equipment emissions after 2030 include:

- Fossil-based diesel and gasoline purchased off-site as needed
- Remaining fossil fuel content of fuels used in medium- and heavy-duty vehicles and equipment not yet scheduled for replacement[20]

[20] "Fossil fuel content" refers to the fossil portion of renewable diesel or gasoline fuel blends.

Performance Metrics

Metrics	Targets / Objectives
Percent of light-duty passenger fleet vehicles that are zero-emissions or use renewable fuels	**2020 Strategy:** 100 percent of light-duty passenger fleet vehicles are zero-emissions or use renewable fuels by 2030; 100 percent of entire fleet is zero-emission by 2050
Percent of liquid and gaseous fuel purchased that is renewable	
Percent of entire fleet (including all vehicles, equipment, and vessels) that is zero-emission	

Success Story: Alternative Bankline Stabilization Program

Seawalls and rocks were historically used to keep shorelines from eroding in Elliott Bay and the Duwamish Waterway. These features create carbon-poor environments that are not ideal for optimal fish and wildlife habitat function. The Port's Alternative Bankline Stabilization Program will identify opportunities to convert "hard armoring" on the shorelines to greener, carbon-rich areas. The program will use anchored large-wood, plant-based erosion control materials, recycled soil, and native plants to stabilize the banklines while creating habitat and capturing carbon.

Success Story: Floating Wetlands

Partnering with the University of Washington, the Port has installed several floating wetland units in the Duwamish River and at Fishermen's Terminal. A floating wetland island is a raft packed with dense wetland plantings. They are used in areas where space limitations prevent conventional restoration methods. These units will provide fish and wildlife habitat while also taking up contaminants from the water column.

Performance Metrics

Metrics	Targets / Objectives
Number of acres of habitat restored (Port-wide)	**Port of Seattle Century Agenda:** Restore, create, and enhance 40 additional acres of habitat in the Green/Duwamish habitat