Northwest Ports Clean Air Strategy: 2021-2025 Implementation Plan

Produced by The Port of Tacoma
November 2021

Executive Summary:

The 2020 Northwest Ports Clean Air Strategy (NWPCAS) -- unanimously adopted by the Port of Tacoma Commission in April 2021 – sets a bold new vision for clean air and climate action by the Port of Tacoma: "**phase out emissions from seaport-related activities by 2050.**" This implementation plan outlines the key actions the Port will take in the next five years to advance that vision, as well as our longer-term interim targets for greenhouse gas (GHG) emission reduction: 50% by 2030, and 70% by 2040.

The overarching goals of this implementation plan are as follows:

- ***Do our part to improve local air quality***, especially in places where environmental health disparities exist, according to the Washington Department of Public Health;
- ***Do our part to meet the global climate challenge*** – limit global temperature rise to 1.5°C to stave off what the International Panel on Climate Change (IPPC) calls "severe, widespread, and irreversible impacts"; and
- ***Sustain and strengthen our competitiveness*** in the cargo shipping industry to advance our core mission: facilitating international and domestic trade that supports more than 58,000 jobs and $12.4 billion in business activity in Pierce County and Washington state.

Emissions from Port of Tacoma's operational scope include a broad commercial, industrial, and marine real estate portfolio, cargo activities at the Tacoma Grain Terminal including grain ships, their assist tugs, locomotives, and administrative emissions such as facility energy use, port-owned maintenance fleets, port owned passenger vehicles for the administrative staff, employee commuting, etc. Though a relatively small fraction of the emissions overall, the emissions from Port of Tacoma's scope are, in some cases, those that we have the most direct control over, specifically those from port-owned and operated fleets and facilities. The Port's strategy for reducing and ultimately eliminating diesel particulate matter and greenhouse gas emissions is two-pronged: continue and strengthen our work to reduce emissions from existing fleets of mostly diesel-powered vessels, vehicles, and equipment; and, at the same time, facilitate and accelerate the transition to zero-emission fuels and technologies, including the development of the necessary fueling and charging infrastructure. Our approach is threefold: 1) take direct action where possible, such as the installation of EV infrastructure at port facilities; 2) collaborate closely with tenants and industry partners – through lease agreements, pilot projects, and other means – to identify, finance, and implement emission-reduction initiatives, such as the purchase of cleaner or zero-emission vehicles and equipment; and 3) track, engage in, and influence international, federal, state and local policies and programs that support clean air and climate solutions in the Port of Tacoma gateway.

The key milestones against which our success over the next five years will be gauged are:

Sector	Timeline	Key Milestones
Community Engagement and Partnerships	Q1 2022	Begin providing quarterly updates on NWPCAS progress.
	End 2022	Complete a Community Clean Air and Climate Resource Guide.
	End 2022	Develop and begin implementing a Tacoma community engagement and partnership program.
Industry Engagement	Q2 2022	Develop and begin implementing a tenant engagement program.

and Partnerships		
Policy Engagement and Advocacy	By 2023	The state Clean Fuel Standard and Climate Commitment Act contain funding mechanisms to support NWPCAS implementation.
	End 2025	Federal, state, and/or local/regional funding is secured to fill funding gaps for projects in this implementation plan.
	End 2025	Stronger emission standards for international shipping are developed.
Infrastructure Planning and Development	Q2 2023	Complete the South Harbor Electrification Roadmap.
Technology Assessment and Advancement	End 2022	Begin conducting technology assessments (first one completed by the end of the year).
Fleets and Facilities	End 2022	Energy efficiency improvements at Fabulich Center complete
	End 2022	Sustainable Building Policy adopted
	Q1 2023	Tenant energy efficiency program established
	End 2025	Complete 1 additional energy efficiency or clean energy project
	End 2022	Sustainable Fleet Plan complete
	End 2022	EV charging infrastructure installed at existing Port Administration Building
	End 2023	EV charging infrastructure installed at Port Maintenance Building
	End 2024	EV charging infrastructure installed at EB-1 terminal
	End 2025	EV charging infrastructure installed at North Intermodal Yard
	TBD	Refresh Port's Commute Trip Reduction Program

Note: green shaded cells are milestones the PoT will work on jointly together with the NWSA in the Tacoma Harbor

The Port will track progress towards these milestones on an annual basis and produce an annual progress report that will be shared with the port executive team, the Port of Tacoma commissioners and the public. This annual "Clean Air and Climate Digest" will outline progress towards our milestones, highlight implementation actions and achievements over the past year, and provide a preview of the year to come. To the extent practicable, this information will be coordinated with the Northwest Seaport Alliance. In addition, an annual progress report on the overarching Northwest Ports Clean Air Strategy (NWPCAS) will be produced and published jointly by the four participating port entities. This joint report will

outline progress toward the shared vision, objectives, and actions outlined in the 2020 NWPCAS.

The Port of Tacoma will take an adaptive management approach to monitoring, reporting, and reviewing this Implementation Plan. As advancements in technology, changes in policy, and funding opportunities occur, the Port will change course or advance action timelines and milestones as needed to maximize opportunities and remain on track to achieve the 2050 vision. Specifically, we will: 1) update our implementation plans on an annual basis; and 2) renew the overarching Northwest Ports Clean Air Strategy about every five years.

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1. Purpose

The Port of Tacoma (PoT) is committed to reducing, and ultimately eliminating, the air and climate pollution emissions of diesel particulate matter (DPM) and greenhouse gases (GHG) and related environmental health disparities associated with our operations. Improving air quality and reducing the Port's contribution to climate change are key priorities for the Port of Tacoma and as such, it has been a partner in the Northwest Ports Clean Air Strategy (NWPCAS) since its inception in 2008. The NWPCAS is a voluntary collaboration between the PoT, Port of Seattle (PoS), The Northwest Seaport Alliance (NWSA) and Vancouver Fraser Port Authority (VFPA) to reduce and ultimately eliminate air pollutant and greenhouse gas (GHG) emissions from seaport activities in the Puget Sound-Georgia Basin Airshed. The NWPCAS constitutes a shared strategic framework for clean air and climate actions and investments that creates a "level playing field" across the four participating port entities, and helps them coordinate, collaborate, and hold each other accountable.

The participating ports updated and renewed the NWPCAS in 2020, strengthening their commitment to reducing air and climate pollution. The 2020 NWPCAS puts forth an ambitious, aspirational, joint vision to **phase out emissions from seaport activities by 2050**, and a suite of high-level joint objectives and actions to advance that vision.

In addition, each of the four participating port entities committed to developing a detailed implementation plan tailored to their particular policy environments, governance structures, lines of business, emissions profiles, and community priorities.

This is the NWPCAS Implementation Plan for the Port of Tacoma, outlining the port's commitment to work towards the aspirational vision and objectives laid out in the NWPCAS. It describes the workplans for the PoT's air quality and climate programs with a primary focus on actions to be taken over the next five years (2021-2025). The NWPCAS and this implementation plan will help to advance progress towards related commitments, such as the Port of Tacoma's Greenhouse Gas Resolution[1].

[1] https://vecportal.blob.core.windows.net/portoftacoma/Documents/b77f95e027e3940243cdd4b8c2dacfac/3A-RES-GHG%20Reduction%20Policy.pdf

1.1 Implementation Plan Applications

The PoT's NWPCAS Implementation Plan is designed to document and communicate our air quality and climate action plan for the next five years. The following summarizes the intended audiences of the plan and how we intend for it to be used.

a. *Staff of the PoT* – The Implementation Plan summarizes our workplan for the next five years. It constitutes a common framework for considering new air quality and climate actions and investments, prioritizing existing actions, and adjusting over time as information becomes available and circumstances change.

b. *NWPCAS Partner Ports* – For our partner ports, the Implementation Plan transparently demonstrates our commitment to working towards the joint vision and objectives and feeds into our joint reporting.

c. *Industry Partners* – The Implementation Plan serves as both a mechanism to communicate our intentions and as a call for collaboration, daylighting areas of joint interest where we can work together.

d. *Funders* – External funding will be vital if we and our industry partners are to be successful in achieving the NWPCAS vision. In addition, external funding can help accelerate our timelines in many areas. The Implementation Plan clearly communicates our near term workplan, identifies key funding gaps, and daylights opportunities for funding support and partnerships.

e. *Near Port Communities and the General Public* – The PoT is dedicated to clearly and transparently communicating our plans for reducing impacts on air pollution and climate change and partnering with near-port communities on clean air and climate solutions. The Implementation Plan serves as our method for communicating our near term workplan and identifying partnership opportunities. We will report our progress via annual progress reports as defined later in the Implementation Plan.

2. NWPCAS Background

The NWPCAS was created in 2008 by the PoS, PoT, and VFPA to set joint aspirational goals to reduce air pollutant and GHG emissions from seaport related operations associated with the four ports. When it was created in 2015, The NWSA joined the collaboration. The geographic and operational scope are described below.

2.1 Operational Scope

The NWPCAS covers emissions from ocean-going vessels, harbor vessels, heavy duty trucks, locomotives, cargo-handling equipment, and port administration and tenant facilities (fleets and facilities). These sectors are explained in more detail in section 5.

2.2 Geographic Scope

The geographic scope of the NWPCAS is the same as the port emission inventories, shown in Figure 1. For the PoT, this includes all vessel, rail, and cargo handling equipment activities that occur within the green shaded area and are directly part of moving Port of Tacoma cargo. For example, an ocean-going vessel calling a PoT terminal would be counted from when it enters the Strait of Juan de Fuca until it exits the airshed.

Figure 1. Geographic scope of the NWPCAS.

2.3 NWPCAS Vision

Responding to the urgent need to minimize environmental health impacts and disparities and address climate change, the 2020 NWPCAS sets a common vision among the participating ports to ultimately phase out air pollutant and GHG emissions. This vision is aligned with the latest guidance from the Intergovernmental Panel on Climate Change (IPCC)[2], which indicates that global carbon neutrality by 2050 is necessary to limit global temperature increase to 1.5 degrees Celsius, thereby avoiding the most catastrophic impacts of climate change. Phasing out emissions

[2] Global Warming of 1.5 ºC — (ipcc.ch)

also will help reduce regional environmental health impacts associated with diesel exhaust. The joint vision statement is:

"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 degrees."

This implementation plan defines how the PoT will begin working towards achieving this joint vision and reducing emissions in the interim.

2.4 NWPCAS Objectives

Supporting the joint vision, the NWPCAS also puts forth a suite of objectives that outline the major action themes along the pathway to achieving zero emissions. These objectives are:

1. *"Implement programs that improve efficiency, phase out old high emitting equipment, and increase use of lower emission fuels."*

   The ports will continue to play a central role in driving reductions of diesel emissions by incentivizing and/or requiring upgrading older equipment with newer models with modern emission controls and implementing programs to increase efficiency and reduce idling. This includes mechanisms like lease requirements for new equipment purchases and grant funded projects to improve energy efficiency.

2. *"Facilitate collaboration among governments, utilities, fuel providers, and industry to ensure that infrastructure needed to enable zero emission technologies is in place at the right time, addressing key constraints by 2030"*

   The ports have a key role to play as conveners and infrastructure providers in the transition to zero emissions. Under this objective, the ports will work with other partners to ensure that the necessary infrastructure is in place to support zero emission technology as it is needed. This means leading planning efforts for infrastructure needs on our own properties, partnering with tenants and other partners to make the necessary investments on port properties, and bringing together coalitions to plan for and fund infrastructure investments needed to support the supply chain's transition outside of port property. The intent of this objective is not that all infrastructure will be in place by 2030, but that the right infrastructure investments will be made at the right time based on need.

3. *"Facilitate collaboration toward commercialization and drive adoption of zero emission technology before 2050"*

   The ports also have an important role to play in accelerating the development, commercialization and deployment of zero emission technologies. We will work as facilitators to help bring partnerships together to identify demonstration opportunities and align the funding needed to support deployment of zero emission technologies that are not currently affordable.

2.5 NWPCAS Conditions for Success

Recognizing that most of the NWPCAS scope is out of the ports' direct operational control, the NWPCAS puts forth a suite of conditions for success that will need to be satisfied in order to reach zero emissions. While the ports play an important role in working towards these conditions, significant action will be needed from others if they are to be satisfied. An abbreviated summary of the conditions for success is provided below, while a full description of the conditions is provided in the full NWPCAS document[3]. The ports will be active participants in promoting and advocating for funding and actions to achieve these conditions for success.

1. "Enabling policy is in place domestically and internationally to support investment in zero emissions technology and infrastructure."

2. "Funding and/or access to capital [is available] to support adoption of zero emission technology and infrastructure development where [the] business case is insufficient".

3. "Adequate electricity and/or fueling infrastructure is available when and where needed."

4. "Technology is commercially available and demonstrated for port applications, and total cost of ownership is competitive [with diesel] which may require enabling regulation and funding."

5. "Industry commitment [is made] to transition to zero emission operations through investments and business planning."

6. "Workforce is trained to operate and maintain zero emissions technology."

3. Port of Tacoma Background

The Port of Tacoma is closely interrelated with the NWSA, as the NWSA manages marine terminal facilities at both home ports of the Port of Tacoma and the Port of Seattle. The NWSA markets and manages the container, breakbulk, auto and some bulk terminals in Tacoma and Seattle. The success and environmental impacts of the Port of Tacoma and the NWSA are intertwined. In 2020, approximately two-thirds of the Port of Tacoma's operating revenue was generated through this partnership. While the PoT relies on the NWSA to manage commercial relationships and agreements among other things, the NWSA relies on the home ports to manage facilities development projects, maintain fleets and facilities, provide administrative office space, and engage with near-port communities in the Tacoma Harbor.

Both the 'home ports' of Port of Tacoma and the Port of Seattle are equal 50/50 partners in the NWSA. The capital and operating budgets of the NWSA are funded 50/50 by the home ports, with the revenue shared 50/50, which can be used to fund home port activities or be invested back into the NWSA. Therefore, all NWSA projects in Tacoma receive significant funding from the Port of Tacoma.

[3] FINAL_2020_NWPCAS_Strategy.pdf (amazonaws.com)

3.1 Description of the Port of Tacoma

The Port of Tacoma (PoT) is a special purpose government established in 1918 representing the people of Pierce County, Washington and makes up half of the Northwest Seaport Alliance. The Port serves greater Pierce County by promoting trade, supporting family-wage jobs, and improving the environment. The PoT manages an extensive industrial/commercial real estate portfolio including a grain cargo terminal. Activities at PoT supported more than 42,100 jobs, generated nearly $3 billion in economic activity and produced more than $100 million annually in state and local taxes (2017). Figure 2 further describes the PoT's relationship to the NWSA and the Port of Seattle, and how the emission sources are distributed between the three entities.

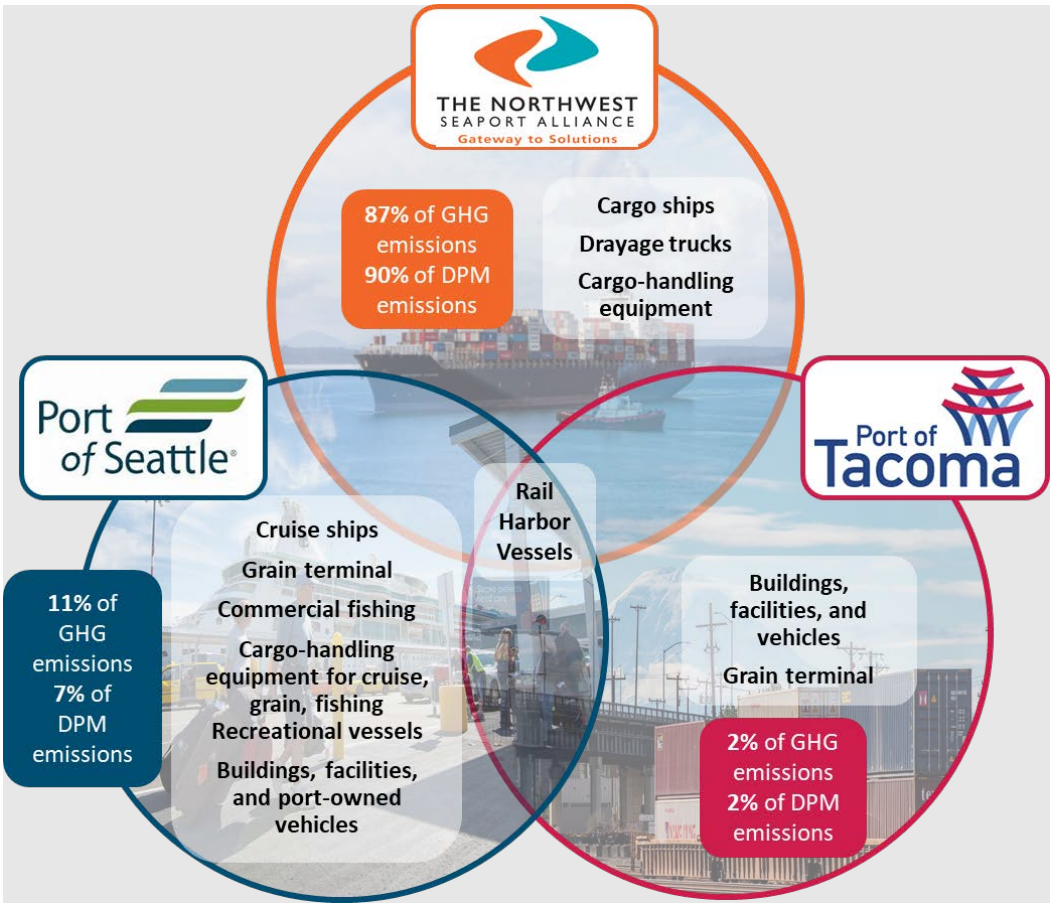

Figure 2: Sectors under Operational Control of the Port of Tacoma, the NWSA and the Port of Seattle

3.2 Role of the Port of Tacoma and Operating Model

The PoT is what is typically referred to as a "landlord" port, meaning that we do not directly operate our marine, commercial, and industrial properties ourselves (in most cases). Instead, we lease the land to private operators who directly manage operations themselves, who own their own equipment and vehicles, and manage their own contracts with customers and shipping lines. Therefore, we do not have direct control of the day-to-day operations that occur on our properties,

but instead, negotiate the operating requirements periodically when new lease agreements are signed, amended and renewed. These long-term lease agreements – the terms of which are negotiated and agreed upon by the PoT and the tenant – are our most direct opportunity to influence tenant operating practices.

It is important to note that a significant fraction of the cargo coming through the Tacoma gateway is discretionary cargo. Discretionary cargo is cargo that is not destined for local residents and businesses, which means it could be shipped through a number of different ports to reach its final destination. Discretionary cargo is particularly susceptible to potential diversion to other ports if costs through another gateway are comparatively lower. In addition to the economic impacts associated with our region losing cargo, diverting cargo to ports that are farther from the Asia and/or have lower environmental standards could lead to increasing emissions. As such a large percentage of the cargo coming through the Tacoma gateway is discretionary, our ability to impose standards through leases without significant risk of cargo diversion, especially those that increase costs of operation, is limited.

These competitive pressures accentuate the importance of working with our NWPCAS port partners to advocate at the federal and international levels for policies that advance air and climate emission standards that support the vision of the 2020 NWPCAS while establishing a level playing field across ports.

In addition, the PoT plays a critical facilitative leadership role in reducing air and climate pollution – fostering the collaboration needed among myriad stakeholders and partners to advance and accelerate the development, financing, and deployment of cleaner technologies, as well as the fueling and charging infrastructure necessary to enable the transition to those technologies.

3.2.1 Leases

As a landlord port, the Port of Tacoma is a long-term steward of industrial land in Pierce County for our constituents, to ensure the environmental and economic sustainability of the port for future generations. We operate this stewardship through long-term leases of land with terminal operators and port-related industries, where the port does not operate the land ourselves, but we set the terms and conditions for use of the land and collect rent. Leases are typically long-term (up to around 20-30 years), allowing tenants security to establish and invest in a thriving business, creating jobs for our local communities. All leases are prepared by the port's real estate team, with input from all port departments, to tailor the requirements of each lease to that specific parcel of land (i.e., permit requirements, historical contamination on-site, etc.). Every lease is posted on our website for review by the public and voted on by the Port Commissioners at one of their monthly public meetings. Every lease has an Environmental Exhibit that details a list of environmental requirements for the tenant to comply with - this is where any lease requirements from the NWPCAS such as the Tier 4 diesel equipment requirement are listed.

Although we sign long-term leases with tenants, leases are reopened many times over their lifetimes, to update the lease with any changes in use of the land or additions to the property (i.e., installation of new lighting, fencing, additional land added to the lease, etc.). As with new leases, all lease amendments go through the same public review process and public vote by Port Commissioners at our regular public meetings. A lease amendment can be prompted by a change

proposed by either the tenant or the port. However, once the lease has been reopened to make the amendment, other updates can be made by either party to update the whole lease through a negotiation. As with new leases, all port departments can update sections of the lease to reflect new programs or requirements introduced since the previous amendment was voted on – this is where 2020 NWPCAS goals can be included.

3.3 Emissions and Impacts

Emission inventories have been the foundation of the goals of the NWPCAS since its inception, providing an analytical basis for how to prioritize emission reduction measures across the operational sectors to maximize impact. Every five years, the PoT participates in an emissions inventory study with other ports and maritime stakeholders in the region to produce the Puget Sound Maritime Air Emissions Inventory (PSEI)[4]. The most recent inventory was completed for activity occurring in calendar year 2016 and the next one will be conducted for activity occurring in calendar year 2021. While we track a full suite of criteria air pollutants as part of the PSEI, we generally focus on diesel particulate matter (DPM) as an indicator of air pollutant burden, as it carries the biggest human health risk of air pollutants that we track. In addition, we focus on aggregated GHG emissions (in units of carbon dioxide equivalents (CO_2e); which includes emissions of carbon dioxide, methane, and nitrous oxide emissions) as an indicator of our contribution to climate change.

Seaport related emissions in the Tacoma harbor result from a variety of activities that can be attributed to both the NWSA and the PoT's operational scopes. Figure 3 details the diesel particulate matter emissions in the Tacoma Harbor (NWSA and PoT combined) and Figure 4 shows the GHG emissions in the Tacoma Harbor (NWSA and PoT combined). The emissions in PoT's operational scope, excluding NWSA activities, represent a relatively small fraction of the total emissions, as demonstrated above in Figure 2.

[4] https://pugetsoundmaritimeairforum.org/

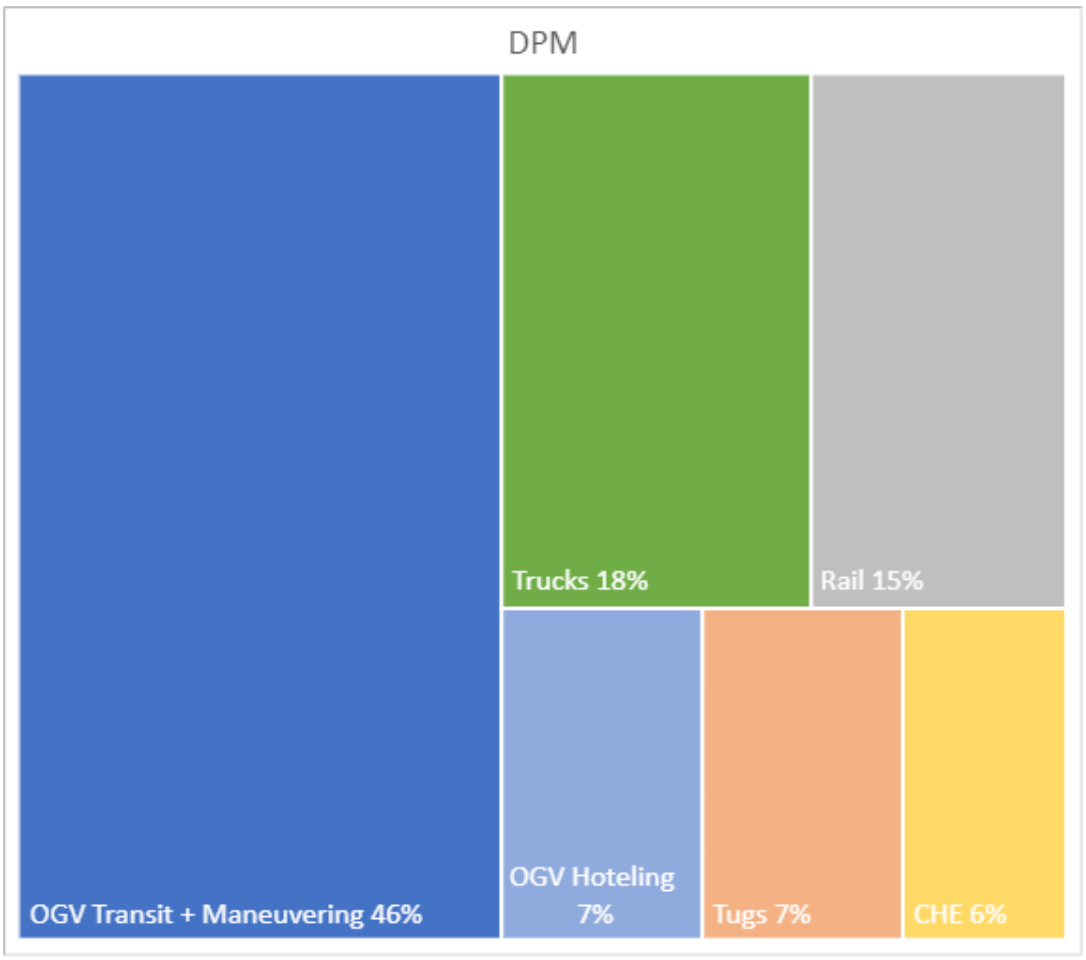

Figure 3: Tacoma Harbor DPM emissions by sector (NWSA and PoT combined)

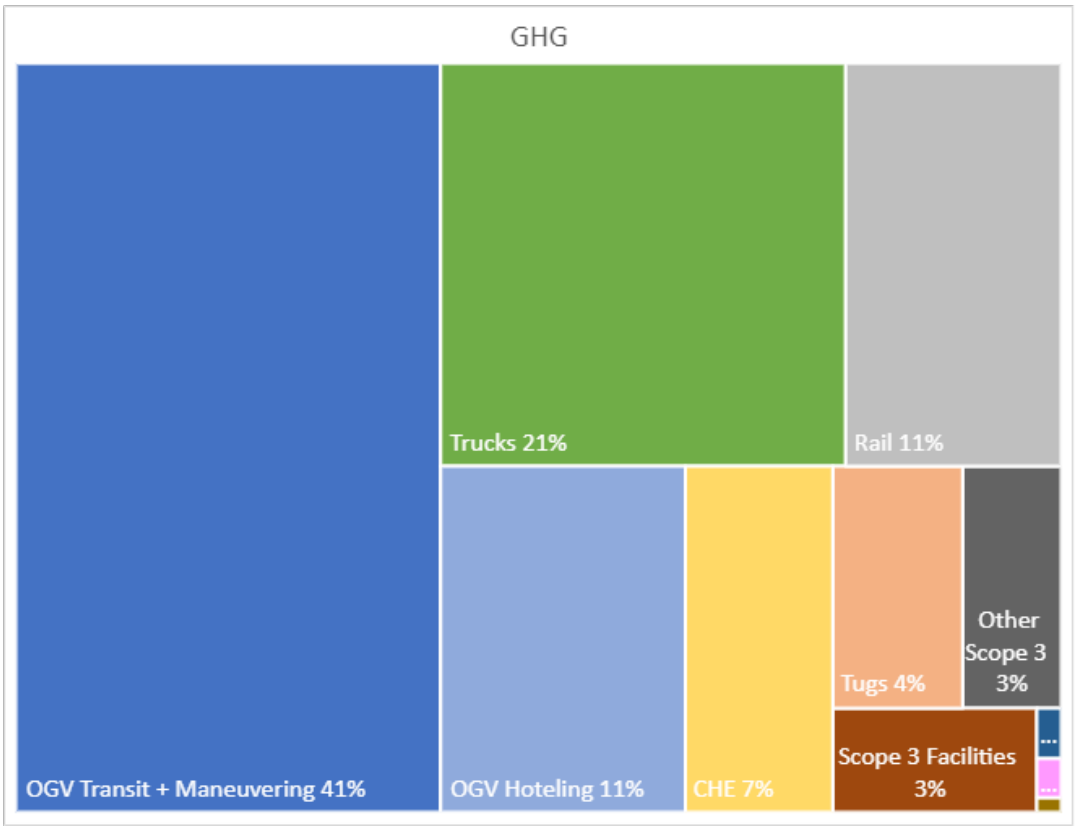

Figure 4: Tacoma Harbor GHG emissions by sector (NWSA and PoT combined. The blue, pink and brown rectangles represent port-owned fleet and facility energy use (less than 1% of total emissions).

Emissions from PoT's operational scope include a broad commercial, industrial, and marine real estate portfolio, cargo activities at the Tacoma Grain Terminal including grain ships, their assist tugs, locomotives, and administrative emissions such as facility energy use, port-owned maintenance fleets, port owned passenger vehicles for the administrative staff, employee commuting, etc. In total, operations connected to activities at the Port of Tacoma resulted in the emissions of 1.2 tons of diesel particulate matter based on our most current emissions inventory and 4,183 tons of GHG emissions. Though a relatively small fraction of the emissions overall, the emissions from Port of Tacoma's scope are, in some cases, those that we have the most direct control over, specifically those from port-owned and operated fleets and facilities.

Emissions in the Tacoma Harbor have decreased significantly since the first 2005 emissions inventory - DPM emissions have been reduced by 80% and GHG emissions have been reduced by 19%. These reductions are the result of a combination of policy changes, fleet turnover, and port programs. For example, the North American Emissions Control Area[5], enacted by the International Maritime Organization in 2015, requires that ships burn fuel with a 0.1% sulfur content, greatly reducing emissions of DPM and oxides of sulfur. Additionally, the EPA has

[5] Designation of the North American Emission Control Area for Marine Vessels | US EPA

enacted several policies to increase emission standards for new on-road[6] and nonroad[7] engines and decrease allowable fuel sulfur contents of diesel fuel[8]. The PoT, along with industry partners, have implemented a number of projects and programs to reduce emissions such as energy efficiency upgrades and fuel efficiency programs.

4. Accountability Framework

The accountability framework is the process by which the PoT will evaluate progress towards meeting the NWPCAS vision and advancing environmental equity. The framework includes our emission targets, a suite of milestones by which we will track our progress, a reporting framework for transparently reporting on our progress, and an adaptive management framework for updating our plans.

4.1 Emission Reduction Goals

The PoT is committed to working towards the emission reduction goals in the 2020 NWPCAS vision and our 2017 Greenhouse Gas Resolution (Resolution 2017-04)[9]. The NWPCAS puts forward the goal to get to zero emissions by 2050 and the GHG Resolution adds an interim goal to reduce emissions to 50% of 2005 levels by 2030. The GHG Resolution also contains 2050 goals, but these have been replaced by the new NWPCAS vision, as they are less aggressive.

In addition, we recognize that we share responsibility with the rest of Washington's economy to meet the state's GHG reduction goals of 45% by 2030, 70% by 2040, and 95% by 2050 and achieving net-zero emissions, all relative to a 1990 baseline. In addition, the PoT will be supporting the NWSA in working towards the same goals. Combining the NWPCAS vision, the PoT's GHG Resolution, and the state's goals, the port will track its emission reductions against the goals summarized below in Table 1. As our emission inventories only go back as far as 2005, we have chosen 2005 as our baseline year. Progress towards meeting these goals will be assessed every five years, at a minimum, through our Puget Sound Maritime Air Emissions Inventory. We will incorporate the latest science to include lifecycle GHG emissions as analytically feasible in our future emission inventories, with a preference for data and methods from the Intergovernmental Panel on Climate Change (IPCC).

Table 1. GHG Emission Reduction Goals (relative to a 2005 baseline)

Year	Emission Reduction Goal
2030	50%
2040	70%
2050	100%

[6] Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards (EPA-420-B-16-018, March 2016)
[7] Nonroad Compression-Ignition Engines: Exhaust Emission Standards (EPA-420-B-16-022, March 2016)
[8] Diesel Fuel Standards and Rulemakings | US EPA
[9] https://vecportal.blob.core.windows.net/portoftacoma/Documents/b77f95e027e3940243cdd4b8c2dacfac/3A-RES-GHG%20Reduction%20Policy.pdf

DPM emissions from PoT's operational scope have been reduced by 80% between our 2005 and 2016 inventories. However, there is still significant work to be done to reduce and ultimately eliminate air pollutant emissions. We will be working towards getting to zero air pollutant emissions by 2050 and implementing cleaner technologies to reduce emissions in the interim, as we wait for zero emission technologies to be available and affordable.

4.2. Port of Tacoma's Milestones

The milestones in Table 2 below are how we will measure success, on everything from reducing emissions from ocean going vessels to engaging effectively with near-port communities.

Table 2: Key 5-Year Milestones for the Port of Tacoma Implementation Plan

Sector	Timeline	Key Milestones
Community Engagement and Partnerships	Q1 2022	Begin providing quarterly updates on NWPCAS progress.
	End 2022	Complete a Community Clean Air and Climate Resource Guide.
	End 2022	Develop and begin implementing a Tacoma community engagement and partnership program.
Industry Engagement and Partnerships	Q2 2022	Develop and begin implementing a tenant engagement program.
Policy Engagement and Advocacy	By 2023	The state Clean Fuel Standard and Climate Commitment Act contain funding mechanisms to support NWPCAS implementation.
	End 2025	Federal, state, and/or local/regional funding is secured to fill funding gaps for projects in this implementation plan.
	End 2025	Stronger emission standards for international shipping are developed.
Infrastructure Planning and Development	Q2 2023	Complete the South Harbor Electrification Roadmap.
Technology Assessment and Advancement	End 2022	Begin conducting technology assessments (first one completed by the end of the year).
Fleets and Facilities	End 2022	Energy efficiency improvements at Fabulich Center complete
	End 2022	Sustainable Building Policy adopted
	Q1 2023	Tenant energy efficiency program established
	End 2025	Complete 1 additional energy efficiency or clean energy project

	End 2022	Sustainable Fleet Plan complete
	End 2022	EV charging infrastructure installed at existing Port Administration Building
	End 2023	EV charging infrastructure installed at Port Maintenance Building
	End 2024	EV charging infrastructure installed at EB-1 terminal
	End 2025	EV charging infrastructure installed at North Intermodal Yard
	TBD	Refresh Port's Commute Trip Reduction Program

Note: green shaded cells are milestones the PoT will work on jointly together with the NWSA in the Tacoma Harbor

4.3 Northwest Seaport Alliance Implementation Plan

As described in Section 3, the Port of Tacoma is a 50% partner in the Northwest Seaport Alliance, funding capital improvements and operations in both Seattle and Tacoma. NWSA activities are responsible for the vast majority of maritime emissions in Tacoma, so much of the Port of Tacoma's efforts in the next five years will be to support the actions in the NWSA Implementation Plan, through funding, project management and technical assistance. Some operational sectors are jointly managed by the NWSA and PoT, and have same goals in the next five years, with NWSA and PoT staff working jointly on both. This is especially the case for the locomotives sector and harbor craft. Many of the large-scale NWSA actions, 50% funded by the Port of Tacoma, will have significant air quality and GHG benefits in Tacoma. For a full picture of NWPCAS activities in the Tacoma Harbor that both NWSA and PoT staff will be focused on in the next 5 years, a summary of the Tacoma milestones in the NWSA Implementation Plan are summarized in Table 3 (a full list can be found in the NWSA Implementation Plan).

Table 3: Summary of NWSA Tacoma Harbor milestones

Sector	Timeline	Key Milestones
Policy Engagement and Advocacy	By 2023	The state Clean Fuel Standard and Climate Commitment Act contain funding mechanisms to support NWPCAS implementation.
	End 2025	Federal, state, and/or local/regional funding is secured to fill funding gaps for projects in this implementation plan.
	End 2025	Stronger emission standards for international shipping are developed.
Industry Engagement and Partnerships	Q2 2022	Develop and begin implementing a tenant engagement program.
Infrastructure Planning and Development	Q2 2023	Complete the South Harbor Electrification Roadmap.
Technology Assessment & Advancement	End 2022	Begin conducting technology assessments.
	End 2022	Begin conducting assessments on the availability and opportunities to increase use of renewable fuels.

Sector	Timeline	Key Milestones
OGVs	End 2023	Update planning analysis and cost estimates for WUT and PCT shore power systems.
	End 2023	Complete shore power installation at Husky Terminal.
	As infrastructure is installed	Incorporate lease requirement for shore power capable ships to use shore power.
	End 2022	Complete vessel emission reduction study
	End 2022	Establish and begin implementing an International Engagement Strategy for reducing vessel emissions
Trucks	End 2023	Scrap 50 trucks through our scrap and replace program.
	End 2025	Implement compliance mechanism to enforce the 2007 model year standard at the domestic terminals.
	End 2022	Regional clean truck collaborative is formed.
	End 2025	At least 10 zero emission trucks have been demonstrated in the gateway, serving both Tacoma and Seattle.
CHE	As leases are signed and amended	Include requirement for any new CHE purchases to be Tier 4 or better in any new or amended lease.
	Q2 2022	Complete the SIM yard tractor project to bring 6 all electric yard tractors to the Tacoma SIM Yard.
	End 2025	At least 25 pieces of zero and/or near zero emission CHE are operating in the gateway.
Locomotives	End 2025	Support at least 1 project to upgrade one or more locomotive engine(s) to Tier 3 or better.
	End 2022	Develop advocacy agenda related to locomotive funding and emission reductions.
Harbor craft	End 2025	Support the deployment of at least 1 hybrid or zero emission tug in the gateway by the end of 2025.
	End 2022	Develop an advocacy agenda related to tug funding and emission reductions.
Administration: light duty fleets and facilities	End 2021	Complete the EB1 and NIM Yard LED lighting upgrade projects

4.4 Reporting

We will track progress towards these milestones on an annual basis and produce an annual progress report that will be shared with the port executive team, the Port of Tacoma Commissioners, and the public. This annual Clean Air and Climate Digest will outline progress towards our milestones, highlight implementation actions and achievements over the past year, and provide a preview of the year to come. To the extent practicable, this information will be coordinated with NWSA activities in the Tacoma harbor, to provide more specific information to near-port residents and communities in Tacoma and Pierce County. In addition, an annual

progress report on the overarching Northwest Ports Clean Air Strategy (NWPCAS) will be produced and published jointly by the four participating port entities. This joint report will outline progress toward the shared vision, objectives, and actions outlined in the 2020 NWPCAS.

4.5 Adaptive Management

The port will take an adaptive management approach to monitoring, reporting, and reviewing the Implementation Plan. As advancements in technology, changes in policy, and funding opportunities occur, the port will change course or advance timelines, actions, and milestones as needed to remain on track to achieve the 2050 vision. Specifically, we will: 1) update our implementation plans on an annual basis; and 2) renew the overarching Northwest Ports Clean Air Strategy about every five years.

- **Annual Implementation Plan Updates**: Annual updates will focus on revising priorities and annual workplans and budgets based on progress to date and the changing political, funding, commercial, and technology landscapes. The primary goal of the annual review and update is to create the workplan and budget for the coming year. This will be done as part of the PoT's budget process in late fall of each year, before public approval by our Port Commissioners, allowing the workplan to be in place before the start of the next year. As part of the Implementation Plan update, new actions may be added that support the existing milestones and timelines for existing actions may be adjusted. Industry, government, community, and NGO partners will be engaged in annual implementation plan updates through the engagement programs outlined in section 5.2.

- **Five-Year NW Ports Clean Air Strategy Renewals:** Every five years the four-port collaborative will renew the NWPCAS, revisiting the shared vision, objectives, and actions based on individual and collective progress to date, changing circumstances, and updates of the Puget Sound Emissions Inventory. As was the case in the development of the 2020 NWPCAS, industry, government, tribal, community and NGO partners will be systematically and significantly engaged in the Strategy renewal process.

5. Port of Tacoma Sector Action Plans

This section lays out the five-year action plan in each activity sector for working towards the NWPCAS vision and joint objectives as well as major milestones we hope to meet within. As many of the sectors will be worked on jointly between the NWSA and PoT, such as locomotives and harbor craft, we have directed the reader towards the NWSA Implementation Plan in these cases for more details on actions and milestones.

5.1 Action Plan Development Process

The development of this implementation plan has been led by the port's Air Quality and Sustainable Practices team, with the goal of developing a plan with actions and milestones that are aggressive yet achievable, will have significant impact, and are rooted in the interests of our local communities, industry partners, governments, and other non-government partners. The implementation plan development has been guided by a rigorous multi-stakeholder external

engagement process, public engagement (including webinars and an online survey), and an internal working group that brought in expertise from across business units at the port. Additionally, a two-year, three-stage engagement process was undertaken to develop the 2020 NWPCAS update, which also provided direction for development of this implementation plan.

Our actions and milestones were created based on what we heard throughout the external engagement process, the expertise of our interdepartmental working group, and the technical work and expertise of our air quality and sustainable practices team. Building the action plans and milestones was a complex process that considered a range of prioritization criteria to both determine the actions we should select as well as how we prioritize work between the sector areas. These criteria are listed below.

- *GHG emission reductions* – Achieving our vision will require that we achieve carbon neutrality by 2050, critical for doing our part to limit climate change.

- *Air pollution impacts* – Air pollutant emissions, especially those from diesel engines, result in negative health impacts for those exposed. Our actions will strive to reduce air pollutant emissions, prioritizing emissions of diesel particulate matter, which are thought to have the most significant health implications of port related air pollutant emissions. We will prioritize air pollutant emission reductions on sources that have more impact on populations.

- *Address environmental health disparities* – We will continue to refine our understanding of the PoT's relationship to environmental health disparities and prioritize air emission reduction efforts in areas that are disproportionately impacted.

- *Alignment with community priorities* – Aligning our work with the priorities of our near port communities is a central priority of this implementation plan.

- *Alignment with customer plans and priorities* – We will work to align the actions in this plan with our tenants' and other business partners' plans to implement cleaner technologies, to ensure we are supporting those efforts.

- *Level of influence* – We will prioritize actions for which the PoT has more influence over success.

- *Technical feasibility* – It is important that technologies can "do the job" and can be reasonably integrated into operations.

- *Cost* – The cost of the action and funding available to offset those costs will be a critical consideration both for the PoT and our industry partners. We will seek to prioritize actions that get the largest benefit for the lowest cost to maximize our limited resources.

- *Alignment with commercial goals* – We will prioritize actions that increase, or at least maintain the competitive position of the Puget Sound cargo gateway in the global marketplace. This means we will need to be conscientious about adding additional costs and prioritizing actions that cargo owners find desirable.

- *Advancement of the pathway to zero* – Our ultimate goal is to transition to zero emissions across all of the sector areas. We will prioritize actions that push us farther down the path towards achieving the desired end state.

5.2 Strategy-Wide Actions

Strategy-wide actions are those that apply broadly across more than one operational sector. This section of the implementation addresses cross-cutting actions in community engagement and partnership; industry engagement and partnership; policy engagement and advocacy; infrastructure planning and development; and technology assessment and advancement.

5.2.1 Community Engagement and Partnerships

Improving air quality for port workers and near-port communities through reduced emissions from port-related sources is a central priority of this implementation plan. Communicating, engaging, and partnering with near-port residents and community groups is an essential component of this work. The Port of Tacoma, in partnership with the NWSA, will continue and strengthen its efforts to engage and partner with near port residents and communities in the Tacoma Harbor, to ensure that our clean air and climate actions and investments incorporate community experience, perspectives, priorities, and ideas.

Based on the Washington State Department of Health's Environmental Health Disparities Map[10], significant environmental health disparities exist along the I-5 corridor and in and around the Tacoma industrial center, where the port is located. Quantifying environmental health is a complicated exercise - the Washington State Department of Health uses 19 indicators including environmental exposures; proximity to certain activities that are thought to elevate risk to human health; population sensitivity; and socioeconomic factors[11]. Diesel emissions from port activities is one of many contributors to these long-standing environmental health disparities that will need to be addressed by a wide consortium of stakeholders. The NWPCAS and the actions in this Implementation Plan are the PoT's effort to reduce our diesel exhaust contributions to these disparities.

As part of our efforts to reduce our impacts we will work with communities and appropriate government agencies to refine and expand our understanding and analysis of how port-related air emissions contribute to environmental health disparities and identify the highest impact strategies for reducing and over time eliminating those contributions.

The main programmatic priorities for our air quality and climate community engagement programs over the next five years are:

1. Increase mutual understanding of port related air quality and climate opportunities and challenges in the Tacoma harbor.
2. Continue to build mutual trust and capacity for collaboration.

[10] Information by Location | Washington Tracking Network (WTN)
[11] Washington Environmental Health Disparities Map:: Washington State Department of Health

3. Better understand the port's relationship to air quality related environmental health disparities experienced by near port communities in the Tacoma harbor.
4. Collaborate on the development and implementation of port related air quality and climate solutions.

Based on these priorities, the actions to be taken are summarized in Table 4 below.

Table 4. Community Engagement and Partnerships Action Plan

Action	Milestones
1. Alongside the NWSA: a. Rely on targeted analytical work and community consultations to better understand and address port--related air quality impacts in near-port communities. b. Develop a "Community Guide to Clean Air & Climate Solutions" to increase understanding of port operations, air quality and climate issues related to ports, and the Northwest Ports Clean Air Strategy. c. Develop and implement a mechanism for providing quarterly updates on NWPCAS implementation.	- Begin providing quarterly updates on NWPCAS implementation by Q1 of 2022. - Complete the Resource Guide by the end of 2022
2. Tacoma Harbor: a. Work with near-port residents and community groups to develop an ongoing community engagement and partnership program. b. Work to expand the network of near port residents and community groups with whom we communicate, engage, and partner. c. Identify and implement partnership opportunities that advance near port community priorities and the NWPCAS in the Tacoma Harbor.	- Develop and launch a community engagement and partnership program by the end of 2022.

5.2.2. Industry Engagement and Partnerships

Achieving the 2020 NWPCAS vision will require action across all industry stakeholders in the port network including terminal operators, ocean carriers, tug operators, rail operators, and truck owners and operators. The PoT will play an important role as a convenor and strategic leader in identifying opportunities and helping to identify and bring in funding for projects. The PoT will continue and strengthen its efforts to engage and partner with its industry partners by providing information, assistance, and facilitating incentives to facilitate and encourage the transition to zero-emission technologies. The NWSA and PoT will jointly work together on expanding industry engagement with our tenants and broader supply chain and real estate partners to facilitate and encourage the transition to zero-emission technologies.

The main programmatic priorities for air quality and climate industry engagement over the next five years are:

1. Inspire, enable and empower our industry partners to implement cleaner technology, especially zero-emission technology.

2. Identify partnerships through which the PoT can enable implementation of zero and near zero-emission technology by facilitating external funding.
3. Maximize the use of zero-emission infrastructure installed by the PoT, especially EV infrastructure.

Based on these priorities, the actions to be taken are summarized in Table 5 below.

Table 5. Industry Engagement and Partnerships Action Plan

Action	Milestones
1. Strengthen tenant engagement and support: Develop a robust tenant engagement and support program to: - Share information about infrastructure and technology developments; - Communicate grant and other funding opportunities; - Identify project and partnership opportunities; and - Provide technical support to tenants related to clean air/climate efforts and/or zero-emission technology.	- Develop framework: Q4 2021 - Implement tenant engagement program: 2022 onwards
2. Partner with tenants and industry partners on funding applications: Lead grant applications and other efforts to secure external funding to support tenant and other industry led projects to implement clean technology.	- Supports milestones throughout the plan related to implementing clean technology
3. Strengthen ocean carrier engagement and partnerships: As needed, engage with major ocean carriers and the PMSA on air pollution reduction programs and potential new programs for reducing emissions while underway.	- *Supports milestones in the OGV sector*
4. Strengthen rail operator engagement: Partner with PSCAA in the Western Clean Rail Collaborative to engage with Tacoma Rail and the Class 1 rail lines to identify opportunities for emission reduction projects and partnerships like repowers.	- *Supports milestone in the locomotive sector*

5.2.3. Public Policy Engagement and Advocacy

Supportive public policy at the local, state, federal, and international levels will be critical to achieving the 2020 NWPCAS vision, for example by establishing appropriate market signals, creating new revenue streams and funding pathways for emission-reduction projects at the Port of Tacoma, and creating a level playing field for air quality and climate action across ports. For example, we know that transitioning to zero-emissions will come at significant cost beyond "business as usual." To accelerate the transition, it will be critical to continue and strengthen our efforts to offset these incremental costs with external funding. Similarly, achieving the vison of zero-emission grain ships calling on PoT terminals will require stronger action by the International Maritime Organization (IMO), which sets emissions standards and efficiency requirements for international ships.

The PoT will increase its efforts under the 2020 NWPCAS, in partnership with the other participating ports and government, industry, and community partners, to promote policies that enable emission reductions and the transition to zero-emissions while maintaining a competitive cargo gateway. The NWSA and PoT will jointly work together on promoting policies that enable emission reductions and the transition to zero emissions while maintaining a competitive cargo gateway at the local, state, federal and international levels.

The following are the main programmatic priorities for the PoT's air quality and climate policy engagement program.

1. Advocate for increased funding opportunities for implementation of zero and near zero-emission technologies in the port and maritime sectors and direct as much of that funding as possible to the Tacoma gateway.
2. Advocate for international and federal policies that increase ambition on air pollutant and greenhouse gas emissions in ways that create a level playing field across ports.
3. Build relationships with local, state, federal, and international agencies and policy makers to advance deployment of lower emission technologies and direct funding towards these projects in the Tacoma gateway.

Based on these priorities, the actions to be taken are summarized in Table 6 below.

Action	Milestones
1. Strengthen International Engagement a. Continue to implement and refine our international engagement program, advocating for more aggressive action on air quality and climate in international shipping. b. Strengthen cross-port collaboration on international engagement with the other NWPCAS partner ports.	*- Supports goals of the OGV section*
2. Strengthen Federal Engagement a. Continue to implement and refine our federal engagement program, advocating for strengthened air quality and climate policies that create a level playing field for ports across the US, and for more funding for the PoT's emission reduction efforts. b. Maintain and strengthen working relationships with key Federal agencies. i. Continue partnership with EPA through the Ports Initiative and DERA program. ii. Strengthen relationship with US DOE, PNNL, and US DOT.	- Funding is secured to support NWPCAS implementation, filling funding gaps by 2025
3. Strengthen State Engagement a. Continue to implement and refine our state engagement program, advocating for policies that create increased funding opportunities for port related emission reduction efforts. b. Engage in key state rule-making processes – in particular those related to the Clean Fuel Standard and the WA Climate Commitment Act – to advocate for support for PoT emission-reduction activities c. Maintain and strengthen relationships with state agencies.	- By the time rulemakings are completed in 2023: the state Clean Fuel Standard and Climate Commitment Act contain funding mechanisms to

i. Department of Ecology through the Clean Diesel Program, VW Settlement Program, Preventing Nonattainment Program, etc. ii. Department of Commerce through the Clean Energy Fund; Electrification of Transportation program, energy efficiency program, etc. iii. Strengthen relationships with the Puget Sound Regional Council (PSRC) and the Washington State Department of Transportation (WSDOT).	support NWPCAS implementation - Funding is secured to support NWPCAS implementation, filling funding gaps by 2025
4. Strengthen Local Engagement: a. Puget Sound Clean Air Agency: support Western Clean Rail Collaborative program, serve on Advisory Council, and others. b. Utilities: Tacoma Public Utilities. Collaborate on energy planning and deployment of infrastructure to support zero-emission operations. c. City of Tacoma: Continue partnership with Office of Sustainability and Sustainable Tacoma Commission and participate in development and implementation of the City's Climate Action Plan. d. Pierce County: Track Sustainability 2030 Pierce County and look for partnership opportunities. e. Regional freight flow strategy: Work with local and regional partners, via infrastructure investments and/or traffic flow strategies to reduce congestion and improve freight flow regionally, with a focus on near port.	*- Supports milestones across other sectors and our funding strategy*

5.2.4 Infrastructure Planning and Development

The transition to zero-emission vehicles and equipment will require charging and fueling infrastructure that is accessible and affordable to a wide range of owners and operators including ocean carriers, marine terminal operators, railyard operators, rail companies, and tug companies. Facilitating the planning and installation of this infrastructure is one of the most important roles that port authorities will play in NWPCAS implementation. It also is one of the most challenging given the monumental cost, likely constraints of the power distribution grids, and uncertain trajectory of zero emission technology advancement and affordability.

The following are the main priorities for infrastructure planning and deployment, summarized in Table 7:

1. Plan for and aggressively seek funding to overcome the high cost of the infrastructure needed to support zero emission operations.
2. Facilitate installation of infrastructure as needed to support adoption of zero emission technologies.

Table 7: Infrastructure Planning and Development Action Plan

Action	Milestone
1. Develop the South Harbor Electrification Roadmap: In partnership with Tacoma Power and the NWSA, evaluate infrastructure needs to support zero emission cargo handling equipment, shore power, drayage trucks, and rail in the Tacoma harbor. This study will take a detailed look at the infrastructure needed on port property as well as in the distribution networks as well as investigating innovative solutions. The NWSA will lead this planning effort with technical support and funding from the PoT.	- Begin the study by the end of 2021 - Complete by Q2 2023

5.2.5 Technology Assessment and Advancement

Achieving the 2020 NWPCAS vision will require a transition to zero-emission technologies that are in varying stages of development – and in some cases do not yet exist. For example, zero-emission vessels do not yet exist; the Getting to Zero Coalition[12] has a goal of getting the first commercially viable deep sea zero emission vessel powered by carbon neutral fuels into operation by 2030, whilst a coalition of cargo owners have pledged to only use shipping lines that use zero-carbon fuel by 2040[13]. The PoT's role in advancing these new, zero-emission technologies focuses primarily on tracking the development and total cost of ownership of relevant technologies in the PNW region, keeping the owners and operators of vehicles and equipment with whom we partner informed about these developments, and looking for strategic opportunities for "early adoption" of zero-emission technologies as they are commercialized and as funding becomes available. Demonstration projects are discussed in the sections on each operational sector below.

The following are our main priorities for technology assessment and advancement:

1. Track the state of zero and near zero emission technology in each operational sector including purchase price and total cost of ownership.
2. Facilitate demonstration and early adoption of zero emission technologies in the Tacoma gateway.

Based on these priorities, the actions to be taken are summarized in Table 8 below.

Table 8: Technology Assessment and Advancement Action Plan

Action	Milestone
1. Collaborate with partner ports to assess zero emission technology feasibility and readiness a. In collaboration with other NWPCAS ports, determine the appropriate breadth, depth and frequency for technology	- Begin assessments in 2022.

[12] Getting to Zero Coalition (globalmaritimeforum.org)
[13] https://www.washingtonpost.com/business/2021/10/19/zero-carbon-fuel-shipping-amazon-ikea/

assessment in each sector. Assemble a framework for jointly delivering and sharing these technology assessments. b. Perform technology assessments to analyze the cost and state of commercialization of zero emission technologies in the PNW market.	
2. Collaborate with the NWSA and partners to assess innovative energy technologies such as on-site solar, energy storage, hydrogen fueling, microgrids, etc. a. PNNL port microgrids study b. PNNL H2 @ Scale Study c. Pursue, advocate, and support other energy innovation assessments.	*- Supports milestones in the energy planning sector*

5.3 Ocean-going Vessels (OGVs)

The OGV source category consists of cargo carrying vessels equipped with large marine propulsion engines, auxiliary engines, and boilers. All the container shipping, breakbulk and auto vessel traffic in the Tacoma Harbor is handled by the NWSA's terminals. Only bulk grain vessels calling at the Tacoma Grain Terminal remain under the Port of Tacoma's emissions profile. The most common origin and destination of ships calling the PoT are Asia (China, Japan, South Korea, Vietnam). In 2020, there were 76 vessel calls by 74 unique grain vessels at the Tacoma Grain Terminal.

While shore power is being used for container cargo vessels in some other west coast and Asian ports, bulk grain vessels have not yet been determined a good use case for shore power - therefore, they generally are not equipped with the required infrastructure and do not use shore power while at berth. The primary reason is that the fleet is quite transient - a vessel that calls at a port may not return for many years. For example, the PoT Grain Terminal saw only two repeat callers in 2020. Without international standardization of shore power provision, installing shore power capabilities on grain ships is likely to provide marginal benefit and create an underutilized asset. In addition, the potential emission benefits of connecting bulk grain ships to shore power is much less than the benefits of connecting a container ship. For example, the average power demand of a grain vessel at berth is less than 400 kW and the demand of container ship can exceed 1000-2000 kW, meaning bulk grain vessels burn less fuel when at berth and emit less.

In California, CARB's Existing At Berth Regulation, which currently requires container vessels to use shore power at Californian ports, has recently been expanded to include requirements for other vessels to use shore power at Californian ports – namely roll-on/roll-off vessels (auto carriers) and tanker vessels from 2025[14]. However, grain vessels are not covered by this CARB Regulation. As there are no other North American shore power installations for grain vessels, and currently very few grain vessels with the ship-side capability, shore power installation is not currently a viable option at the Port of Tacoma.

Although shore power has been robustly demonstrated in use for container vessels, this is not currently a viable strategy for the Port of Tacoma to pursue for grain vessels, as industry has not

[14] Control Measure for Ocean-Going Vessels At Berth | California Air Resources Board

determined bulk grain vessels to be a good use case for shore power and therefore, the vessels themselves do not have the ship-side infrastructure installed. As described above, this is primarily because the grain vessels visit ports unpredictably and infrequently, in many cases calling once and never returning, so we do not have a 'captive market' to use any shore power infrastructure we might install.

The PoT will work closely with the NWSA on actions in the NWSA Implementation Plan related to reduced emissions from all vessels serving the Tacoma Harbor, and installing shore power at container terminals in Tacoma. The PoT and NWSA will work together to advocate for policies to reduce emissions from all international vessels. A full list of actions and milestones can be found in the NWSA Implementation Plan and in Table 3 that both NWSA and PoT will be working on.

5.4 Trucks

The trucking sector is made up of heavy duty (class 8) combination tractors that move cargo to and from port marine terminals and railyards. While the Port of Tacoma managed their own Clean Truck Program until 2015, all truck emissions now come under the NWSA's responsibility under the NWSA Clean Truck Program - the Port of Tacoma has no direct responsibility for truck emissions. Grain cargo is transported into and out of the port by rail, not requiring trucking.

The PoT will work closely with the NWSA on actions in the NWSA Implementation Plan related to trucks to help the NWSA meet its milestones in its Tacoma Harbor. PoT will provide support for the installation of Clean Truck Program infrastructure at the NWSA domestic container terminals in Tacoma (TOTE and West Sitcum) during this 5-year implementation period.

5.5 Cargo-handling equipment

Cargo handling equipment (CHE) are nonroad equipment (i.e., not licensed for over the road use) that are used for moving cargo around terminals and to and from marine vessels, railcars, and on-road trucks. As the Port of Tacoma no longer handles containerized cargo following the formation of The NWSA in 2015, PoT tenants do not use cargo-handling equipment. However, the Port of Tacoma does still own some CHE purchased by the port itself prior to the formation of the NWSA, that the NWSA currently uses to move cargo at NWSA facilities. This equipment will be replaced by The NWSA as they are retired and eventually this entire fleet will be NWSA owned. The PoT will still provide maintenance services to the NWSA.

The PoT will work closely with the NWSA on actions in the NWSA Implementation Plan related to the PoT-owned CHE to help the NWSA meet its milestones in the Tacoma Harbor.

5.6 Locomotives

As locomotives serve both NWSA activities in the Tacoma Harbor and PoT, the NWSA and PoT will jointly work together to reduce air pollutant and GHG emissions in this sector. A full list of actions and milestones can be found in the NWSA Implementation Plan and in Table 3 that both NWSA and PoT will be working on.

5.7 Harbor Vessels

The PoT does not currently have any harbor craft tenants on PoT property. As harbor craft serve both NWSA activities in the Tacoma Harbor and PoT, the NWSA and PoT will jointly work together to reduce air pollutant and GHG emissions in this sector.

A full list of actions and milestones can be found in the NWSA Implementation Plan and in Table 3 that both NWSA and PoT will be working on.

5.8 Fleets and Facilities

The Fleets and Facilities sector includes emissions from port and tenant fleets and facilities. Air and climate pollution from buildings, facilities, vehicles, and equipment – some owned and operated by the Port of Tacoma itself and others managed by tenants – represents a very small percentage of the overall emissions that are focus of the NWPCAS. However, as most of the cargo shipping operations are managed by the NWSA, emissions from fleets and facilities now make up the largest source of GHGs under the Port of Tacoma's direct control.

The PoT provides fleet and facility services for the NWSA, i.e., passenger and security vehicles owned by the PoT are also used by the NWSA. The PoT also provides administrative facilities to The NWSA at the main office (Administration Building) in Tacoma and the Fabulich Center. Tenant fleets include passenger cars, pickup trucks, passenger vans, and other vehicles necessary for administration and maintenance. Tenant-operated facilities include office buildings, equipment maintenance bays, yard lighting, fueling, among others. Emission impacts from fleets and facilities include fuel combustion and energy use.

Working to reduce and ultimately eliminate emissions from the PoT's fleets and facilities is an important contribution to meeting the overall vision of the NWPCAS and demonstrates the Port's commitment to clean air and climate solutions to government and industry partners and the community-at-large. At the same time, our goal is to sustain and strengthen the Port's competitiveness in the cargo shipping and real estate development industries through this work. Progress in this sector should position the Port for sustained commercial success, for example by increasing the efficiency of port operations and by transitioning to lower cost-of-ownership technologies as they become available. Due to the Port's access to clean, affordable electricity from Tacoma Power, there will be a strong emphasis on electrifying buildings, vehicles, and equipment in the coming years.

5.8.1 Emissions from Fleets and Facilities

Fleets and facilities are the smallest source of emissions in the scope of all emissions targeted by the NWPCAS as a whole but are a significant part of the PoT's emissions profile. DPM emissions from fleets and facilities are negligible but make up the largest source of GHG emissions attributable to the PoT.

5.8.2 Level of Influence

Emissions in this sector come from both port-owned and operated fleets and facilities, and tenant fleets and facilities, meaning there are different levels of influence depending on the management

and ownership of the assets. Since the formation of the NWSA, most of the marine terminal properties owned by the PoT have been licensed to the NWSA, meaning that The NWSA is now responsible for their management. These properties are covered by the NWSA's Implementation Plan. The remaining properties not licensed to the NWSA, primarily industrial and commercial real estate properties, are covered by the actions in this implementation plan.

The Port of Tacoma is a "landlord port" meaning many of these buildings and facilities are leased to tenants, which constrains the Port's control over their energy use and management. Tenants manage the day-to-day operations occurring on facilities, pay the utility bills, and in many cases perform routine maintenance. Tenants may be motivated to make energy efficiency improvements if they will save money on utility bills in the long run. The PoT can help assess the business case for energy efficiency improvements and connect tenants with incentives. The most practicable pathway is for the parties to agree to consider cost effective energy efficiency upgrades and to collaborate on claiming incentive and grant funding to help offset costs.

The PoT can influence tenant fleet purchase decisions by negotiating requirements into the lease agreements and helping to coordinate any grant or incentive funding from utilities. The PoT can also install EV charging at facilities during renovations to enable tenants to purchase electric vehicles. The PoT can encourage and facilitate energy efficiency improvements by performing analytical work to help tenants identify opportunities to save money by investing in energy efficiency improvements.

The PoT also owns and operates its own fleet of vehicles and equipment, and operates some buildings itself, such as the Port Administration Building. The PoT has full operational control and ownership of these assets, presenting an opportunity for leadership in the energy efficiency and clean fleets space.

5.8.3 State of Technology and Outlook

Facilities

Electricity can be used in buildings to provide power to heat and cool buildings, water and for cooking. Many cities and counties have begun banning the use of natural gas for heating in new buildings[15], such as the City of Seattle changing their energy code in 2021 to ban installation of natural gas to provide heating in new commercial and apartment buildings[16]. The City of Tacoma also passed a resolution in 2021 prohibiting all new buildings built by the City from using natural gas and other fossil fuels for heating, lighting and power from 2022 onwards, and will assess the potential impact of expanding this rule to new residential and commercial buildings[17]. Regulations have not yet restricted natural gas use for industrial facilities. State-level legislation was proposed in Washington but did not move forward in the 2021 session[18]. However, port tenants use natural gas in buildings for a range of uses, far beyond cooking and heating, and approximately 93% of

[15] San Jose, Oakland join growing list of California cities to ban natural gas construction | Smart Cities Dive
[16] Mayor Durkan Announces Ban on Fossil Fuels for Heating in New Construction to Further Electrify Buildings Using Clean Energy - Office of the Mayor (seattle.gov)
[17] City of Tacoma - File #: RES40776 (legistar.com)
[18] Washington Legislature Considers State-Level Natural Gas Ban (natlawreview.com)

commercial buildings in the U.S use non-electric heating fuel, according to the Lawrence Berkeley National Laboratory[19].

There are a large number of types of energy efficiency measures that can be taken on port buildings and facilities including: upgrading yard and interior lighting to modern light emitting diode (LED), upgrading building HVAC systems, and upgrading windows. As new buildings and facilities are built, energy codes generally prescribe best practices in energy efficiency. However, efficiency improvements can also be retrofitted to existing buildings and facilities. Utilities' conservation programs are often a good source of incentive funding to help make energy efficiency retrofits cost effective.

Tracking and reducing energy use at PoT facilities is complicated by the way in which electricity and natural gas is metered by utilities, and by the complex array of relationships through which energy use and costs are distributed between the Port and its tenants. To assess the potential impact of reducing and eliminating natural gas use in port buildings, the PoT will assess the current inventory and uses of natural gas use in facilities and assess alternative energy sources for these uses.

Fleets

Electricity will be a key energy source in helping us meet our NWPCAS goals since in Tacoma, electricity is a very low carbon source of energy. The local utility, Tacoma Power, sources more than 90% of its electricity from hydropower and overall, their energy is 99% less carbon intense than diesel. In addition, electricity is cheaper on a per unit of energy basis than diesel, and electric drivetrains require less maintenance and are more efficient than internal combustion drivetrains, indicating the potential for electric drive equipment to be a disruptive technology.

Battery electric, zero emission versions of light duty vehicles are broadly commercially available, and pickup trucks are nearing commercial availability[20]. While zero emission vehicles are, or will soon be, commercially available, they are still more expensive than gasoline and diesel vehicles to purchase and require charging infrastructure to support. Some projections have stated that 2025 is roughly the year that passenger cars will reach price parity[21], while price parity is likely further away for pickup trucks and other heavier duty vehicles, though the Ford F-150 Lightning is expected to hit the market in 2022 at $40,000 for a base model[22].

5.8.4 Fleets and Facilities Action Plan

The main programmatic priorities in this sector over the next five years are:

1. Work with tenants to identify cost effective energy efficiency projects and incentive funding
2. Perform an assessment of natural gas use in port owned and leased facilities
3. Ensure our new Port Administration Building is a clean technology leader

[19] LBNL-Electrification-of-Buildings-2018.pdf (msu.edu)
[20] https://www.caranddriver.com/ford/f-150-electric
[21] https://about.bnef.com/blog/electric-cars-reach-price-parity-2025/
[22] The 11 most exciting electric vehicles hitting streets in 2022, from Ford's electric F-150 to an ultra-sleek Cadillac SUV (yahoo.com)

4. Accelerate the adoption of zero emission vehicles into the port's own fleet
5. Planning and installing the EV charging infrastructure necessary to enable that transition
6. Encourage and assist tenants to adopt zero emission fleet vehicles

Based on these priorities, the actions to be taken in the next five years are summarized in Table 9 below.

Table 9: Actions to be taken by 2025 to reduce emissions from Fleets and Facilities

Action	Milestone
Facilities	
1. Increase energy efficiency and clean energy usage in existing Port buildings and facilities a. Create a Sustainable Facilities Working Group that meets regularly to identify and prioritize potentially cost-effective opportunities to increase energy efficiency and/or clean energy use in Port and tenant buildings and facilities b. In partnership with Tacoma Public Utilities, conduct energy audits/assessments on top-ranked opportunities, beginning with lighting and HVAC (heating, ventilation, and air-conditioning) systems in larger buildings (e.g., administration buildings) and exterior lighting at PoT buildings. c. Continue to seek external funding support (e.g., grants, utility rebates) for top-ranked opportunities; incorporate funding into port budgets as needed to support priority projects.	- Energy efficiency improvements at Fabulich Center complete by end of 2022
2. Develop and implement a Sustainable Building Policy to guide design and construction of new Port buildings, major remodels and infrastructure projects Work with the Sustainable Facilities Working Group to: a. Develop interim guidelines to be considered in new design and construction and major remodels while the Sustainable Building Policy is being developed, finalized, and adopted b. Conduct a review of best practices in sustainable design and construction policies and programs in a port/public agency context (e.g. available frameworks, model policies, etc.). Track implementation of the City of Tacoma's "Decarbonization Resolution," including assessment of the benefits and costs of prohibiting natural gas use in new commercial buildings.	- Sustainable Building Policy adopted by end of 2022
3. Build the new Port of Tacoma Maritime Center/Administration Building as an innovative example of a Net Zero Building a) Work with Engineering and project team to ensure energy efficiency measures are incorporated in every facet of development of our new administrative building	- TBD

b) Examine the inclusion of renewable energy use and potentially production at our new building c) Ensure all heating and cooking systems in new building are powered by electricity d) Work with Tacoma Public Utilities to secure incentive and grant funding	
4. Create a program to help tenants identify and finance opportunities for cost-effective energy efficiency and clean energy improvements a. Engage tenants annually on potential for energy efficiency or clean energy upgrades. b. Maintain a small pool of funding for energy efficiency audits conducted by a consultant. c. Facilitate site visits by utilities' conservation teams. d. Work with the utility to secure incentive funding to support energy efficiency projects.	- Program established by Q1 2023 - Identify and complete one energy efficiency or clean energy project by end of 2025
Fleets	
5. Plan and install EV charging infrastructure for Port vehicles: a. Map out infrastructure needs for Port and tenant vehicles through the South Harbor Electrification Roadmap (SHERM) b. Install EV charging at existing Port Administration Building for administrative vehicle fleet c. Install EV charging at new Maritime Center/Port Administration Building d. Install additional charging stations for existing light-duty fleets at other Port locations (EB-1, NIM yard, Maintenance Building)	- EV charging installed at existing Port Administration Building by end of 2022 - EV charging installed at new Maritime Center/Administration Building - TBD - EV charging installed at Port Maintenance Building by end of 2023 - EV charging installed at EB-1 terminal by end of 2024 - EV charging installed at North Intermodal Yard by end of 2025

6. Develop a Sustainable Fleet Plan for transitioning the Port's entire vehicle fleets to zero-emission vehicles by 2050 at the latest a) Track the development and total-cost-of-ownership of electric SUVs, vans, security vehicles, light-duty trucks b) Review best practices in sustainable public fleet management, including the use of decision-making tools that help fleet managers compare the total cost of ownership across vehicle choices c) In collaboration with Port Maintenance, Operations and Commercial teams, develop a plan for transitioning the Port's Administration fleet to zero emission or plug in hybrid by 2030. d) Embed the Sustainable Fleet Plan into Port vehicle purchasing policy to ensure all future light-duty vehicle purchases or leases are zero emission or plug-in hybrid for the Port administration fleet e) Seek external funding for acceleration of adoption of zero-emission vehicles and associated charging infrastructure (i.e., through rebates and grant funding)	- Plan developed by end of 2022
7. Refresh the Port's commute trip reduction program (expanded teleworking, improved access to transit, etc.)	- TBD (dependent on staff returning to office)
8. Accelerate adoption of zero emission vehicles in tenant-owned fleets (light and medium duty) a. Engage with tenants to understand infrastructure needs. b. Connect tenants with incentive funding to support infrastructure installation.	*- Include in industry engagement program (action 3 of the industry engagement section, above)*

6. Budget and Funding Strategy

Significant external funding will be critical if we are to meet the 2020 NWPCAS vision. Achieving the vision of the NWPCAS 2020 will require monumental investments in clean technology across the marine transport, port terminal operations, light and medium duty vehicle and rail sectors, along with the supporting infrastructure. Given the magnitude of this challenge, the PoT recognizes that we can't do this alone; significant investments will be needed from industry, governments, and other external partners to transition to zero emission port operations. This section describes sources of external funding that could help fill identified funding gaps (section 6.1), and more detailed descriptions of the major projects and initiatives that need funding (section 6.2). The funds attributed to the PoT in this section are being incorporated into the PoT's five-year capital investment program.

The PoT's operating and capital budgets are approved on an annual basis at a public meeting and voted on by our Port Commissioners. Although a project may be included in this annual budget and approved by the Commission, individual projects must undergo an additional project authorization process by the relevant Port Department, Executive Director, or Commission at a subsequent public meeting, dependent on the level of funding required. All public

meeting materials are posted beforehand on the PoT's website, and meetings are open for public comment[23].

6.1 External Funding Sources

Historically, we have funded air quality and climate projects through grants from the federal Diesel Emission Reduction Act (DERA) program[24], the Congestion Mitigation and Air Quality (CMAQ) grant program[25], the Washington State Department of Ecology's Clean Diesel Program[26], the Washington State Clean Energy Fund[27], and the state and federal Volkswagen Mitigation Settlements[28]. Continuing to win grant funding through these programs will be important as we look forward to the next five-year NWPCAS implementation period.

While these programs have helped make significant progress in improving air quality in our region, the challenge of transitioning to zero emissions will require even larger investments that will require even larger funding sources. A significant difference from previous air quality efforts which focused primarily on scrapping and replacing diesel equipment and replacing them with newer diesel equipment, transitioning to zero emissions will require significant investments in infrastructure. Infrastructure funding is not often available in traditional air quality grant programs. As a result, we plan to apply for a broader set of grants to support our air quality and climate work including Washington State Clean Energy Fund grants and Federal Infrastructure grants such as the Port Infrastructure Development Program (PIDP) and the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program. These larger federal programs will allow us to combine infrastructure projects that support the transition to zero emissions with seaport infrastructure development projects. We believe this combination will yield competitive applications.

Finally, we are excited to participate in and see the results of rulemaking processes for the recently passed Washington State Low Carbon Fuel Standard and Cap and Invest Program in 2021, as we hope that significant funding from the revenues of these programs will be directed towards decarbonization of port operations. In addition, there may be opportunities for the PoT and our business partners to claim credits under the low carbon fuel standard rule, which can generate revenue that will help offset the costs of implementing zero emission technologies. In addition to policies enacted on the state level, the Biden Administration is working on its infrastructure funding package on the federal level. Decarbonization is a key component of this legislative package and we are hopeful that significant funding will be directed towards port decarbonization as a result.

We will seek to leverage all of these new funding opportunities to support this NWPCAS Implementation Plan, and also advocate for additional new sources of funding.

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[23] Commission Meetings (veconnect.us)
[24] https://www.epa.gov/dera
[25] Federal Programs Directory: Congestion Mitigation and Air Quality (CMAQ) Improvement Program | US Department of Transportation
[26] Clean diesel grants - Washington State Department of Ecology
[27] Clean Energy Fund - Washington State Department of Commerce
[28] Volkswagen enforcement action grants - Washington State Department of Ecology

6.2 Funding Needs

There are several projects that we would like to progress as part of the NWPCAS Implementation Plan that will need external funding to move forward. In some cases, both external funding (i.e., grants, incentives, or other contributions) and industry partner funding will be needed. This section details the items for which we have an existing funding gap.

South Harbor Electrification Roadmap:
Sponsor: Northwest Seaport Alliance and Port of Tacoma
Total cost: $500k
PoT Funds: $50k [10%]
NWSA funds: $250k [50%]
External funds: $200k [40%]
This study is a critical element of our transition to zero emission port operations in the Tacoma harbor. It will provide a flexible plan to deliver energy infrastructure to support future needs that include ocean-going vessel shore power, zero emission cargo handling equipment, and charging for electric drayage trucks, light duty fleets, and others. We will be partnering with the utility to ensure that the plan identifies and will address key grid constraints and to build a partnership by which we can work together to explore new business models and ways to expedite the investments needed. We believe that we have enough funding to do the baseline planning work. External funding and support will allow us to do more in depth engineering on specific short-term projects identified as high priority in the plan and allow us to take a more comprehensive look at innovative energy solutions like storage, on-site generation, and connected microgrids. This study is being led by The NWSA with technical and financial support from the PoT.

Zero Emissions Technology Assessment:
Sponsor: Ports of Seattle, Tacoma and Northwest Seaport Alliance
Total cost: $260,000
Port funds: $86,667 [33%]
External funds: $173,333 [67%]
Zero- and near-zero-emissions technologies are advancing rapidly, and the availability, performance, and cost of technology as well as the availability of warranties and service in the PNW market are all crucial factors which will have a significant impact on the ability of the ports, terminal operators, vessel operators, utilities, and others to transition to these technologies. The Ports envision conducting periodic assessments in multiple sectors. We believe we have enough funding to do an annual assessment, any additional external funding would help accelerate the frequency of each sector's assessment.

EV Charging Stations (new Port of Tacoma Administration Building):
Sponsor: Port of Tacoma
Total cost: $903k
Port funds: $451k [50%]
Other external funds: $451k [50%]
Transitioning the Port of Tacoma's light duty vehicle fleet to zero emissions is a critical early action as these vehicles are commercially available at moderate incremental cost today. A major obstacle is the charging infrastructure required to support this fleet. In the next five years, the Port of Tacoma will be relocating its administration building and we plan to install

charging infrastructure for zero emission vehicles at this facility. At a minimum, 15 chargers will be installed to support the Port's fleet. External funding would allow us to install an additional 15 units for employee and public charging.

EV Charging Stations (EB-1, Maintenance Building and NIM yard)
Sponsor: Port of Tacoma
Total cost: $3M
Port funds: $1.5M [50%]
Other external funds: $1.5M [50%]
Transitioning the Port of Tacoma's light duty vehicle fleet to zero emissions is a critical early action as these vehicles are commercially available at moderate incremental cost today. A major obstacle is the charging infrastructure required to support this fleet. The Port has an existing fleet of light-duty vehicles at a number of more remote locations, at operational sites away from our main Administration Building. In the next five years the Port will build EV charging stations at these more remote operational sites to help transition those fleets to EV models.

Transition the Port of Tacoma's Administrative Fleet to Zero Emissions:
Sponsor: Port of Tacoma
Total cost: $600k
Port funds: $475k [75%]
Other external funds: $125k [25%]
Transitioning the Port of Tacoma's light duty vehicle fleet to zero emissions is a critical early action on our work to phase out emissions. Having the incremental cost of purchasing electric vehicles as opposed to gas vehicles covered by external funding would allow us to move faster in replacing this fleet.

Lighting and Building Energy Efficiency Projects
Sponsor: Northwest Seaport Alliance and Port of Tacoma
Total cost: $5.2M
Port funds: $500k [10%]
Tenant funds: $2.1M [40%]
Other external funds: $2.6M [50%]
Improving the energy efficiency of our facilities is a critical component of reducing emissions associated with energy usage and by reducing existing demand on the grid. Projects include yard lighting retrofits to move to high efficiency LED lighting, and we could perform at least three significant building energy efficiency projects in the next 5 years given sufficient funding. Since tenants bear the responsibility of paying utility bills, they would pay the majority of matching funds to make these projects happen.

6.3 Budget

The workplan for the next five years are summarized in Table 9 below including itemized costs and staff time requirements. This workplan, built from the sector action plans above, represents the PoT's year-by-year action plans and budgets for implementing the NWPCAS over the next five years and will be revised annually as part of our adaptive management process.

Table 9: 2021-2025 Budget

Action	Cost
Port Fleets & Facilities	
Energy efficiency upgrades	$800,000
EV charging infrastructure: existing and new Port Administration Buildings, EB-1 Terminal, NIM Yard and Maintenance Building	$3,000,000
EVs for Port Administrative fleet	$600,000
Sustainable Building Plan development	$50,000
Sustainable Fleet Management Plan development	$50,000
Cross-Cutting	
- Industry engagement - Community engagement - Policy engagement - South Harbor Electrification Roadmap contribution - Emissions inventory contribution - Technology assessment contribution	$800,000
- **Total 5-year Implementation Costs**	**$5,300,000**

7. Glossary

Air Pollutants:
Natural and man-made substances in the air we breathe that negatively impact human or environmental health. In the 2020 NWPCAS, air pollutants include particulate matter (PM), ozone-forming pollutants (nitrogen oxides (NOx) and volatile organic compounds (VOC)), sulfur oxides (SOx), and carbon monoxide (CO).

Greenhouse gases (GHGs):
Gases that trap heat in the atmosphere. GHGs included in port inventories are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). Emissions are reported using carbon dioxide equivalent units (CO2e).

Lifecycle emissions:
Emissions that result from the extraction, processing, and transport of the fuel or technology prior to its final use, in addition to those that are emitted at the tailpipe.

Participating ports:
The four port authorities that have collaborated to develop the NWPCAS and are committed to its implementation.

Particulate matter:
A mix of solid particles and liquid droplets found in the air, e.g., dust, soot or smoke. Fine particulate matter ($PM_{2.5}$) measures 2.5 micrometers and smaller. Coarse particulate matter

(PM_{10}) measures 10 micrometers and smaller. Diesel particulate matter (DPM) is particulate matter that results from burning diesel fuel.

Sector:
Six groupings that are also used in port emission inventories to estimate emissions by source, including: ocean-going vessels, harbor vessels, cargo-handling equipment, trucks, rail, and port administration and tenant facilities.

Supply chain:
The network involved in producing and transporting a product to a consumer.

Tailpipe emissions:
Chemicals released as a result of burning fuel to operate an engine (e.g., gasoline, diesel, biofuels). Electric and hydrogen fueled engines have zero tailpipe emissions.

Zero emission:
For this strategy, use of technologies and fuels that result in no tailpipe emissions, recognizing that emissions may still occur when looking at the full lifecycle.

8. Acronyms

3PL	Third Party Logistics
CARB	California Air Resources Board
CHE	Cargo-Handling Equipment
CMAQ	Congestion Mitigation and Air Quality
DERA	Diesel Emission Reduction Act
DPM	Diesel Particulate Matter
EV	Electric Vehicle
GHG	Greenhouse Gas
hp	Horsepower
HVAC	Heating, Ventilation and Air Conditioning
IAPH	International Association of Ports and Harbors
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LED	Light Emitting Diode
NIM	North Intermodal Yard
NWPCAS	Northwest Ports Clean Air Strategy
NWSA	Northwest Seaport Alliance
OGV	Ocean-Going Vessel
PCT	Pierce County Terminal
PIDP	Port Infrastructure Development Program
PNW	Pacific Northwest
PoS	Port of Seattle
PoT	Port of Tacoma
PSCAA	Puget Sound Clean Air Agency
PSEI	Puget Sound Maritime Emissions Inventory

RAISE	Rebuilding American Infrastructure with Sustainability and Equity
SIM	South Intermodal Yard
VFPA	Vancouver Fraser Port Authority
WPCAP	World Ports Climate Action Program
WPSP	World Ports Sustainability Program
WUT	Washington United Terminal