



NORTHWEST PORTS
CLEAN AIR STRATEGY

2023 PROGRESS REPORT

MARCH 2025



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Acronyms

CHE	Cargo-Handling Equipment	NWPCAS	Northwest Ports Clean Air Strategy
DPM	Diesel Particulate Matter	NWSA	The Northwest Seaport Alliance
EPA	U.S. Environmental Protection Agency	OGV	Ocean-Going Vessel
EV	Electric Vehicle	POS	Port of Seattle
GHG	Greenhouse Gas	POT	Port of Tacoma
LED	Light-emitting diode	VFPA	Vancouver Fraser Port Authority

2020 Northwest Ports Clean Air Strategy At-A-Glance

The 2020 Northwest Ports Clean Air Strategy is a voluntary collaboration among four port authorities with a vision to reduce—and ultimately eliminate—seaport-related air pollutant and greenhouse gas emissions throughout the Georgia Basin-Puget Sound airshed. The Northwest Seaport Alliance, Port of Seattle, and Port of Tacoma in the U.S., and Vancouver Fraser Port Authority in Canada built this strategy through extensive engagement and it represents an important step to catalyze collaboration across the ports, industry, government, and community towards this collective vision.

Vision

Phase out emissions from seaport-related activities by 2050, supporting cleaner air for our local communities and fulfilling our shared responsibility to help limit global temperature rise to 1.5°C.

Guiding Principles

Community health | Climate urgency | Social equity | Innovation | Evidence-based decisions | Focused resources | Leadership | Accountability | Port competitiveness



OCEAN-GOING VESSELS (OGV)



HARBOR VESSELS



CARGO HANDLING EQUIPMENT (CHE)



TRUCKS



RAIL



PORT ADMINISTRATION AND TENANT FACILITIES

Objectives

Efficiency, fleet modernization, and interim fuels

Implement programs that promote equipment efficiency, phase out old high-emitting equipment, and support lower-emission interim fuels

Infrastructure to support zero-emissions equipment

Facilitate collaboration to identify and address key infrastructure constraints by 2030

Adoption of zero-emissions equipment

Facilitate collaboration to advance commercialization of zero-emissions equipment and enable adoption before 2050

Collaborative Actions

Participating ports will dedicate resources to collaborative action, which may include pooling resources to conduct joint technology or infrastructure studies, hosting engagement workshops with industry, and/or executing parallel initiatives and sharing lessons learned to inform future actions.

Port-Specific Implementation Plans

Participating ports commit to develop and implement port-specific action plans that advance the vision and objectives outlined in the 2020 NWPCAS.

Monitoring and Reporting

Participating ports commit to annually review and report progress toward the collective NWPCAS vision and objectives, and to provide port-specific updates on actions undertaken, to share successes, failures, and challenges faced, and to adjust actions as needed.

Introduction

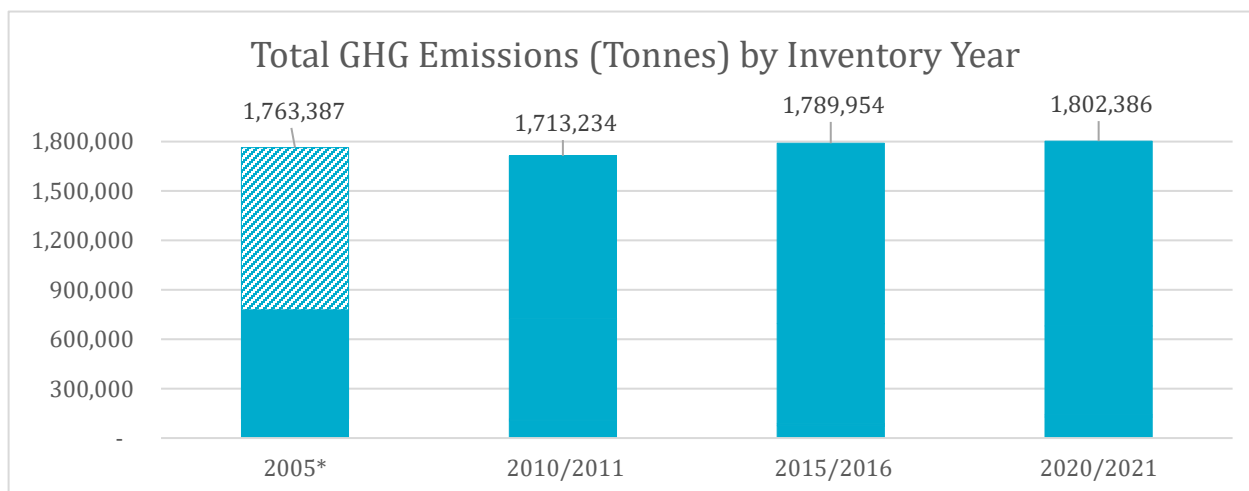
The Northwest Ports Clean Air Strategy (NWPCAS) is a voluntary collaboration among four participating port authorities: the Northwest Seaport Alliance (NWSA), Port of Seattle (POS), Vancouver Fraser Port Authority (VFPA), and Port of Tacoma (POT). This collaboration started with the adoption of the first strategy in 2008, followed by updates in 2013 and 2020. The [2020 NWPCAS](#) outlines a new vision to phase out emissions from seaport-related activities by 2050. **This report reflects the progress made towards emission reduction goals and strategic objectives among the participating port authorities in the calendar year 2023.**

Progress on emission reduction goals

The vision of the NWPCAS is to phase out emissions of greenhouse gases (GHG) and air pollutants by 2050, despite projected port growth over time. Emissions inventories are the most direct gauge of the port's progress toward the strategy's emission reduction goals.

The participating ports conduct emission inventories every five years; however, the inventory cycles for VFPA and the U.S. ports are not in sync, and they use different baselines. VFPA uses 2010 as the baseline for its GHG emissions and 2015 as the baseline for air pollution emissions. NWSA, POS, and POT use 2005 as the baseline for both GHG and air pollutant emissions. The most recent inventory cycle includes results from the Port of Vancouver's 2020 emissions inventory and the 2021 Puget Sound Maritime Air Emissions Inventory for NWSA, POS, and POT.¹

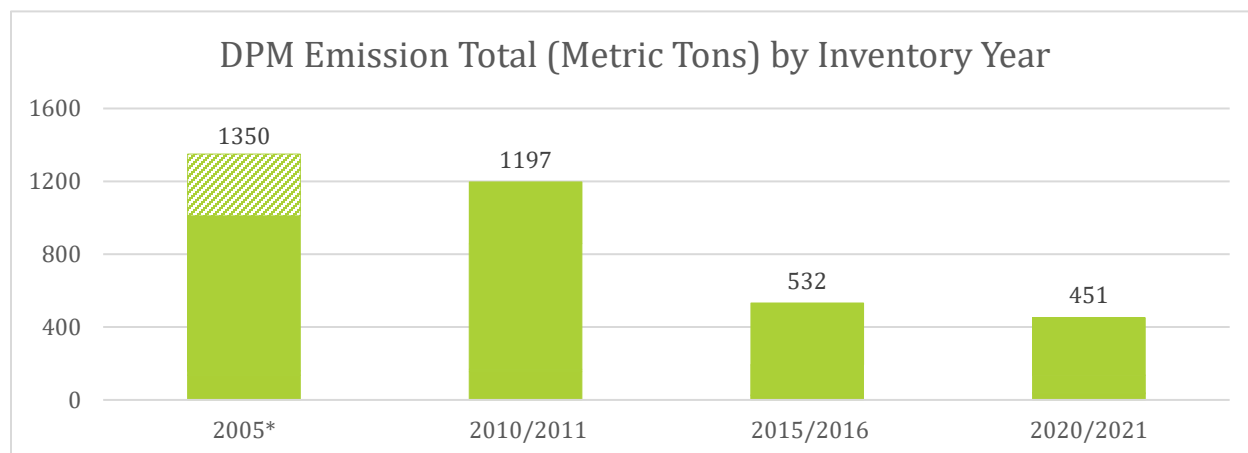
Figure 1 shows estimated emissions of GHG from the participating ports from 2005 to 2021. Collectively, the 2020/2021 inventories indicate that GHG emissions have increased by 2.2% since the 2005 baseline and by 0.7% since 2015/2016. Meanwhile, the amount of cargo throughput has increased by 27% since 2005 and by 1.1% since 2015/2016, and the number of cruise passengers has more than tripled since 2005 and has increased 67% since 2015/2016.



* Hatched area represents VFPA's 2010 GHG emissions, used as proxy for 2005 data.

¹ See Appendix A for data extracted from the Port of Vancouver 2020 Port Emissions Inventory Report and the 2021 Puget Sound Maritime Air Emissions Inventory (which covers NWSA, POS and POT).

Although there are numerous air pollutants associated with maritime emissions, diesel particulate matter (DPM) is a focus of the NWPCAS because it is a significant air toxic affecting near-port communities and is a good indicator of maritime-related air pollution. Figure 2 shows estimated emissions of DPM from the participating ports since 2005. Collectively, emissions of DPM have declined by 66% since 2005 and by 15% since 2015/2016. DPM emissions decreased due to regulatory changes, industry actions, and port programs to accelerate the turnover of equipment and use cleaner fuels.



* Hatched area represents VFPA's 2010 DPM emissions, used as proxy for 2005 data.

Progress toward strategy objectives

To track progress on an annual basis, the participating ports identified key metrics tied to the 2020 NWPCAS objectives, discussed below. Several targets are holdovers from the 2013 strategy which remain relevant because they have not yet been met. The reporting below also highlights qualitative progress towards new objectives. Performance targets are reported as an aggregate of the activities occurring at all participating ports. Port-specific accomplishments are summarized in Appendix B.

Efficiency, fleet modernization, and interim fuels

Implement programs that promote equipment efficiency, phase out old high-emitting equipment, and support lower-emission interim fuels

Infrastructure to support zero-emissions equipment

Facilitate collaboration to identify and address key infrastructure constraints by 2030

Adoption of zero-emissions equipment

Facilitate collaboration to advance commercialization of zero-emissions equipment and enable adoption before 2050

Efficiency, fleet modernization, and lower-emission fuels



OCEAN-GOING
VESSELS (OGV)

Target: Continuous improvement in the percentage of shore power capable container and cruise ships that plug in and percentage of total ships that plug in.

Status: In 2023, 8% of **container ship calls** connected (113 of 1,434), an increase from 7% of container ship calls in 2022. 49% of total calls were shore power capable, an increase from 41% of total calls in 2022.

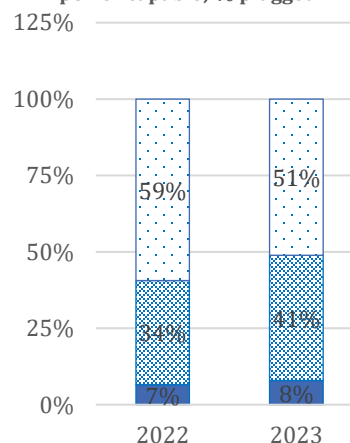
In 2023, 33% of **cruise ship calls** connected to shore power (205 of 624), an increase from 29% in 2022. 71% of 2023 cruise ship calls were shore power capable, an increase from 56% in 2022.

VFPA introduced a new “Platinum” level to its EcoAction program, rewarding vessels who connect to shore power, use low-emission fuels and technologies, or have quiet underwater noise notations.

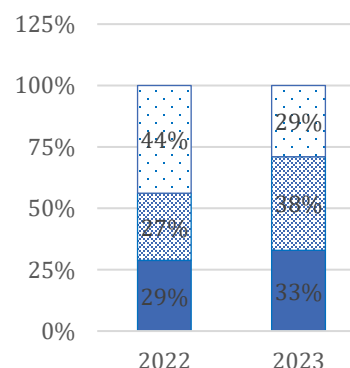
NWSA tariff agreements require shore power-equipped vessels to plug in where shore power is available.

POS berthing agreements require shore power-equipped cruise ships to plug in where shore power is available.

Container ship calls: % shore power capable; % plugged in



Cruise ship calls: % shore power capable; % plugged in



CARGO HANDLING
EQUIPMENT (CHE)

Target: 80% of CHE meets Tier 4i equivalent emission standards by 2020. (This target was set in 2013 and has not yet been met.)

Status: In 2023, 65% of units met Tier 4i equivalence, below the 80% target. Many of the smaller units were powered by electricity, propane, or gasoline (Tier 4i equivalent) while other diesel-powered units have Tier 4i emission controls in place.

65% of CHE met target





TRUCKS

Target: 100% of container trucks meet or surpass EPA standards for model year (MY) 2007 by 2017. (This target was set in 2013 and has not yet been met.)

Status: In 2023, 98% of trucks calling to container terminals met or surpassed MY 2007 standards. The two ports with container terminals (VFPA and NWSA) both have programs restricting the registration of older trucks.

98% of trucks met MY 2007 standards



PORT ADMINISTRATION
AND TENANT FACILITIES

Target: Zero emissions from building/lighting energy use by 2050.

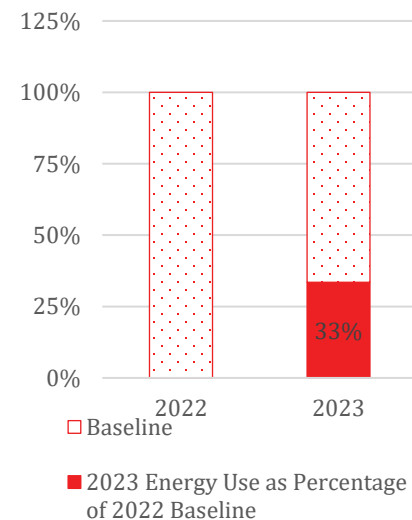
Status: In 2023, GHG emissions from port-controlled buildings totaled 4,141 tonnes. This is a 67% reduction from 2022, which serves as the baseline year for this metric. Total GHG emissions are influenced by the amount of energy used and utility-specific emission factors for purchased electricity.

POS purchased renewable natural gas (RNG) for all natural gas use at maritime properties. RNG is accounted for as zero emission in this progress report as a biogenic fuel.

POS initiated Building Tune-Ups for 7 buildings and 5 LED lighting retrofit projects.

NWSA completed a LED lighting project at Terminal 30, replacing approximately 320 bulbs and achieving 60% more energy efficiency compared to non-LED bulbs.

Building Energy GHG Emissions
Trends from 2022 Baseline



HARBOR VESSELS



RAIL



PORT ADMINISTRATION
AND TENANT FACILITIES

Target: Continually increase equipment efficiency, replace old equipment, and decrease emissions from existing equipment.

Status: The four ports worked to reduce emissions from existing equipment by encouraging drop-in replacement fuels and efficiency improvements while planning for the transition to zero-emission equipment.

VFPA introduced the next phase of the Non-Road Diesel Emissions program out to 2030.

POS initiated a Commercial Harbor Craft Decarbonization Industry Engagement project to gather information on readiness for hybrid, electric and alternatively fueled vessels, and was delivered its first electric workboat at Fisherman's Terminal.

Infrastructure to support zero-emissions technology



Target: 100% of major cruise and container berths with shore power installed by 2030.

Status: In 2023, 32% of cruise and container berths (9 of 28) had shore power available. Design and construction are underway for additional berths.

POS received a submarine cable necessary to deliver power to the Pier 66 cruise shore power project, which is expected to be completed in 2024.

NWSA continued construction of shore power at Husky Terminal (which is slated to be completed in early 2025) and continued design of shore power at Terminal 18.

32% of berths
had shore power



Target: Facilitate collaboration to identify and address key infrastructure constraints by 2030.

Status: The four ports collaborated with regional stakeholders on infrastructure planning to accelerate port-wide electrification and hydrogen production, distribution, and fueling infrastructure.

POS completed an assessment of utility and on-terminal power supply constraints as a part of Seattle Waterfront Clean Energy Strategy.

POS completed an EV charging study to electrify the Port's maritime fleet vehicles and equipment.

POS surveyed Transportation Network Company (TNC) drivers to understand barriers to electrification as part of the Port's Ground Transportation Emission Reduction Strategy.

NWSA and POT made progress on the South Harbor Electrification Roadmap; a study focused on planning for the infrastructure needed to enable the transition to zero emissions.

NWSA launched the Zero Emission Drayage Trucking Collaborative, which will work to identify and address key infrastructure needs to accelerate deployment of zero emission drayage trucks in the NWSA gateway.

The NWSA is a partner in the Pacific Northwest Hydrogen Hub, which was awarded \$1 billion in federal funding to develop hydrogen production, distribution, and end use, including port applications..

The BC Hydrogen Ports Project (BCH2 Ports Project) plans to demonstrate hydrogen refueling stations in the Port of Vancouver.

Adoption of zero-emissions technology



Target: Support international efforts toward phasing out emissions from vessels.

Status: The four ports continue to engage in collaborative work, including participation in Green Corridor partnerships and international decarbonization coalitions, to phase out emissions from vessels.

POS and VFPA signed a Project Charter to formalize collaborative work on the Pacific Northwest to Alaska (PNW2AK) Green Corridor and partnered with the Maersk Mc-Kinney Moller Center for Zero Carbon Shipping to scope a green methanol feasibility study for cruise.

VFPA continued to collaborate with other ports, government, and industry through involvement in the World Ports Climate Action Program, the International Association of Ports and Harbors, Blue Sky Maritime Coalition, Vancouver Maritime Center for Climate, Getting to Zero Coalition and the Sustainable Shipping Initiative, and the Net Zero Supply Chain Initiative.

The NWSA completed a pre-feasibility study to scope the potential for green corridor routes to decarbonize cargo trade between Seattle/Tacoma and Busan, South Korea. Other partners in the effort include the US State Department, U.S Department of Energy National Labs, and the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping. Feasibility assessments for container and ro/ro green corridors will begin in 2024.



Target: By 2050, zero-emissions cargo-handling equipment is adopted.

Status: The four ports made progress towards securing zero-emission cargo-handling equipment, including piloting early demonstrations, securing funding, and planning for infrastructure needs.

NWSA deployed six electric yard tractors, along with charging infrastructure, at the South Intermodal Yard. The yard tractors were funded by Tacoma Power and an EPA Diesel Emission Reduction Act grant secured by the NWSA.

POS received \$800K grant for two EV Forklifts at Terminal 91. The forklifts and required charging will be in place by 2026.

POT recieved grant funding for an electric yard tractor and mobile charging unit that will serve rail and maintenance applications.

The BCH2 Ports Project plans to demonstrate fuel-cell electric yard trucks in the Port of Vancouver.

At the Port of Vancouver, DP Word finalized a project team for a hydrogen fuel cell rubber-tired gantry cranes (RTGs) pilot project at its Centerm terminal.



Target: 100% of container trucks are zero-emission by 2050.

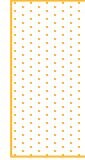
Status: In 2023, 0% of container trucks calling to the ports were zero-emission.

NWSA established the Puget Sound Zero Emission Truck Collaborative, a multi-stakeholder group to develop and build support for a Decarbonizing Drayage Roadmap to 2050. The Roadmap will emphasize facilitating a just and equitable transition to zero-emission trucking and is expected to be published in late 2024.

NWSA was awarded grant funding to demonstrate 15 zero emission drayage trucks, and plans to launch a Zero Emission Drayage Incentive Program in 2024.

The BCH2 Ports Project plans to demonstrate hydrogen-fueled drayage trucks in the Port of Vancouver.

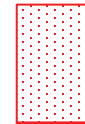
0% of trucks
are zero-
emission



Target: 100% of port-owned light-duty passenger vehicles are zero emissions or use renewable fuels by 2030.

Status: In 2023, 5% of the ports' light-duty fleet were all-electric vehicles (EVs). In addition, 24% of the light duty vehicles were gasoline-electric hybrids or used renewable fuels. The ports continued to plan for and install EV charging stations to prepare for future EV purchases. VFPA added four electric vehicles to its corporate fleet.

5% of light-duty
vehicles were
zero emission



Collaboration and Engagement

Many of the actions listed above involved collaboration and engagement with industry, governments, utilities, communities, and others. In addition:

- VFPA expanded outreach for the development of the port authority's first Climate and Air Quality Action Plan to include a broad range of stakeholders, such as government, industry, environmental organizations, and academia, as well as First Nations.
- VFPA commenced the monitoring phase for Strathcona Area Air Quality Study, a two-year near-port community air monitoring study guided by a multi-partner steering committee.
- The U.S. ports (NWSA, POS, and POT) completed the 2021 update to the Puget Sound Maritime Emissions Inventory and continued publishing the Clean Air Quarterly e-Newsletter.
- POS and NWSA launched a Pacific Northwest Sustainable Maritime Fuels Roadmap Study with the Rocky Mountain Institute (RMI), Commerce, Washington Maritime Blue, NWSA and CHARGE, and convened maritime fuel industry meeting with over 50 participants.

Looking ahead

With the adoption of the 2020 NWPCAS, the participating ports strengthened their commitment towards a zero-emissions future and identified key objectives to achieve that vision. This renewed emphasis has come with new challenges. Although the time to act on climate change is short, phasing out emissions is a complex effort which requires long lead times. Some improvements require energy sources and fuels that are not yet available, as well as sustained external funding. In addition, the ports have indirect influence over many of the major emission sources, highlighting the need for ongoing collaboration with industry, government, and community. Triple bottom line approaches to project delivery require changes from the current 'business as usual' models.

Recognizing these challenges while moving ahead with strategy implementation, several themes will continue to define clean air and decarbonization efforts at each port and in collaboration with each other in 2024 and beyond.

- **Continued focus on the decarbonization of ocean-going vessels, trucks, and cargo-handling equipment**, some of the largest sources of emissions, through partnership efforts like green corridors, the Sustainable Maritime Fuels Collaborative, and the Zero-Emission Truck Collaborative.
- **Continue the installation of shore power at major container and cruise berths** to reduce emissions by enabling shore power capable ships to plug in while at berth.
- **Continue planning for clean energy and infrastructure** to support the transition to zero-emission operations.
- **Leverage funding opportunities to accelerate implementation of ZE technologies** such as the U.S. Inflation Reduction Act and Washington Climate Commitment Act, among others.
- **Continue to engage partners** and support partner-led efforts including port tenants, industry, governmental, non-governmental organizations, and near-port communities.

Appendix A. Emissions data

The table below provides the inventory data used to chart emission reductions used to track NWPCAS progress via two key indicators: GHG and DPM, as shown in Figure 1 of this report. VFPA uses 2010 as the baseline for GHG emissions and 2015 data as the baseline for particulate emissions (using PM2.5 as proxy for DPM) and has additional data from its 2020 emissions inventory. NWSA, POS, and POT use 2005 as the baseline for both GHG and DPM emissions and have additional datapoints in 2011, 2016, and 2021.

Sources: Port of Vancouver 2020 Emissions Inventory and 2021 Puget Sound Maritime Air Emissions Inventory.

NWPCAS Participating Ports GHG Emissions from baseline to date (tonnes CO2e)				
Port	2005	2010 / 2011	2015 / 2016	2020 / 2021
NWSA	662,373	614,379	608,879	539,573
POS	93,862	104,715	74,701	128,252
POT	22,508	9,496	11,352	12,624
VFPA	Not applicable	984,644	1,095,023	1,121,936
Total GHG (tonnes CO2e)		1,713,234	1,789,954	1,802,386
NWPCAS Participating Ports DPM Emissions from baseline to date (tonnes)				
Port	2005	2010 / 2011	2015 / 2016	2020 / 2021
NWSA	851	690	166	98
POS	135	155	24	35
POT	25	13	3	3
VFPA	Not applicable	Not applicable	339	315
Total DPM (tonnes)			532	451

Appendix B. Summary of accomplishments by port

The following pages summarize key 2023 accomplishments, and 2024 priorities, for each of the four participating ports.



The Northwest Seaport Alliance in Context

Types of activity	2023 Cargo moved	2023 Cruise passengers	Number of terminals
Containers, breakbulk, autos	23,805,307	n/a	14

Website: [Clean Air | Northwest Seaport - Port of Tacoma](#)

Efficiency, fleet modernization, and lower-emissions fuels

- Received funding for terminal expansion and efficiency improvements at Husky Terminal.
- Continued planning to expand Clean Truck Program requirements to domestic terminals by the end of 2025, and to offer incentives to replace older trucks with newer, lower-emitting models.
- Applied for the United States Environmental Protection Agency Diesel Emissions Reduction Act program to fund the scrapping of 30 pre-2007 drayage trucks serving domestic container terminals.

Infrastructure to support zero-emissions technology

- Plugged in the first vessel to shore power at the Terminal 5 north berth, the MSC Brunella.
- Continued shore power infrastructure construction and installation at Terminal 5 south berth and Husky Terminal.
- Began design work for shore power installation at Terminal 18 and Washington United Terminals.
- Launched Puget Sound Zero Emission Drayage Trucking Collaborative in partnership with multi-agency and community stakeholders to accelerate the just and equitable transition to zero emission trucks through a Decarbonizing Drayage Roadmap.
- Continued progress on Seattle Waterfront Clean Energy Strategy and South Harbor Electrification Roadmap to assess clean energy infrastructure needed to electrify port operations in the Seattle and Tacoma Harbors.
- The Pacific Northwest was awarded \$1 billion in funding through the DOE Clean Hydrogen Hubs program to develop hydrogen production, distribution, and end use infrastructure. The NWSA is a sub-recipient of this grant program and will use the funds to incentivize deployment of hydrogen drayage trucks and cargo handling equipment.

Adoption of zero-emissions technology

- Completed a prefeasibility assessment for a green corridor to deploy low carbon fuels on certain cargo routes between Seattle/Tacoma and South Korea, in partnership with the US and Korean governments, US national labs, and the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping.
- Began development of the Decarbonizing Drayage Roadmap 2050 with the Puget Sound Zero Emission Truck Collaborative, a multi-stakeholder group that focuses on transitioning drayage trucks to zero emissions.
- Awarded approximately \$29 million from the United States Federal Highway Administration (FHWA) Charging and Fueling Infrastructure Grant Program and Reduction of Truck Emissions at Port Facilities Grant Program to implement a zero-emission truck demonstration program.

Collaboration and Engagement

- Along with POT and POS, published community and partner updates through the Clean Air Quarterly e-Newsletter to communicate NWPCAS projects and milestones to community and industry partners and interested parties.
- Convened the Duwamish Valley Youth Climate Change Adaptation Panel with the POS to hear from youth leaders in near-port communities on climate and air quality concerns and collaborate on potential actions.
- Hosted trucker appreciation events in North and South Harbors to thank truckers for their critical supply chain role and solicit trucker feedback.
- Joined the Sustainable Maritime Fuels Collaborative as a founding partner to accelerate production and use of sustainable maritime fuels and technologies in Washington.

2024 priorities

- Complete shore power construction at Terminal 5 south berth and Husky Terminal, and pursue grant funding for shore power design and installation at Terminal 18.
- Partner with POS and POT to advance the Seattle Waterfront Clean Energy Strategy and South Harbor Electrification Roadmap.
- Partner with the Puget Sound Zero Emission Truck Collaborative to draft and publish the “Decarbonizing Drayage: Roadmap to 2050.”
- Design and launch a zero-emission drayage truck incentive program.
- Pursue additional grant funding to support shore power, ZE drayage, and ZE CHE projects.
- Implement additional lighting replacement projects.



Port of Seattle in Context

Types of activity	2022 Cargo moved	2022 Cruise passengers	Number of terminals
Cruise, bulk cargo (mostly grain), commercial and recreational marinas	2,678,895 tonnes	1,777,984 revenue passengers	3 (2 cruise terminals and 1 grain terminal)

Website: [Northwest Ports Clean Air Strategy | Port of Seattle](#)

Efficiency, fleet modernization, and lower-emissions fuels

- 52% of cruise calls at Terminal 91 connected to shore power (102/196 calls), and 35% of cruise calls across all cruise terminals connected (102/290 calls).
- Surveyed Transportation Network Company (TNC) drivers to understand barriers to electrification as part of a Ground Transportation Emission Reduction Strategy for the Seattle-Tacoma International Airport and the Port's cruise terminals.
- Initiated outreach with Louis Dreyfus Company and Puget Sound Clean Air Agency to pursue a grant for a clean diesel switcher locomotive replacement at Terminal 86.
- Evaluated participation in IAPH Environmental Ship Index (ESI) At-Berth program pilot
- Initiated Building Tune-Ups for 7 buildings and 5 LED lighting retrofit projects.
- Procured and began implementation of an Energy Management System to improve energy use tracking and connect to smart meters. Began pre-design to deploy smart meters at 6 buildings.
- Replaced all fossil natural gas use in Port-owned maritime properties with renewable natural gas (RNG) through Puget Sound Energy's RNG program.

Infrastructure to support zero-emissions technology

- Submarine cable necessary to deliver power to Pier 66 cruise shore power connection delivered; project completion expected in 2024.
- Completed assessment of utility and on-terminal power supply constraints as a part of Seattle Waterfront Clean Energy Strategy.
- Completed EV charging study to electrify the Port's maritime fleet vehicles and equipment. Began design of priority projects.

Adoption of zero-emissions technology

- Signed a Project Charter to formalize collaborative work on the Pacific Northwest to Alaska (PNW2AK) Green Corridor and partnered with the Maersk Mc-Kinney Moller Center for Zero Carbon Shipping to scope a green methanol feasibility study.
- Engaged stevedores, transportation companies and rail on new federal grant funding opportunities for zero-emission port equipment.
- Initiated a Commercial Harbor Craft Decarbonization Industry Engagement project to gather information on readiness for hybrid, electric and alternatively fueled vessels
- Received \$800K grant for two EV Forklifts at Terminal 91 (to be delivered by 2026)
- Delivered first electric workboat at Fishermen's Terminal.

Collaboration and Engagement

- With POT and NWSA, initiated the 2021 update to the Puget Sound Maritime Emissions Inventory
- With POT and NWSA, continued publishing the Clean Air Quarterly e-Newsletter.
- With NWSA, convened a youth-focused and youth-led Clean Air and Climate Resilience event.
- Initiated development of the Sustainable Maritime Fuels Collaborative.
- Participated in IMO's Intersessional Working Group on GHG reductions to advocate for strong 2050 industry targets.
- Co-hosted PNW maritime fuels study authors convening with Pacific Northwest National Laboratory and Washington Maritime Blue
- Launched a PNW Sustainable Maritime Fuels Roadmap Study with RMI, Commerce, Maritime Blue, NWSA and CHARGE, and convened maritime fuel industry meeting with over 50 participants.

2024 priorities

- Integrate Port of Seattle's Maritime Climate and Air Action Plan goals into business and capital planning
- Launch technical work on Pacific Northwest to Alaska Green Corridor Green Methanol Feasibility Study
- Use building audits and decarbonization planning to inform capital investment needs
- Complete the Seattle Waterfront Clean Energy Strategy
- Leverage leases and agreements to drive sustainability
- Pursue federal grant funding opportunities to support and accelerate decarbonization
- Grow the maritime ground transportation program
- Expand community, industry, international engagement
- Launch efforts on the Sustainable Maritime Fuels Collaborative
- Complete the PNW Maritime Fuels Roadmap Study



Port of Tacoma in Context

Types of activity	2023 Cargo moved	2023 Cruise passengers	Number of terminals
Bulk (grain), Real Estate	5,092,253	n/a	1

Website: [Air & Climate | Port of Tacoma](#)

Efficiency, fleet modernization, and lower-emissions fuel

- Further planning and design for the Port Maritime Site, a new headquarters building which will include sustainable features such as charging for the POT electric vehicle fleet.
- Continued development of a sustainable building framework for port-owned buildings and facilities to incorporate the port's goals of reducing GHG emissions, among other elements.

Deployment of ZE Technologies and Supporting Infrastructure

- Received a Volkswagen Grant from the Department of Ecology for an electric yard truck and a mobile charging unit, replacing a diesel yard truck that serves railyard and maintenance operations.
- Voted to advance an accelerated timeline to eliminate Scope 1 and 2 emissions by 2040.
- Continued development of the South Harbor Electrification Roadmap (SHERM) project.
- Completed installation of EV charging at the POT Administration Building.
- Received grant funding to purchase an electric yard truck and mobile charging unit.
- Ordered 4 EV light duty vehicles for the POT Administrative fleet, with expected delivery in early 2024.

2024 priorities

- Implement zero emission yard truck demonstration for railyard and maintenance operations.
- Purchase electric vehicles for port operations.
- Continue design of sustainable features and begin environmental remediation for new headquarters building.
- Assemble an inventory of port-owned buildings in the Tacoma Harbor to prepare for Washington State Clean Building Standards compliance and energy efficiency project assessments.

- Complete South Harbor Electrification Roadmap (SHERM) project to assess electrical infrastructure constraints associated with transitioning to zero emissions.

Port of Vancouver in Context

Types of activity	2023 Cargo moved	2023 Cruise passengers	Number of terminals
Containers, Bulk, Breakbulk, Automobiles, Cruise	150,380,603 tonnes	1,243,060	29 terminals

Website: [Climate and air quality action | Vancouver Fraser Port Authority](#)

Efficiency, fleet modernization, and lower-emissions interim fuels

- Continued to optimize the new boiler system that services the hotel, convention center, and offices at Canada Place. The new system is expected to reduce boiler system GHG emissions by 50%.
- Introduced a new “Platinum” level to the EcoAction program, rewarding vessels who connect to shore power, use low-emission fuels and technologies, or have quiet noise notations.
- Introduced the next phase of the Non-Road Diesel Emissions program out to 2030, including increasing fees, rebates, and prohibitions on Tier 2 and 3 equipment
- Terminal operator Viterra adopted 100% renewable diesel in all of their locomotives after the previous year’s trial in one locomotive.
- Implemented multiple energy efficiency projects on the port lands under the Energy Action Program leading to ~6.3 GWh electrical energy savings.

Infrastructure to support zero-emissions technology

- Continued planning for future shore power installation.
- Four electric vehicles were purchased as part of the corporate fleet.
- Continued to explore the electrification and other energy management opportunities at the terminals and infrastructure required to support the future electricity demand.

Adoption of zero-emissions technology

- DP Word finalized a project team for a hydrogen fuel cell rubber-tired gantry cranes (RTGs) pilot project at its Centerm terminal at the Port of Vancouver. Loop Energy, a hydrogen fuel cell manufacturer, TYCROP Manufacturing, a manufacturing and engineering company, and HTEC who will supply the hydrogen are the primary project participants.

- HaiSea Marine's battery electric tugs arrived in the Port of Vancouver. Although these tugs will be relocated to Kitimat in mid-2024, they will operate in the Port of Vancouver for the year. HaiSea Marine is a joint venture majority owned by the Haisla Nation in partnership with Seaspan ULC, a tenant at the Port of Vancouver.
- BC Hydrogen Ports Project (BCH2 Ports Project) commenced. The BCH2 Ports project is BC's first large-scale project to use hydrogen and fuel cells in the shipping and transportation sectors. The project will demonstrate hydrogen fueling stations, fuel-cell electric yard trucks and drayage trucks serving the Port of Vancouver.

Collaboration and Engagement

- Signed a formal Project Charter that sets a foundation for project definitions, governance, and decision-making to guide the work ahead by the Pacific Northwest to Alaska Green Corridor's First Mover partners. Engaged the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping to scope a feasibility assessment to explore the use of green methanol for cruise. Convened a public webinar to provide a progress update on efforts to reduce emissions from cruise travel between Washington, British Columbia, and Alaska.
- Further development of the port authority's first Climate and Air Quality Action Plan for the Port of Vancouver. Following our 2022 advisory group engagement, we expanded our outreach in 2023 to include a broad range of stakeholders, such as government, industry, environmental organizations, and academia, as well as First Nations, emphasizing the port's commitment to an inclusive and collaborative planning process. This initial outreach was followed by targeted discussions with representatives from specific industry sectors, alongside an invitation for First Nations to participate and share insights.
- Continued to collaborate with other ports, government, and industry through involvement in the World Ports Climate Action Program, the International Association of Ports and Harbors, Blue Sky Maritime Coalition, Vancouver Maritime Center for Climate, Getting to Zero Coalition, the Sustainable Shipping Initiative, and the Net Zero Supply Chain Initiative.
- Commenced the monitoring phase of the Strathcona Area Air Quality Study (SAAQS), a two-year (2023-2024) near-port community air monitoring study guided by a steering committee co-chaired by VFPA and the Strathcona Residents Association, with representation from the University of British Columbia, Metro Vancouver, Vancouver Coastal Health, City of Vancouver, and Environment and Climate Change Canada (ECCC). Public engagement activities were undertaken to share information about the study with members of the community.
- Continued collaboration with the local electricity supplier, BC Hydro and the port community to enable the sharing of energy management best practices around the port community.

2024 priorities

- Launch the feasibility assessment for the Pacific Northwest to Alaska Green Corridor to evaluate the use of green methanol for cruise ships in the Pacific Northwest.
- Continue engaging with stakeholders and First Nations to develop the Climate and Air Quality Action Plan. Publish an engagement summary report, highlighting insights and key themes from this process. Initiate drafting of the Climate and Air Quality Action Plan.

- Join the North Pacific Green Corridor Consortium as a founding member. This consortium is developing a decarbonized bulk supply chain corridor between Canada's west coast and Japan and South Korea.
- Strathcona Area Air Quality Study – Continue procurement and deployment of study's remaining air quality monitors. Complete the study's year 1 (2023) monitoring report and share the year 1 monitoring results with the public, industry and government stakeholders through various engagement sessions.
- Continue with the next pilot, under the Low Emission Technology Initiative, to promote the trial and adoption of zero-emission drayage trucks serving the Port of Vancouver.
- Continue implementation of energy management projects at the terminals.
- Continue planning the infrastructure required to support the future electricity demand.
- Alternative marine fuel services for LNG is expected to come online in 2024-2025. The port authority is fully prepared to ensure that bunkering is conducted safely and follows global best practices.