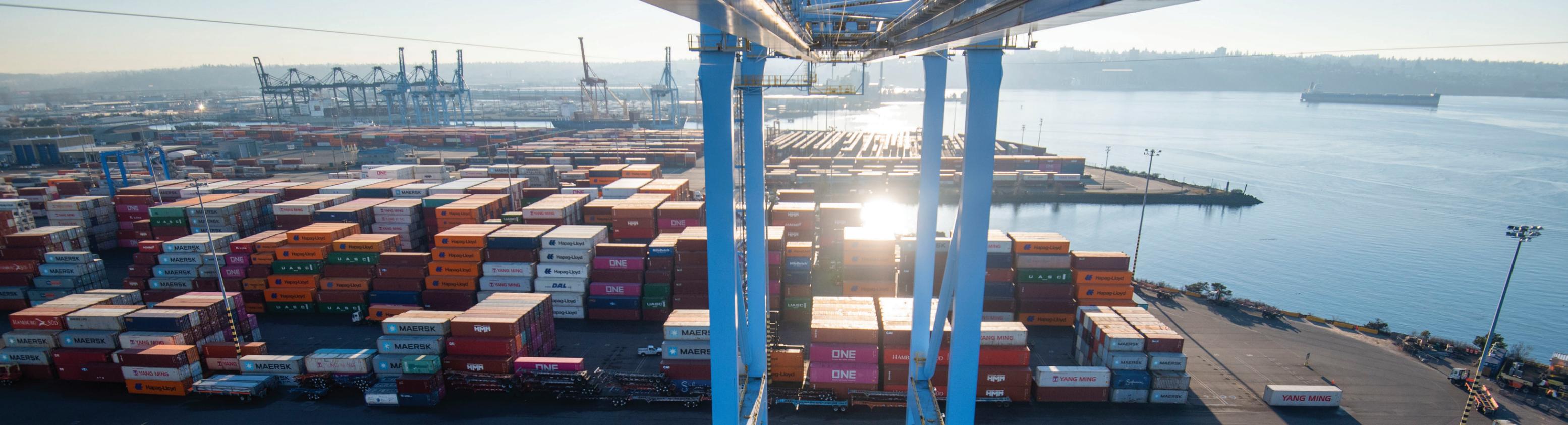




NORTHWEST PORTS CLEAN AIR STRATEGY

# 2026-2030 Clean Air Implementation Plan





# Table of Contents

<b>Executive Summary</b>	3	<b>5. Port of Tacoma 2026-2030 Implementation Plan</b>	14
<b>1. Background and Purpose</b>	5	5.1. Implementation Plan Development Process	14
1.1. Why Phase Out Emissions?	6	5.2. Performance Metrics and Estimated Emission Reductions	14
1.2. What Does Phasing Out Emissions Mean?	6	5.3. Community Engagement and Partnerships	18
<b>2. NWPCAS Background</b>	7	5.4. Public Policy Engagement and Advocacy	19
2.1. Operational Scope	7	5.5. Facilities	19
2.2. Geographic Scope	7	5.6. Fleets	22
2.3. NWPCAS Vision	7	5.7. Grain Terminal	25
<b>3. Port of Tacoma Background</b>	8	5.8. Port-Industry Emission Reduction Partnerships (PIER-Ps)	27
3.1. Role of the Port of Tacoma and Operating Model	8	<b>6. Budget and Funding Strategy</b>	30
3.2. Emissions and Impacts	9	6.1. External Funding Sources	30
3.3. 2021-2025 Key Accomplishments	11	6.2. Funding Needs	32
<b>4. Northwest Seaport Alliance Clean Air Implementation Plan</b>	13	6.3. Estimated Budget	36
		<b>7. Glossary</b>	37
		<b>8. Acronyms</b>	38
		<b>9. Appendix</b>	39

# Executive Summary

The 2020 Northwest Ports Clean Air Strategy (NWPCAS) set a bold vision for clean air and climate action by the Port of Tacoma (PoT): to “phase out emissions from seaport related activities by 2050.” The Port of Tacoma’s Clean Air Implementation Plan (CAIP) outlines the key actions we will take between 2026 and 2030 to advance this vision. It also outlines our organizational greenhouse gas reduction targets: a 50% overall reduction by 2030; net zero emissions for Scope 1 and Scope 2 by 2040; a 70% reduction in Scope 3 emissions by 2040; and full net zero emissions across all scopes by 2050.

The overarching goals of this 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 – reduce greenhouse gas emissions in alignment with limiting global temperature rise to 1.5°C to stave off the worst impacts of climate change; and
- Sustain and strengthen our economic vitality to advance our core mission: facilitating cargo operations and real estate business that supports more than 41,000 jobs and nearly \$10.8 billion in total business output.

This is the Port of Tacoma’s second CAIP, building upon the 2021-2025 NWPCAS Implementation Plan and reaffirming our commitment to the vision and objectives of the NWPCAS. The CAIP outlines the work plans for the PoT’s air quality and climate programs, highlights progress made under the previous plan, and identifies the actions we will take over the next five years

(2026-2030). Our strategy for continuing to phase out emissions, building on this strong track record, focuses on the following key areas:

1. Reduce emissions from the existing conventionally powered fleet through implementation of alternative (cleaner) fuels, continued modernization of equipment, vehicles, and vessels, and improving operational efficiency.
2. Understand and address infrastructure needs and constraints associated with the adoption of zero emission technologies.
3. Facilitate and accelerate the transition to zero emission technologies.

The 2026-2030 CAIP presents a comprehensive action plan for reducing emissions across port-related operational sectors. It also includes action plans for critical support activities, such as community engagement and policy engagement. These action plans are designed to advance the PoT’s priorities in alignment with the NWPCAS.

Key milestones, outlined in **Table 1** on the facing page, will serve as benchmarks for measuring our progress in implementing CAIP actions. A complete list of milestones can be found in the Port of Tacoma 2026-2030 Implementation Plan section of this report.

**Table 1: Key 5-Year Actions for the Port of Tacoma Implementation Plan**

Sector	Timeline	Key Milestones
Community Engagement and Partnerships	Ongoing	Maximize utilization of NW Clean Ports website as a community outreach and educational tool.
	Ongoing	Continue to develop, publish and increase readership of the Clean Air Quarterly newsletter.
	By 2026	Develop a gateway-wide communications and community engagement strategy for low to near-zero emission maritime fuels.
Policy Engagement	Ongoing	Continue to track and advocate for state and federal policy developments that advance NWPCAS implementation and PoT’s strategic interests.
	Ongoing	Identify and pursue state and federal funding opportunities to address the cost gap for ZE technology planning and conversion.
Facilities	By 2030	Complete LED lighting upgrades at all PoT-owned and operated facilities.
	By 2028	Conduct assessment and implement actions needed to ensure compliance with the Washington State Clean Buildings Performance Standards.
	By 2027	Complete a 2040 Net Zero Roadmap for PoT-owned and operated facilities.
	By 2030	Transition PoT-owned and operated facilities from natural gas to electricity or renewable natural gas.
	Ongoing	Encourage Port contractors to use low- or zero-emission fuels and equipment for PoT-funded construction projects.
Fleets	By 2027	Update a 2040 Net Zero Roadmap for the port-owned fleet.
	By 2030	Complete vehicle charging installation for the PoT’s light-duty fleet.
	By 2030	Continue transitioning PoT-owned passenger and light-duty fleet to zero emissions.
	By 2030	Transition 30% of PoT-owned equipment to zero emissions.
Tacoma Grain Terminal	Ongoing	Encourage the Tacoma Grain Terminal operator to switch on-terminal equipment (e.g., switcher locomotives) to renewable diesel.
	Develop by 2026 Implement by 2030	Partner with the Tacoma Grain Terminal operator to develop an Emission Reduction Strategy for the Tacoma Grain Terminal. <ul style="list-style-type: none"> <li>– Roadmap to phasing out emissions by 2050</li> <li>– Priority 5-year action plan</li> </ul>
	Ongoing	Partner with the NWSA to: <ul style="list-style-type: none"> <li>– Identify opportunities to reduce emissions from tugboat assist.</li> <li>– Co-develop rail emission reduction strategy to increase pace of progress in the locomotive sector.</li> <li>– Track alternative at-berth emission control technologies.</li> <li>– Implement a Clean Vessel Recognition/Incentive Program.</li> </ul>
Port-Industry Emission Reduction Partnership (PIER-P)	By 2027	Develop a PoT-Industrial Emission Reduction Partnership (PIER-P) Program.
	By 2029	Develop and implement a pilot partnership and project to reuse industrial waste as inputs for other local industries.

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

# 1. Background & Purpose

The Port of Tacoma (PoT) is committed to reducing, and ultimately eliminating, air and climate pollution and related environmental health disparities associated with our operations. Improving air quality, particularly for communities living near port terminals and along major freight corridors, and reducing the PoT’s contribution to climate change are top priorities.

Since 2008, the PoT has been a dedicated partner in the Northwest Ports Clean Air Strategy (NWPCAS), a voluntary collaboration among the Port of Tacoma, Port of Seattle, The Northwest Seaport Alliance (NWSA) and the Vancouver Fraser Port Authority. Together, these ports are working to reduce and ultimately eliminate air pollutant and greenhouse gas (GHG) emissions from seaport activities in the Puget Sound-Georgia Basin Airshed.

The NWPCAS provides a unified strategic framework for clean air and climate action and investments that creates a level playing field across the participating ports. It enables coordination, collaboration, and mutual accountability in achieving our shared environmental goals.

In 2020, the participating ports renewed and strengthened their commitment to reducing air and climate pollution through an updated NWPCAS. The revised strategy sets forth an ambitious joint vision to phase out emissions from seaport activities by 2050. It also outlines a set of high-level, collaborative actions and objectives to guide progress toward that vision.

Each of the four ports committed to developing a detailed implementation plan tailored to their unique business operations, policy environments, governance structures, emissions profiles, and community priorities.

This is the PoT’s second Clean Air Implementation Plan (CAIP), building upon the 2021-2025 Plan and reaffirming our continued commitment to the aspirational vision and objectives of the NWPCAS. This updated CAIP outlines the Port’s strategic work plans for air quality and climate programs, highlights key achievements from the previous five-year period, and details the actions planned for 2026-2030 to continue advancing clean air and climate goals. Both the NWPCAS and this Implementation Plan support progress toward related commitments, including the Port of Tacoma’s Greenhouse Gas Resolution<sup>1</sup>.

The overarching goals of this Implementation Plan are to:

- Do our part to improve local air quality, particularly in areas experiencing environmental health disparities, as identified by the Washington Department of Public Health<sup>2</sup>;
- Do our part to meet the global climate challenge by aligning with the goal of limiting global temperature rise to 1.5°C to stave off what the Intergovernmental Panel on Climate Change (IPCC) describes as “severe, widespread, and irreversible impacts”;
- Sustain and strengthen our economic vitality by advancing PoT’s lines of business, which support more than 41,000 jobs and nearly \$10.8 billion in business output.

1. [Port of Tacoma Resolution 2017-04-P](#)  
 2. [Information by Location | Washington Tracking Network \(WTN\)](#)

## 1.1. Why Phase Out Emissions?

### Community Health Impacts

According to the Washington State Department of Health’s Environmental Health Disparities Map<sup>3</sup>, significant environmental health disparities exist along the I-5 corridor and in and around the Tacoma industrial center, where the PoT is located. The map incorporates 19 indicators, including environmental exposures; proximity to pollution sources, population sensitivity; and socioeconomic factors<sup>4</sup>.

Diesel emissions, including but not limited to those from port-related activities, are one of many contributors to these long-standing environmental health disparities. Addressing them will require coordinated action from a broad coalition of stakeholders. Through the NWPCAS and this Implementation Plan, the PoT is taking action to reduce our diesel exhaust emissions as part of a broader effort to improve community health outcomes.

### Climate Impacts

The effects of climate change are already being felt in the Tacoma Harbor and across Washington state, from rising temperatures and intensified wildfire seasons to reduced snowpack and heavier rainfall events. The business activities of the PoT and NWSA contribute to the GHG emissions that accelerate global temperature rise.

The NWPCAS vision to phase out seaport-related emissions by 2050 was developed in response to these growing threats. The ports remain committed to the goals outlined in the NWPCAS. With this renewed Implementation Plan, the PoT continues its focus on emission reduction actions and positions itself as a leader in both local and international efforts to meaningfully address climate change.

3. [Information by Location | Washington Tracking Network \(WTN\)](#)  
 4. [Washington Environmental Health Disparities Map](#)

## 1.2. What Does Phasing Out Emissions Mean?

The NWPCAS describes “phasing out emissions” as the implementation of zero tailpipe emission technologies, such as battery-electric or hydrogen fuel cell systems, wherever feasible, while also minimizing upstream emissions. The NWPCAS recognizes that some emission sources, particularly ocean-going vessels, may not yet have viable zero-emission alternatives. Given the unique challenges across different sectors and use cases, the following hierarchy of solutions is considered for each application, based on feasibility and practicability:

1. Zero tailpipe emission technologies (e.g., battery-electric or hydrogen fuel cell), powered by clean energy to minimize upstream emissions.
2. Fuels that provide a pathway to net-zero GHG emissions while also minimizing air pollutant emissions.
3. Technologies and fuels that reduce GHG and/or air pollutant emissions but may not directly achieve net-zero.

In addition to the NWPCAS vision and commitments, the PoT has adopted a Greenhouse Gas Resolution that established a more ambitious target to eliminate Scope 1 and 2 emissions by 2040. The PoT’s GHG reduction targets are summarized in **Table 2** (below).

**Table 2. GHG Emission Reduction Goals (relative to a 2005 baseline)**

Year	Emission Reduction Goal
2030	50% reduction for scopes 1, 2, and 3
2040	Net zero for scopes 1 and 2, 70% reduction for scope 3
2050	100%

## 2. Northwest Ports Clean Air Strategy (NWPCAS) Background

The NWPCAS was launched in 2008 by the Ports of Tacoma, Seattle and Vancouver Fraser Port Authority to establish joint goals for reducing air pollutant and GHG emissions from seaport-related operations. In 2015, the NWSA joined the collaboration, further strengthening the regional commitment to clean air and climate action. The geographic and operational scope of the NWPCAS is outlined below.

### 2.1. Operational Scope

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

### 2.2. Geographic Scope

The geographic scope of the NWPCAS aligns with the boundaries used in the port's emission inventories, shown in **Figure 1**. This area includes all mobile emission sources, such as vessels, rail, and cargo-handling equipment, operating within the green-shaded region shown on the map. These activities are directly associated with the movement of cargo in and out of NWPCAS port terminals. For example, emissions from an ocean-going vessel calling at a PoT terminal are included from the point it enters the Strait of Juan de Fuca until it exits the airshed.

### 2.3. NWPCAS Vision

In response to the urgent need to reduce environmental health disparities and address global climate change, the NWPCAS establishes a joint vision statement: "Phase out emissions from



Figure 1: Geographic scope of the NWPCAS.

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 vision aligns with the latest guidance from the IPCC<sup>5</sup>, which states that achieving global carbon neutrality by 2050 is essential to limiting global temperature rise to 1.5 degrees Celsius, thereby avoiding the most catastrophic impacts of climate change. Phasing out emissions will also help reduce regional health impacts associated with diesel exhaust.

This Implementation Plan outlines how the PoT will contribute to achieving this shared vision, while also making meaningful progress on emissions reductions in the near term.

5. [Global Warming of 1.5° C — \(ipcc.ch\)](https://www.ipcc.ch/)

## 3. Port of Tacoma Background

The PoT is a special purpose government established in 1918 to serve the people of Pierce County, Washington. It represents one half of the NWSA and plays a vital role in promoting trade, supporting family-wage jobs, and improving the environment. The PoT manages a diverse industrial and commercial real estate portfolio, including a grain terminal, and contributes significantly to the regional economy.

In 2023, activities through the PoT and NWSA's South Harbor lines of business supported more than 41,000 jobs, generated approximately \$3.4 billion in total compensation, and produced nearly \$10.8 billion in business output<sup>6</sup>.

The PoT is closely integrated with the NWSA, which manages marine terminal operations at both the PoT and Port of Seattle. The NWSA markets and manages the container, breakbulk, auto and some bulk terminals across both harbors. As a result, the success, and environmental impact, of the PoT and NWSA are intertwined. In 2020, approximately two-thirds of the PoT's operating revenue was generated through this partnership.

While the NWSA is responsible for managing commercial relationships and terminal operations, it relies on the home ports to manage facility development projects, maintain fleets and facilities, provide administrative office space, and engage with near-port communities in the Tacoma Harbor. **Figure 2** illustrates the relationship between the PoT, NWSA, and the Port of Seattle, and shows how the emission sources are distributed among the three entities. Both the PoT and Port of Seattle are equal partners in the in the NWSA. The NWSA's capital and operating budgets are funded equally,

6. [Economic Impact | Port of Tacoma](#)



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

50/50, by the two home ports, and revenue is also shared equally. These shared funds can be used to fund home port activities or be invested back into the NWSA. Therefore, all NWSA projects located in Tacoma receive significant funding support from the PoT.

### 3.1. Role of the Port of Tacoma and Operating Model

The PoT is a "landlord port," meaning it does not directly manage the day-to-day operations of its marine, commercial, and industrial properties. Instead, the PoT leases land to private operators who are responsible for managing their own operations, owning their equipment and vehicles, and contracting directly with customers and shipping lines.

As a result, the PoT does not have direct control over daily operational activities on its properties. However it negotiates operating requirements periodically when new lease agreements are signed, amended and renewed. These long-term lease agreements

represent the PoT’s most direct opportunity to influence tenant operating practices.

In addition, the PoT plays a critical leadership and facilitation role in reducing air and climate pollution. This includes fostering collaboration among a wide range of 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. Emissions and Impacts

Emission inventories have been the foundation of the NWPCAS since its inception, providing a data-driven basis for prioritizing emission reduction strategies across operational sectors. 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)<sup>7</sup>. The most recent inventory reflects activity from calendar year 2021.

To track progress over time, the PoT focuses on two key indicators:

- GHG emissions, measured in carbon dioxide equivalents (CO<sub>2</sub>e), which include carbon dioxide, methane, and nitrous oxide, key contributors to climate change.
- Diesel particulate matter (DPM), a primary indicator of air pollutant burden due to its strong link to health disparities in the region.

Air toxics remain a significant concern in the Puget Sound region, with DPM identified as the leading contributor to regional air toxics related health risks. According to the Puget Sound Clean Air Agency’s 2021-2022 Air Toxics Monitoring Study<sup>8</sup>, while cancer risks from air toxics have declined, they are still

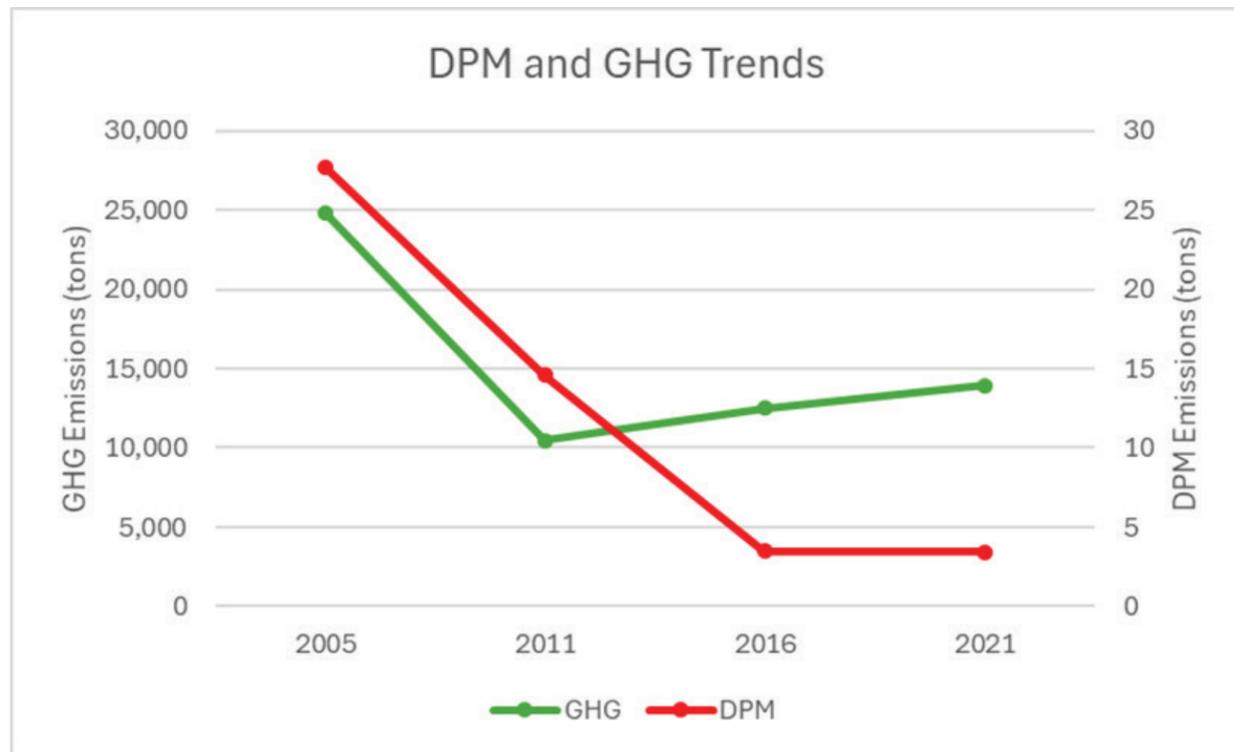


Figure 3: PoT DPM and GHG Emission Trends 2005-2021

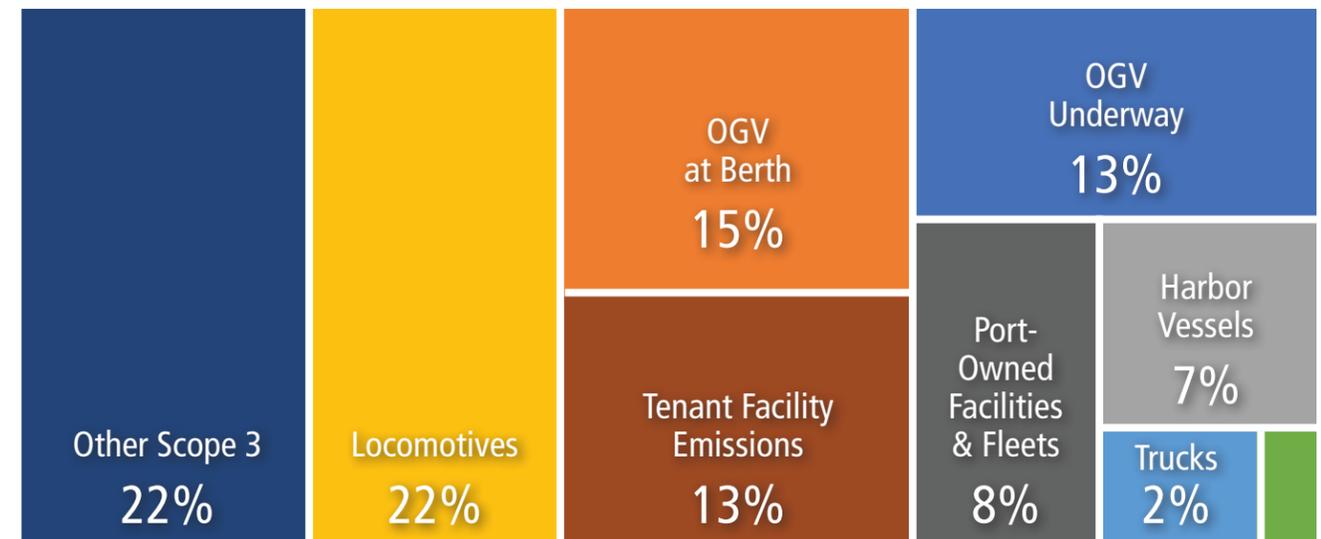


Figure 4: PoT GHG Distribution (2021 PSEI and PoT Emissions Inventory)

significant—DPM alone accounts for over 80% of the total air toxics related cancer risk. The U.S. Environmental Protection Agency (EPA) also identifies Pierce County as an area of concern for air toxics. It is listed in the EPA’s 2024 Clean Ports Program Disadvantaged Communities list due to high ambient concentrations of DPM.

Figure 3 illustrates the trends in DPM and GHG emissions from the first PSEI in 2005 through the 2021 inventory. Since 2005, DPM emissions have decreased by 88% and GHG emissions by 44%. However, DPM emissions have remained relatively the same since 2016, and GHG emissions have increased since 2011, highlighting the need for more aggressive action.

Emission reductions have been driven by a combination of regulatory and policy changes, fleet turnover, and PoT-led programs. Notable examples include:

- The North American Emissions Control Area<sup>9</sup>, established by the International Maritime Organization in 2015, which mandates the use of marine fuels with no more than 0.1% sulfur content, greatly reducing DPM and sulfur oxide emission.

- PA regulations that have tightened emission standards for new on-road<sup>10</sup> and nonroad<sup>11</sup> engines and reduced allowable sulfur content in diesel fuels<sup>12</sup>.
- PoT and industry partner-led programs focused on emissions reduction, such as energy efficiency, fuel-switching, and equipment upgrades.

Figures 4 and 5 illustrate the PoT’s GHG and DPM emissions by operational sector. These figures show the percentage of total emissions attributed to each source, including ocean-going vessels (OGVs) while transiting and maneuvering and while at berth, cargo handling equipment (CHE), trucks, harbor vessels, locomotives, and PoT-owned fleets and facilities<sup>13</sup>.

7. [Puget Sound Maritime Air Forum](#)  
 8. [2023 Tacoma Seattle Air Toxics Report](#)  
 9. [Designation of the North American Emission Control Area for Marine Vessels | US EPA](#)  
 10. [Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards \(EPA 420-B-16-018, March 2016\)](#)  
 11. [Nonroad Compression-Ignition Engines: Exhaust Emission Standards \(EPA-420-B-16-022, March 2016\)](#)  
 12. [Diesel Fuel Standards and Rulemakings | US EPA](#)  
 13. Figures 4 and 5 only show GHG and DPM emissions resulting from PoT activities. For NWSA emissions in the Tacoma Harbor, please see the [2021 Puget Sound Emissions Inventory](#).

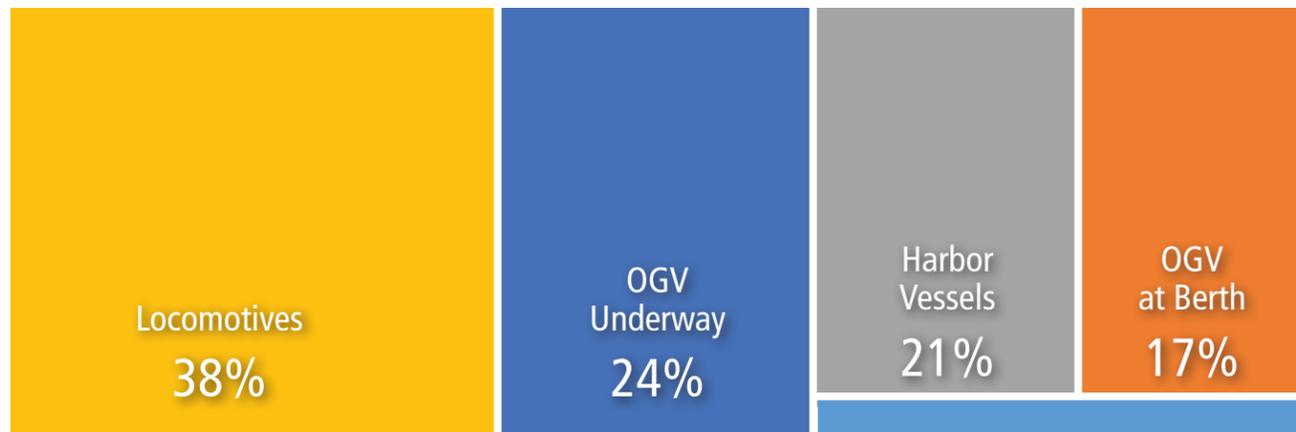


Figure 5: PoT DPM Distribution (2021 PSEI data)

OGVs are the largest source of both GHG (25%) and DPM (41%) emissions when all phases of their activity, transit, maneuvering, and at berth, are included. The second-largest source of GHG emissions is tenant employee commuting (22%).

Locomotives are the next largest contributor to both GHG (19%) and DPM (38%) emissions. While PoT-owned fleets and facilities contribute only 8% of total GHG emissions and a negligible share of DPM, they represent a significant portion of the PoT's Scope 1 and 2 emissions. The PoT has committed to eliminating these emissions by 2040 per its 2023 GHG Resolution.

In conjunction with the PSEI, the PoT conducted an updated GHG emissions inventory for calendar year 2021 to track emissions across all three scopes: Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased energy), and Scope 3 (all other indirect emissions).

Scope 3 emissions account for 97% of the PoT's total GHG emissions and include sources such as: emissions from the PoT's commercial, industrial, and marine real estate portfolio; cargo activities at the Tacoma Grain Terminal, including grain ships, assist tugs, and locomotives; and employee commuting and other indirect sources.

The remaining 3% of emissions fall under Scope 1 and 2. Of these: 75% are from PoT-owned vehicles and equipment, and 24% are from natural gas used in PoT-owned buildings, and 1% is from purchased electricity (see Figure 6 on the facing page for a breakdown). While Scope 1 and 2 emissions represent a relatively small share of the PoT's total emissions, they are sources over which the PoT has most direct control.

While potential emission reductions are a key factor in prioritizing actions, they are not the only consideration. Other important criteria include technology readiness, cost, the PoT's level of influence, community priorities, and commercial needs. These factors are all weighed carefully to ensure that our efforts are both impactful and practical.

### 3.3. 2021-2025 Key Accomplishments

Over the past five years, the PoT has implemented several key actions outlined in the 2021–2025 Implementation Plan. In total, 14 of 19 milestones (73%) were completed in 2021–2025.

A summary table of key accomplishments from 2021 to 2025 is provided on the facing page. This list is not exhaustive but highlights some of the most significant achievements during the implementation period.

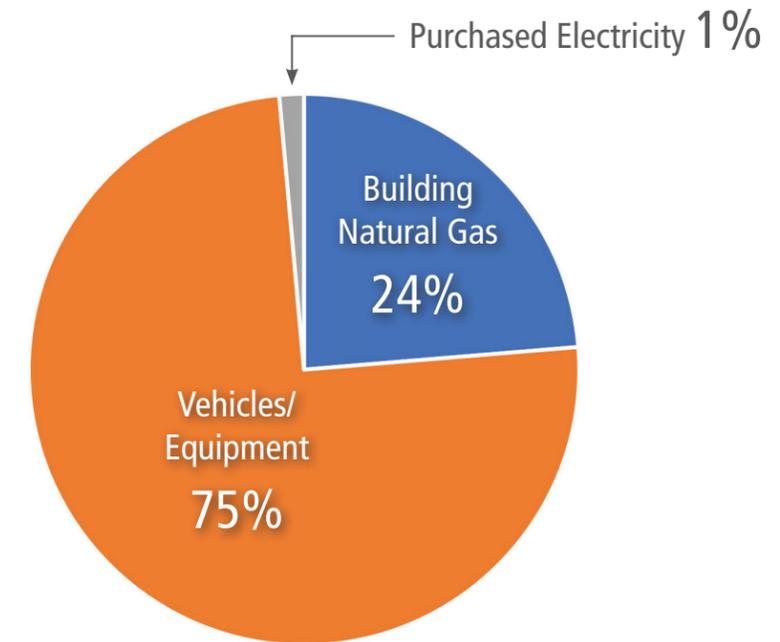


Figure 6: PoT Scope 1 & 2 GHG Emissions

Table 3: 2021-2025 Key CAIP Accomplishments	
Sector	Accomplishment
Facilities	Completed an inventory of port-owned buildings to assess energy targets and compliance with the Clean Building Performance Standard.
	Upgraded lighting to LED at port-owned buildings and facilities.
Fleets – Vehicles	Added eight battery-electric vehicles to the PoT fleet, with additional units on order.
	Installed EV charging infrastructure at the Port Administration Building.
Fleets – Cargo Handling Equipment	Deployed a battery-electric yard tractor.
	Transitioned all PoT-owned diesel equipment to renewable diesel.
Energy Planning	Completed the South Harbor Electrification Roadmap (SHERM).
Policy	Received a Department of Ecology Volkswagen grant to purchase a battery-electric yard truck and mobile charging unit.
	Received grant funding to install EV charging stations, solar power generation, and backup energy storage at the Maritime Center.
Engagement	Launched the Clean Air Quarterly newsletter.
	Launched the NW Clean Ports website.

# 4. The Northwest Seaport Alliance (NWSA) Clean Air Implementation Plan

NWSA activities account for the majority of maritime emissions in the Tacoma Harbor. While PoT direct operations contribute a relatively small share of overall emissions, as a 50% partner in the NWSA, the PoT plays a critical role in supporting and advancing the NWSA-led Clean Air implementation actions that will drive significant air quality and GHG reductions in Tacoma. Over the next five years, the PoT's efforts will focus on supporting and enabling NWSA strategies through the following key priorities:

- Assess PoT-owned property for opportunities to deploy alternative fueling and charging infrastructure that supports emission reduction goals.

- Leverage relationships with PoT tenants to identify, implement and support emission reduction strategies.
- Support NWSA-led initiatives targeting emission reductions from ocean-going vessels, trucks, locomotives, harbor craft, and NWSA tenant cargo-handling equipment.

Based on these priorities, the PoT's actions in support of NWSA's Tacoma Harbor initiatives are summarized in Table 4 below. A full list of NWSA activities can be found in their 2026-2030 Clean Air Implementation Plan.

**Table 4: PoT actions to support the NWSA's CAIP**

Sector	Action	Timeline
OGVs	Partner with NWSA to complete Future Marine Fuels Program research, including market analysis, bunkering infrastructure needs assessment, and regulatory and safety roadmap.	By 2027
	Develop and implement a future marine fuels strategy.	By 2027
	Participate in the Puget Sound Sustainable Marine Fuels Collaborative.	Ongoing
	Assess opportunities to displace natural gas use with renewable natural gas (RNG).	Ongoing
	Support development of the new EB-2 Terminal, including installation of shore power.	Ongoing
Locomotives	Support Tacoma Rail funding applications to repower or replace locomotives and engines with renewable diesel and/or zero emission technologies.	Ongoing
	Partner with NWSA to develop a rail emission reduction strategy to identify actions to accelerate progress in the locomotive sector.	By 2027
Trucks	Assess opportunities for zero emission charging/fueling infrastructure on port property; conduct a study to assess business case and inform strategy.	By 2027
	Support NWSA's assessment of interim fuels in drayage trucks, including renewable diesel and RNG.	By 2027

**Table 4 CNTD**

Sector	Action	Timeline
Harbor Craft	Partner with NWSA and Port of Seattle to support tug operators in switching to renewable diesel, pursuing engine replacements or fuel efficiency improvements, and evaluating shore power opportunities.	By 2027
	Assess feasibility of a centralized tug hub for mooring, shore power, and future charging.	By 2027
Cargo Handling Equipment	Encourage tenants to use renewable diesel as a bridge strategy to reduce emissions.	Ongoing
Cross-Cutting Actions	Increase frequency of NWSA and PoT-led emissions inventories from every five years to every two years.	By 2026

# 5. Port of Tacoma (PoT) 2026-2030 Implementation Plan

This section outlines the PoT's five-year Implementation Plan to advance the goals of the NWPCAS. It includes key milestones to measure progress and is organized by operational sectors as well as support activities like policy and community engagement.

## 5.1. Implementation Plan Development Process

The development of this Implementation Plan was led by the PoT's Air Quality and Sustainable Practices team, with the goal of creating a plan that is ambitious yet achievable, impactful, and grounded in the interests of our local communities, industry partners, governments, and other non-government partners. The PoT aligned its Implementation Plan development process with that of the NWSA to ensure coordination, identify synergies, and reflect shared priorities across the Tacoma Harbor.

The PoT's CAIP was shaped through a robust internal and external stakeholder engagement process. In early 2025, interdepartmental workshops and consultations

with Port leadership helped shape the initial draft. This was followed by targeted outreach to industry, community, and government stakeholders with following objectives:

- Gather feedback from a broad range of external stakeholders to inform the CAIP update
- Strengthen partnerships and foster collaboration
- Increase awareness and understanding of the CAIP and related initiatives

Feedback from stakeholders and Commissioners was incorporated into the revised draft, which underwent final review in fall 2025.

## 5.2. Performance Metrics and Estimated Emission Reductions

The PoT will track and report progress on each action outlined in the CAIP, along with the performance metrics

Table 5: 2026-2030 Performance Metrics		
Sector	Metric	Target
Port Facilities	Percentage of buildings utilizing renewable natural gas or are fully electric	100%
	Percentage of buildings in compliance with Washington’s Clean Buildings Performance Standard	100%
Port Fleet	Percentage of passenger and light duty vehicles that are zero emissions	100%
	Percentage of cargo-handling equipment that is zero emissions	30%
Tacoma Grain Terminal	Reduction in on-terminal GHG and DPM emissions compared to 2021 baseline	10%

detailed below. To enhance transparency and public engagement, the PoT will develop a public-facing dashboard on the NW Clean Ports website. The dashboard will provide:

- Annual updates on progress toward CAIP actions
- Estimated emission reduction benefits to date
- Highlights of key actions and achievements
- A preview of planned activities for the upcoming year

Where feasible, this information will be coordinated with NWSA activities in the Tacoma Harbor to provide more localized insights for near-port communities in Tacoma and Pierce County.

In addition, the four NWPCAS partner ports jointly publish an annual progress report on the overarching NWPCAS. This report summarizes collective progress toward the shared vision, goals, and actions outlined in the 2020 NWPCAS.

The following sections outline the performance metrics and estimated emission reduction benefits associated with the PoT’s CAIP.

### 5.2.1. Performance Metrics

To evaluate the effectiveness of the proposed actions in the PoT’s highest impact sectors, **Table 5** above summarized the metrics that will be used to track performance and impact over the five-year implementation period.

Performance metrics for NWSA emission sources are outlined in the NWSA CAIP. These metrics encompass actions within the Tacoma Harbor that specifically target NWSA operations.

### 5.2.2. Emission Reduction Benefits

Although PoT activities represent a relatively small portion of overall seaport emissions in the South Harbor, they still contribute to local air and global climate pollution. The actions outlined in this CAIP will support the PoT’s progress toward its climate goals:

- Reduce Scope 1 and 2 GHG emissions 50% by 2030.
- Eliminate Scope 1 and 2 emissions and reduce Scope 3 emissions 70% by 2040.
- Eliminate all Scope 3 emissions by 2050.

These reductions will be achieved primarily through the deployment of already available zero emission technologies, alongside strategic planning for the long-term transition to zero emission technologies that currently face cost or availability barriers compared to conventional diesel counterparts.

### Scope 1 and 2 emissions

**Figure 7** illustrates the sources of Scope 1 and 2 emissions based on the 2021 PSEI, with PoT-owned and operated fleet accounting for 75% of emissions and PoT-operated facilities accounting for 25%, primarily due to natural gas consumption. Together, these sources account for approximately 764 tons of GHG emissions annually.

In May 2024, the PoT made a significant advancement in reducing its operational emissions by transitioning its diesel fleet to R-99 renewable diesel. R-99 is also a key component of the emission reduction strategy at the Tacoma Grain Terminal.

While R-99 offers modest tailpipe emission benefits, its primary GHG emission reduction potential lies in its lifecycle emissions, the emissions associated with

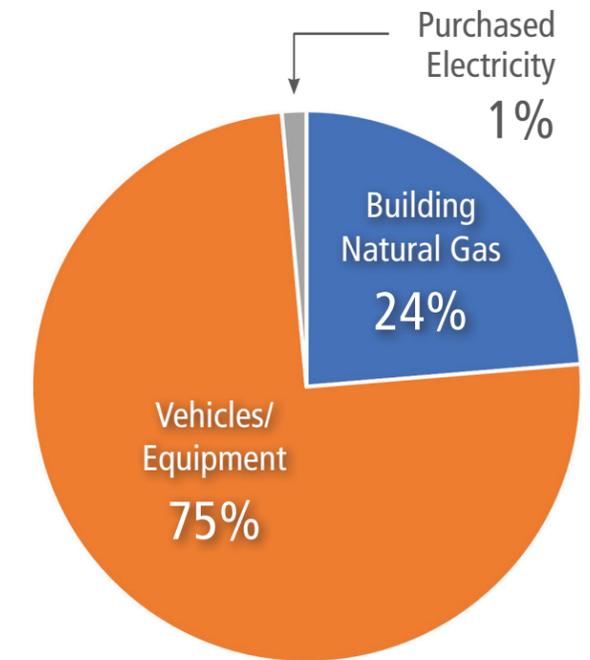


Figure 7: PoT Scope 1 & 2 GHG Emissions

the production, distribution, and use of the fuel. These lifecycle benefits are not reflected in the current emissions inventory but will be captured in future PoT inventories, resulting in a more accurate representation of the PoT’s progress toward its climate goals.

Table 6: Projected Scope 1 and 2 Emission Reductions		
Action	GHG Emission Reductions (tons/yr)	Percentage of Scope 1 and 2 Emissions
Renewable Diesel Use <sup>14</sup>	61	7.8%
Transition port-owned passenger and light-duty fleet to zero emissions.	236	30%
Transition 30% of Port-owned CHE to battery-electric	48	6%
Eliminate natural gas consumption in Port-operated facilities	181	24%

14. [Lifecycle GHG emission reductions estimated at 60% based on Washington State Clean Fuel Standard Approved Fuel Pathways](#)

**Table 6** (on the previous page) outlines the projected Scope 1 and 2 emission reduction benefits from actions planned under the PoT CAIP. If fully implemented, these actions could result in an estimated 67% reduction in Scope 1 and 2 GHG emissions during this period. It's important to note that DPM emissions from Scope 1 and 2 sources represent less than 1% of total DPM emissions associated with PoT activities. As such, this CAIP focuses primarily on GHG emission reductions.

### Scope 3 Emissions

In addition to its Scope 1 and 2 reduction goals, the PoT is committed to eliminating all Scope 3 emissions by 2050. Currently, approximately:

- 60% of Scope 3 emissions are associated with the Tacoma Grain Terminal
- 20% of Scope 3 emissions stem from Port tenant employee commuting
- 14% of Scope 3 emissions result from Port tenant natural gas consumption

**Figure 8** illustrates the distribution of GHG emissions from Tacoma Grain Terminal operations.

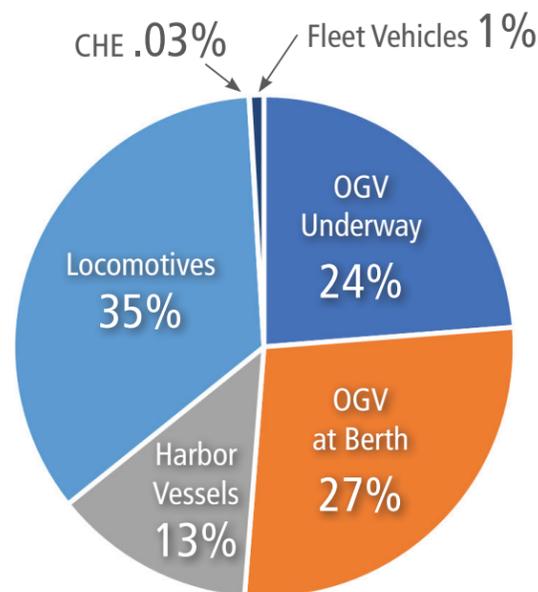


Figure 8: Grain Terminal GHG Emissions Distribution (2021 PSEI)

**Table 7** provides estimated GHG and DPM emission reduction benefits from TEMCO's switch to R-99 renewable diesel. While this action contributes to progress, it alone will not achieve the targeted 10% reduction in GHG and DPM emissions for Tacoma Grain Terminal operations. To meet this goal, the PoT will:

- Develop a five-year emission reduction action plan for the Tacoma Grain Terminal by the end of 2026

Action	Renewable Diesel Use by TEMCO <sup>15</sup>
GHG Emission Reduction (tons/yr)	345
Estimated Percentage of Total Tacoma Grain Terminal GHG Emissions	2.6%
Estimated Percentage of On-Terminal <sup>16</sup> GHG Emissions	8%
DPM Emission Reduction (tons/yr)	0.33
Estimated Percentage of Total Tacoma Grain Terminal DPM Emissions	9.7% <sup>17</sup>
Estimated Percentage of On-Terminal DPM Emissions	12%

15. Lifecycle GHG emission reductions estimated at 60% based on Washington State Clean Fuel Standard Approved Fuel Pathways.

16. On-terminal emissions refer to emissions resulting from switcher locomotives, CHE and OGV at berth.

17. DPM emission control factor of 0.700 for Tier 0-3 engines.

- Implement five-year action plan by 2030
- Leverage emission reduction strategies outlined in NWSA's CAIP, particularly those addressing grain-transport via ocean-going vessels, harbor craft, and locomotives

### Other benefits

While many actions in this plan directly reduce emissions, several initiatives, though not directly tied to emission reductions, are critical to both short- and long-term success. These foundational efforts support the PoT's broader climate and air quality goals and include:

- Community and policy engagement initiatives
- Development of net-zero roadmaps for PoT-owned and operated fleets and facilities
- Port-Industry Emission Reduction Partnership (PIER-P) Program

### 5.3. Community Engagement and Partnerships

Effective and equitable air quality strategies require active communication, engagement, and collaboration with near-port residents and community organizations. In partnership with the NWSA, the PoT will continue to 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 reflect community experiences, perspectives, priorities, and ideas.

Over the next five years, the PoT's community engagement program will focus on the following priorities:

- Enhance mutual understanding of port-related air quality and climate challenges/opportunities
- Deepen relationships and build trust with near-port communities

- Address environmental health disparities through an environmental justice perspective
- Collaborate on the development and implementation of port-related air quality and climate solutions.

These priorities will guide the actions outlined in **Table 8**.

Action	Timeline
Maximize utilization of the NW Clean Ports website as a community outreach and educational tool. <ul style="list-style-type: none"> <li>– Regularly update content related to PoT CAIP milestones and progress</li> <li>– Develop and implement a strategy to track and increase website traffic and external engagement</li> </ul>	Ongoing
Continue development and publication of the Clean Air Quarterly newsletter with a focus on increasing readership.	Ongoing
Develop a gateway-wide communications and community engagement strategy for low to near-zero emission maritime fuels.	By 2026
Leverage existing PoT communications platforms and collaborate with PoT communications to share progress on NWPCAS implementation progress.	Ongoing
Participate in community events (e.g., farmers markets, Touch a Truck, meetings with lawmakers); develop handouts for events referring people to the Clean Air newsletter and website	Ongoing

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

## 5.4. Public Policy Engagement and Advocacy

Supportive policy at the local, state, federal, and international levels is essential to ensure that adequate incentives and funding are available to advance emission reduction projects and programs. These policies must provide:

- Direct financial support for PoT’s capital projects
- Market signals that encourage private sector investment in low- and zero-emission technologies

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

- Support the development of state and federal policies that align with and advance the NWPCAS vision
- Identify and pursue funding opportunities to implement zero- and near-zero emission technologies

- Strengthen relationships with key stakeholders, including local, state, federal, and international agencies and policymakers to accelerate the deployment of lower emission technologies and direct funding towards these projects in the Tacoma gateway.

Based on these priorities, **Table 9** summarizes the key actions the PoT will undertake as part of its public policy engagement strategy.

## 5.5. Facilities

The PoT manages a large real estate portfolio, which includes both port-owned and operated buildings and facilities leased to tenants. Additionally, the PoT also provides administrative facilities to the NWSA, including the Administration Building, the Fabulich Center, and the new Maritime Center in Tacoma. Tenant-operated facilities, such as office buildings, equipment maintenance bays, yard lighting, and fueling, fall under the PoT’s Scope 3 emissions. These facilities contribute to emissions primarily through electricity and natural gas usage.

Reducing and ultimately eliminate emissions from both PoT and tenant-owned facilities is a key component to achieving the NWPCAS vision. While facilities represent a relatively small portion of total emissions targeted by the NWPCAS, they account for a significant share of the PoT’s Scope 1 and 2 emissions profile, making their decarbonization a central focus of the PoT’s CAIP.

Several port-owned buildings are subject to the Washington Clean Buildings Performance Standard (CBPS), which applies to buildings over 50,000 square feet. Compliance requires:

- Tracking building energy use
- Evaluating operations and maintenance practices
- Implementing energy efficiency upgrades as needed

The CBPS reflects Washington State’s broader climate goal of reducing statewide climate pollution 95% by 2050. The PoT is committed to a more ambitious timeline, aiming to eliminate all emissions from PoT activities by 2050, and will strive not only to comply with CBPS but to meet or exceed state targets ahead of schedule.

### 5.5.1. Emissions from Facilities

Facilities are a small yet meaningful source of GHG emissions for the PoT:

- Tenant-operated facilities account for 13% of combined Scope 1, 2, and 3 emissions, primarily due to natural gas combustion.
- Port-operated facilities contribute 24% of combined Scope 1 and 2 emissions from natural gas use, with 1% is associated with purchased electricity.

Although smaller in scale compared to other sources, these emissions are within the PoT’s direct control, making them a strategic focus for near-term reductions.

### 5.5.2. Level of Influence

The PoT has direct influence over buildings and facilities it owns and operates. However, tenant-operated buildings are generally outside the PoT’s direct control, as defined by lease and operating agreements. In some cases, the PoT retains responsibility for facility maintenance.

Where direct influence is possible, the PoT has an opportunity to lead in building electrification and energy efficiency. For tenant-operated facilities, the Port can exert influence through tenant relationships, lease amendments, and incorporating CBPS compliance requirements.

These strategies will help drive broader adoption of clean building practices across the PoT’s real portfolio.

### 5.5.3. State of Technology

Over the next five years, the PoT has a strategic opportunity to implement energy efficiency measures and explore opportunities for investment in new clean energy technologies, such as solar panel installation and on-site battery energy storage.

A wide range of energy efficiency measures can be applied to PoT buildings and facilities, including:

- Transitioning yard and interior lighting to high-efficiency LED systems
- Upgrading HVAC systems and converting to electric heat pumps
- Installing energy-efficient windows
- Retrofitting existing buildings to meet modern energy standards

While new buildings are typically constructed to meet current energy codes, retrofitting existing facilities remains a critical strategy. Utility conservation programs can provide financial incentives to help offset the costs of these upgrades, making them more economically viable.

Area	Actions	Timeline
International	Collaborate with and support the NWSA in strategic efforts to promote strong international policies that align and advance NWPCAS goals	Ongoing
Federal	Advocate for and engage in federal policies and programs that advance NWPCAS implementation.	Ongoing
State	Successfully administer current state grant funds, including funding for the new Maritime Center (\$100K from Dept. of Ecology, \$2.4M from Dept. of Commerce).	By 2027
	Track and pursue additional state grant funding opportunities that advance PoT’s CAIP (e.g., Department of Ecology Charge Where You Are grant program, Department of Commerce Community Decarbonization grant program).	Ongoing
	Support NWSA efforts to monitor and advocate for state policy developments that advance NWPCAS implementation and PoT’s strategic interests.	Ongoing
Local/Regional	Strengthen existing regional government relationships and cultivate new opportunities for local government engagement.	Ongoing

<b>Action</b>	<b>Timeline</b>
Complete LED lighting upgrades across all PoT buildings and facilities. <ul style="list-style-type: none"> <li>– Complete LED upgrades at Bullfrog</li> <li>– Conduct comprehensive assessment of remaining LED conversion opportunities for both exterior lighting yards and Port-owned buildings</li> <li>– Create a comprehensive database for past, current, and future LED upgrades</li> <li>– Implement LED projects identified through assessment</li> </ul>	<ul style="list-style-type: none"> <li>– Complete Bullfrog by 2026</li> <li>– Complete LED assessment by 2026</li> <li>– Complete remaining LED projects by 2030</li> </ul>
Conduct assessment and implement actions needed to ensure compliance with the Washington State Clean Buildings Performance Standards. <ul style="list-style-type: none"> <li>– Develop an Energy Management Plan (EMP) and Operations and Maintenance (O&amp;M) Plan for covered Tier 1 and 2 buildings</li> <li>– Provide benchmarking data to the state for covered buildings</li> <li>– Identify a compliance pathway and potential energy efficiency improvements for Tier 1 buildings subject to the state Energy Use Intensity (EUI) target</li> <li>– Plan for future EUI reductions for Tier 2 buildings to comply with future CBPS rule-making</li> </ul>	By 2028
Complete a 2040 Net Zero Roadmap for port-owned and operated facilities. <ul style="list-style-type: none"> <li>– Proactively assess opportunities to increase energy efficiency and sustainability at facilities</li> <li>– Develop and implement a Sustainable Buildings Framework checklist to guide Port infrastructure and maintenance projects</li> <li>– Identify decarbonization plan for buildings using natural gas</li> <li>– Inform asset management strategy for staff-occupied Port buildings</li> </ul>	By 2027
Establish annual meetings with Port tenants to inform tenants of upcoming Clean Buildings requirements and opportunities for cost-effective energy efficiency improvements.	By 2026
Evaluate opportunities for installing solar panels and battery energy storage systems on port-owned buildings.	Ongoing
Transition port-owned and operated buildings from natural gas to electricity or renewable natural gas.	By 2030
Encourage Port contractors to use low- or zero-emission fuels and equipment for PoT-funded construction projects.	Ongoing

Electrifying port buildings and phasing out fossil natural gas is a cornerstone of the Port’s buildings strategy, supported by the availability of clean, affordable electricity. Pierce County benefits from one of the cleanest sources of electricity in the country, and under Washington State’s Clean

Energy Transformation Act, the region will transition to 100% clean electricity by 2045. Tacoma Power, the utility serving PoT and tenant-owned facilities, currently supplies 97% carbon-free electricity and is on track to achieve carbon neutrality by 2045.

The Port has already begun integrating available sustainable building features into its infrastructure. The new Port of Tacoma Maritime Center, scheduled to open in early 2027, is expected to achieve LEED Silver or Gold certification. Key sustainability features include: on-site battery energy storage, solar panel installation, and private and public EV charging stations.

These enhancements are supported by grant funding from the Washington State Department of Commerce and Department of Ecology and will serve as a model for incorporating sustainable building design into both new and existing facilities.

Monitoring and reducing energy use at PoT facilities is complicated by current metering practices and the complex distribution of energy responsibilities between the PoT and its tenants. However, the State’s CBPS now requires benchmarking for buildings over 20,000 square feet, giving the Port access to detailed energy consumption data for its facilities.

This increased transparency enables the PoT to better assess opportunities for: reducing and eliminating natural gas use, advancing building electrification, and improving overall energy performance.

The Port will continue to evaluate and implement strategies that support its long-term goal of reducing and eliminating emissions from its buildings and its facilities.

### 5.5.4. Facilities Action Plan

Between 2026 and 2030, the PoT will prioritize key improvements to Port-owned facilities with a strong focus on sustainability and energy efficiency. The Port is committed to enhancing building energy efficiency, leveraging resources and funding made available through the Department of Commerce to ensure compliance with the CBPS. Given the Port’s access to clean, affordable electricity, there will be a strong emphasis on electrifying buildings and transitioning away from natural gas (see [Table 10](#) on the previous page).

### 5.6. Fleets

The Fleets sector includes emissions from Port-owned vehicles, including passenger cars, passenger vans, pickup trucks, and other vehicles used for administrative and maintenance purposes. While fleet emissions represent a relatively portion of NWPCAS emissions overall, they account for a significant share of the PoT’s Scope 1 emissions. This presents an opportunity to reduce emissions directly under the PoT’s direct control.

<b>Vehicle / Equipment Type</b>	<b>Number with internal combustion engines</b>	<b>Number that are zero-emission</b>
Passenger and light-duty vehicles (e.g., SUVs, passenger vans, F-150s)	63	8
Medium-duty vehicles (e.g., F-250, F-350 or equivalent)	47	
Fork lift	8	1
Manlift	3	2
Miscellaneous equipment	2	
<b>Total # vehicles</b>	<b>110</b>	<b>8</b>
<b>Total # equipment</b>	<b>15</b>	<b>3</b>

The PoT's fleet includes approximately 124 vehicles and 45 pieces of cargo-handling equipment. Many of the fleet vehicles are passenger or light duty, for which commercially available electric vehicle options exist. Similarly, the cargo-handling equipment fleet, comprised of forklifts and yard tractors, has battery-electric alternatives, although these tend to be more expensive than their diesel counterparts.

For fleet assets where electric or zero-emission options are not yet commercially viable, the continued use of renewable diesel offers the most viable near-term strategy. Renewable diesel significantly reduces life-cycle GHG emissions while providing modest reductions in DPM and GHG emissions on the terminal.

While tenant-owned fleets also contribute to emissions in the Tacoma Harbor, they are addressed in the NWSA's CAIP. The PoT also owns a large fleet of cargo-handling equipment that is operated by the NWSA and similarly included in the NWSA CAIP.

### 5.6.1. Emissions from Fleets

Port-owned fleet emissions represent approximately 3% of the PoT's total GHG emissions and a negligible share of DPM emissions. However, they account for approximately 75% of the PoT's Scope 1 GHG emissions, making this sector a key area for emissions reductions under the PoT's direct control.

Of the fleet's GHG emission: 40% are attributable to light-duty and passenger fleet vehicles, 32% from medium-duty fleet vehicles, and 28% from cargo-handling equipment.

Because zero-emission options are commercially available for light-duty and passenger vehicles, these assets present the most immediate and cost-effective opportunity for emissions elimination over the next five years.

### 5.6.2. Level of Influence

The PoT has full ownership and operational control over its fleet, positioning it to lead by example in fleet electrification and alternate fuel usage. The PoT can reduce and eliminate emissions from this sector through: installing fleet charging infrastructure on port property and purchasing zero-emission or hybrid vehicles and equipment.

In 2024, the PoT converted all diesel-powered fleet vehicles and equipment to renewable diesel. Over the next five years, the PoT will continue to pursue near-term emission reduction opportunities while planning for the elimination of all Port-owned fleet emissions by 2040.

### 5.6.3. State of Technology and Outlook

Electrification continues to be a cornerstone of the PoT's strategy to reduce emission from its owned fleet. As noted in the Facilities sector, electricity sourced from Tacoma Power is nearly zero carbon and will reach net-zero by 2045 under the state's Clean Energy Transformation Act. This clean energy foundation supports the PoT's transition to battery-electric vehicles (BEVs) and equipment.

Commercially available BEVs, such as Ford Lightning, are suitable for passenger and light-duty fleet vehicles. Although these vehicles have not yet reached full price parity with internal combustion engine vehicles, declining battery costs suggest parity could be achieved by 2026.<sup>18</sup> This price trend is reinforced supporting policy such as the State's Clean Vehicles Act, which will require that all light-duty vehicles sold in Washington be zero-emission by 2035.<sup>19</sup>

Battery electric cargo-handling equipment and heavy-duty vehicles are also available, but they remain significantly more expensive than conventional

18. [Study: EVs Could Reach Price Parity in 2026 - Kelley Blue Book](#)  
19. [Washington State Clean Vehicle Rulemaking - NW Energy Coalition](#)

diesel alternatives. For example, electric cargo handling equipment, such as yard tractors and top handlers, can cost two to three times more than their diesel counterparts. While these electric models can support two-shift operations with opportunity charging, their adoption is often dependent on external funding.

In 2023, the PoT purchased an Orange EV yard tractor and mobile charging unit with support from a Department of Ecology Volkswagen Grant. Hydrogen-powered cargo handling equipment is also being piloted, but remains less commercially mature than battery-electric options.

A major barrier to broader electrification is the installation of charging infrastructure. Fast charging stations for vehicles and equipment can be cost prohibitive and often require utility infrastructure upgrades. Fortunately, most of the PoT's light-duty fleet can be supported by Level II or overnight charging, which has lower installation costs and electrical capacity requirements. However, charging

for heavy-duty vehicles and equipment will require more extensive infrastructure planning and investment.

While electrification and renewable diesel offer the most viable near-term strategies for emission reductions, the PoT should continue to explore emerging technologies and alternative fuels over the next five years to support long-term decarbonization goals.

### 5.6.4. Fleets Action Plan

Based on the PoT's current fleet composition and the commercial availability of zero emission technologies, the following priorities have been identified for 2026-2030:

- Continue using renewable diesel across the entire fleet.
- Install charging infrastructure to support the transition of passenger and light-duty fleet vehicles to zero emission alternatives.
- Begin transitioning forklift and yard tractor fleets to zero emission technologies.

Action	Timeline
Update a 2040 Net Zero Roadmap for the port-owned fleet. <ul style="list-style-type: none"> <li>– Assess additional vehicle fleet charging locations and opportunities</li> <li>– Create a plan to transition the entire port-owned fleet to zero emissions by 2040 or sooner</li> </ul>	End of 2027
Complete vehicle charging installation for the PoT's light-duty fleet. <ul style="list-style-type: none"> <li>– Install EV charging for the maintenance fleet and the security fleet.</li> <li>– Complete EV charging installation at the Maritime Center</li> </ul>	End of 2030
Continue transitioning PoT-owned passenger and light-duty fleet to zero emissions. <ul style="list-style-type: none"> <li>– Prioritize vehicles with highest fuel use</li> <li>– Consider strategies to right-size vehicle fleets (e.g., MDVs that can be converted to LDV)</li> </ul>	End of 2030
Transition 30% of PoT-owned equipment to zero emissions. <ul style="list-style-type: none"> <li>– Prioritize equipment with highest fuel use and GHG reduction potential.</li> </ul>	End of 2030
Continued use of R-99 across all diesel-powered PoT fleet vehicles and CHE.	Ongoing
Refresh the PoT's commute trip reduction program after completion of the new Port Maritime Center.	End of 2027

## 5.7. Grain Terminal

The majority of the PoT's emissions are associated with operations at the Tacoma Grain Terminal, operated by TEMCO since 1975. TEMCO operates multiple grain terminals across the Pacific Northwest, including in Kalama, WA and Portland, OR, which collectively handle about 30% of the region's grain exports. Commodities such as corn, soybeans, and wheat are transported to the terminal via rail or barge and shipped overseas to Asian markets.

As the largest source of emissions under the PoT's operational footprint, the Tacoma Grain Terminal presents an opportunity to significantly reduce its GHG and DPM emissions through the transition to cleaner and zero emission technologies and fuels. However, it also presents several challenges, as the largest sources of on- and off-terminal emissions including vessels, locomotives and tugboats are some of the most difficult sectors to decarbonize.

Emissions from ocean going vessels and harbor vessels (including tugs) are addressed through the NWSA CAIP, and the PoT will continue to collaborate closely with the NWSA on implementation efforts. Through the PoT's CAIP, the PoT will also develop a strategy for decarbonizing on-terminal emission sources not covered by the NWSA CAIP, primarily emissions from switcher locomotives owned and operated by TEMCO.

### 5.7.1. Emissions Profile

Operations at the Tacoma Grain Terminal, including ocean-going vessels, harbor vessels, and locomotives, account for approximately 60% of the PoT's total GHG emissions. The terminal has minimal on-site equipment, with no drayage trucks and only one propane-powered forklift in operation.

GHG emissions from TEMCO operations have declined by 46% between 2005 to 2021, positioning the PoT

close to its goal of a 50% reduction by 2030. These reductions were largely driven by decreased cargo volume between 2005 and 2011, including a 20% drop in volume and a corresponding decline in locomotive and vessel activity. However, inventories from 2015 and 2021 show a graduate increase in emissions, underscoring the need for targeted action to reverse this trend.

While DPM emissions from PoT activities represent only 2% of regional DPM emissions covered under the NWPCAS, the Tacoma Grain Terminal is responsible for the majority of that share. DPM emissions have declined by 87% since 2005, primarily due to the implementation of the North American Emission Control Area (ECA), which mandates cleaner-burning fuels for vessels operating in the region.

Given the small remaining amount of DPM emissions and the rise in GHG emissions, the PoT will focus its 2026-2030 efforts on reducing GHG emissions in partnership with TEMCO. Near-term opportunities to further reduce on-terminal DPM emissions, such as using renewable diesel, will be pursued as soon as possible.

### 5.7.2. Level of Influence

The PoT has some influence over on-terminal emissions through its long-term lease and operational partnership with TEMCO. TEMCO has considerable influence over the diesel-powered switcher locomotives it owns and operates on the terminal, but has limited influence over the emissions from long-haul locomotives, dry bulk vessels, and assist tugs.

While lease renewals and/or amendments can sometimes provide the PoT with an opportunity to introduce stricter emission requirements, the TEMCO lease extends through 2040 and any new air quality requirements would require a re-opening of the lease agreement.

The PoT has more limited influence over emissions from long-haul locomotives, but can partner with the NWSA to play a facilitative role in efforts to repower diesel engines and/or implement cleaner technologies. Our ability to reduce emissions from locomotives is limited to being an influencer and collaborator, because we do not have regulatory authority over their emissions and very limited opportunities to make requirements related to locomotive emissions in lease agreements.

Similarly, the PoT can partner with the NWSA on efforts to reduce emissions from assist tugs serving the Tacoma Harbor. These tugs are typically hired by the ocean-carriers, meaning the NWSA does not have a direct business relationship with tug operators. Some opportunities may still exist for emission reduction efforts, including securing funding to install shore power for tugs while at dock, supporting the transition to renewable fuels and future deployment of zero-emission tugs once they become affordable and available.

The PoT also has limited influence over the ocean-going vessels calling the Tacoma Grain Terminal. The dry bulk vessels that transport grain products are not on a fixed schedule and may call at the Tacoma Grain Terminal only once, making it difficult to build relationships or implement consistent emission reduction strategies. Unlike container ships, dry bulk vessels are generally not shore power capable due to lower auxiliary power demands and infrequent calls to the same port, making shore power an impractical solution for this sector.

### 5.7.3. State of Technology

While the state of technology varies by each emission sources and operational activities at the Tacoma Grain Terminal, the largest sources face significant technological limitations that currently render zero-emission technologies either unaffordable or unavailable.

The vessels serving the Tacoma Grain Terminal are dry bulk vessels, which differ from the large auto carriers and container ships that call at NWSA terminals. Although new bulk vessels are increasingly being built with alternative-fuel capable technology, these represent a small fraction of the global bulk vessel fleet compared to the container ship fleet.<sup>20</sup> Recent global developments, including the postponement of the IMO's Net-Zero Framework to 2026, have introduced additional uncertainty around the future adoption of lower-carbon fuels for the global fleet.<sup>21</sup>

Despite this uncertainty, some operational strategies are currently available to reduce local air pollutant emissions from ocean-going vessels. For example, vessel speed reduction (VSR) programs in designated slowdown zones can provide localized benefits for near-port communities and local marine life. However, these programs may not result in net GHG reductions over the course of an entire voyage if a vessel compensates by increasing speed elsewhere to make up for lost time. Another emerging option is onboard carbon capture and storage technology, which could complement cleaner maritime fuels. However, carbon capture and storage remains in the early stages of development for shipping applications.<sup>22</sup>

While shore power is currently utilized by container vessels at NWSA terminals, bulk grain vessels have not yet been identified as a suitable use case. These vessels are generally not equipped with the necessary onboard infrastructure, and without international standardization of shore power systems, installing such infrastructure at the Tacoma Grain Terminal would likely result in limited benefits and underutilization.

Moreover, the potential emission reductions from connecting bulk grain vessels to shore power are

20. [Alternative Fuels Insight](#)

21. [Has the IMO's Vote Put Trade's Low-Carbon Future on Hold?](#)

22. [Onboard carbon capture and storage on ships](#)

significantly lower than those from container ships. Grain vessels, which average 84 hours at berth, typically have a power demand of less than 400 kW—substantially lower than the 1,000 to 2,000 kW demand of container ships. As a result, bulk grain vessels consume less fuel and emit fewer pollutants while at berth.

Despite these challenges, the PoT remains committed to exploring opportunities to reduce at-berth emissions. This includes evaluating alternative shore power technologies in partnership with the NWSA.

Hybrid and zero emission technologies for assist tugs are commercially available, though they currently come at a significant cost premium. Successful demonstrations have taken place at other West Coast ports, including Crowley’s battery-electric tugboat at the Port of San Diego and a tugboat shore power installation at the Port of Kalama’s grain terminal. In the Puget Sound region, assist tugs require substantial range, making plug-in hybrid tug with liquid fuel range extenders a more viable option. However, these vessels are at least twice as expensive to build compared to conventional tugs and require high-power charging infrastructure (1 MW or more).

Looking ahead to the 2026–2030 timeframe, the NWSA plans to assess the feasibility and potential locations for a tugboat shore power installation within the Seattle-Tacoma gateway. This initiative could play a key role in accelerating the transition to cleaner tug technologies.

Zero emission locomotive technologies, such as battery-electric and hydrogen fuel cell systems, are also available but remain significantly more costly than traditional diesel-powered engines. Long-haul locomotives present particular challenges for zero emission conversion, as they are frequently rotated across regions by Class 1 Railroads. This limits the

potential for local air quality benefits and may disqualify such projects from regional grant funding.

In contrast, the Tacoma Grain Terminal’s switcher locomotives are more suitable candidates for zero emission conversion or repower projects. These locomotives operate exclusively on-terminal, making them compatible with localized charging infrastructure. However, the high upfront costs and the need for upgraded on-terminal power systems mean that external grant funding will be essential to advance these projects.

In the near term, drop-in fuels such as renewable diesel are available in the Tacoma Harbor and offer a practical pathway for reducing emissions from diesel engines while longer-term solutions are explored.

#### 5.7.4. Tacoma Grain Terminal Action Plan

Over the next five years, the PoT will collaborate with TEMCO to develop and implement a Tacoma Grain Terminal Action Plan focused on reducing emissions from on-terminal sources, such as switcher locomotives. In parallel, the PoT will work closely with the NWSA to identify and advance sector-specific strategies aimed at reducing emissions from ocean-going vessels, long-haul locomotives, and assist vessels (e.g., tugboats).

#### 5.8. Port-Industry Emission Reduction Partnerships (PIER-Ps)

The Tacoma Tideflats—officially designated as the Port of Tacoma Manufacturing Industrial Center (MIC)—is the largest concentration of industrial and manufacturing activity in Tacoma and Pierce County, serving as a major economic driver for the region. Spanning over 5,000 acres of waterfront land, the Tideflats is a vital hub for maritime operations, manufacturing, food processing, energy production, domestic and international trade, environmental

**Table 13: Tacoma Grain Terminal Action Plan**

Action	Timeline
Encourage the Tacoma Grain Terminal operator to switch on-terminal equipment (e.g., switcher locomotives) to renewable diesel.	By mid-2026
Partner with the Tacoma Grain Terminal operator to develop an Emission Reduction Strategy for the Tacoma Grain Terminal. <ul style="list-style-type: none"> <li>– Roadmap to phasing out emissions by 2050</li> <li>– Priority 5-year action plan (e.g., energy infrastructure planning and design to support electrification of locomotives, locomotive repowers / replacements, exploration of methods for reducing emissions from bulk vessels at berth)</li> </ul>	Develop 2050 roadmap and 5-year action plan by 2026  Implement 5-year action plan by 2030
Partner with NWSA to identify opportunities to reduce emissions from tugboat assist. <ul style="list-style-type: none"> <li>– Explore opportunities to encourage/support tug operators in switching to renewable diesel.</li> <li>– Identify and pursue opportunities for engine replacements, fuel efficiency, and shore power installation.</li> <li>– Collaborate with NWSA and Port of Seattle on ongoing Maritime Innovation Study, including assessing feasibility of centralized hub/facility for tug mooring, shore power and future charging opportunities.</li> </ul>	Ongoing
Partner with NWSA to co-develop rail emission reduction strategy to increase pace of progress in the locomotive sector.	Ongoing
Partner with NWSA to track alternative at-berth emission control technologies.	Ongoing
Partner with NWSA to implement a Clean Vessel Recognition/Incentive Program. <ul style="list-style-type: none"> <li>– Conduct engagement to determine which incentives (e.g., vessel speed reduction) would be conducive to TEMCO operations and if incentives would influence the type of behavior/ vessels calling to the Tacoma Grain Terminal</li> </ul>	Ongoing
Identify and pursue state and federal funding opportunities to address cost gap for zero emission technology planning and conversion.	Ongoing

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

services, and a wide range of support industries including fueling, cold storage, marine electronics, and naval architecture.

The PoT owns approximately 2,500 acres within the Tideflats, encompassing marine cargo terminals, warehousing and logistics facilities, industrial development sites, environmental remediation areas, and office space.

This unique concentration and diversity of industrial activity presents a compelling opportunity for collaborative partnerships among businesses to share or exchange materials, energy, water, and by-products—an approach known as industrial symbiosis. This model can help conserve resources, reduce operational costs, and lower emissions across the Tideflats.

Industrial symbiosis is gaining momentum globally and regionally. In 2021, the Washington State Department of Commerce launched the Industrial Symbiosis Grant Program to support projects that repurpose industrial waste as valuable inputs for other industries. In 2025, the program awarded \$3.25 million to 11 projects. A similar program in Oregon is supporting the Port of Astoria’s Industrial Symbiosis Project, which partners with local seafood processors and the Center for Sustainable Infrastructure to recover valuable byproducts, such as proteins, from seafood processing wastewater.

Locally, the City of Tacoma’s Green Economy Strategy also emphasizes industrial symbiosis, promoting the reuse of materials traditionally considered waste and leveraging the city’s port and logistics infrastructure for advance sustainable industrial practices.

Building on this momentum, the PoT plans to develop a framework to launch a new pilot program: the Port-Industry Emission Reduction Partnerships or PIER-P program. This program is designed to leverage the PoT’s strategic role as a transportation and industrial hub to foster cross-industry collaboration within the Tacoma Tidelands.

A key early action will be assessing PoT-owned properties and tenant operations to identify opportunities for matching industrial waste and by-products with resource and energy needs across the Tidelands. This analysis will also explore the potential for deploying clean energy technologies on Port property to serve the PoT, our tenants, and surrounding industries.

The insights gained from this assessment will inform the selection of pilot participants and guide the application of the PIER-P framework. By integrating principles of circular economy

and industrial symbiosis, the pilot aims to demonstrate how collaborative approaches can reduce emissions, optimize resource use, and support growth of Tacoma’s green economy.

### 5.8.1. Level of Influence

One of the primary challenges in advancing industrial symbiosis and circular economy initiatives is developing a comprehensive understanding of the landscape of opportunities and fostering collaboration across diverse industrial entities. As a major industrial hub and economic driver, the PoT is uniquely positioned to lead, coordinate, and facilitate these efforts within the Tacoma Tidelands and across the broader Puget Sound region.

### 5.8.2. State of Technology

Innovative approaches to industrial symbiosis and circular economy development are already in practice, supported by programmatic frameworks and pilot studies that the PoT can reference and adapt. Additionally, funding opportunities are available to support exploration of industrial partnerships and resource-sharing strategies, providing a strong foundation for launching the PIER-P program.

### 5.8.3. PIER-P Action Plan

The core programmatic priorities for the PIER-P Program are outlined in **Table 14** on the facing page.

**Table 14: PIER-P Action Plan**

Action	Timeline
Develop a Port-Industrial Emission Reduction Partnership (PIER-P) Program. <ul style="list-style-type: none"> <li>– Research best practices and lessons learned in industrial symbiosis/circular economic development to date, especially initiatives involving seaports</li> <li>– Develop partnerships with local experts in industrial symbiosis/circular economic development</li> <li>– Develop a comprehensive inventory of industrial activities (inputs and outputs) on the Tacoma Tidelands</li> <li>– Explore ways that Port property can be used for new business opportunities around renewable energy, such as battery energy storage or micro nuclear, generating accessible renewable energy for port operations and near port communities</li> <li>– Identify and prioritize partnership opportunities for PoT</li> </ul>	By 2027
Develop and implement an industrial symbiosis partnership and project.	By 2029

## 6. Budget and Funding Strategy

Achieving the PoT’s 2050 vision and GHG Resolution commitments will require substantial external funding over the next five years. Many zero emission technologies carry significantly higher upfront costs compared to conventional diesel or gas-powered models, making external funding and subsidies essential to bridging the cost gap.

Recognizing the scale of this challenge, the PoT acknowledges that it cannot achieve this transition alone. Meaningful investment from industry partners, government agencies, and other external stakeholders will be critical to enabling the shift toward zero emission port operations.

Funding allocated to the PoT for these initiatives is being incorporated into the PoT’s five-year capital investment program. The PoT’s operating and capital budgets are approved annually during public meetings and voted on by the Port of Tacoma Commission.

Inclusion in the annual budget does not automatically authorize a project; each project must undergo a separate authorization process by the relevant Port Department, the Executive Director, or the Commission, depending on the funding level that is required.

All public meeting materials are posted in advance on the PoT’s website, and meetings are open to public comment.<sup>23</sup>

### 6.1. External Funding Sources

Securing external funding over the next five years will be increasingly challenging due to recent political shifts and reductions in federal and state budgets. In light of these constraints, it is essential that the PoT remains agile and prepared to capitalize on every relevant funding opportunity. This may require proactive investment planning and design to enhance

23. [Commission Meetings \(veconnect.us\)](https://www.portoftacoma.com/veconnect.us)

the competitiveness and precision of grant applications, accelerate project delivery timelines, and improve our ability to execute successfully on awarded grants.

The following are among the most promising opportunities to support zero-emission technology deployments outlined in this implementation plan. Given the scope of the PoT's Clean Air Implementation Plan, the most viable external funding sources are expected to remain at the state level.

### Washington State Climate Commitment Act (CCA) Funding

CCA funding represents the largest and most reliable source of clean air and climate-related funding anticipated in the coming years. Both the PoT and the NWSA have successfully secured CCA funding to advance clean air initiatives. For example, the Department of Commerce's Community Decarbonization Grant, funded through the CCA, is supporting a \$2.4 million solar panel installation and battery energy storage project at the new Maritime Center. Staff recommends continuing to "execute with excellence" on existing CCA-funded projects and maintaining a proactive approach to identifying and pursuing future opportunities. Priority should be given to projects that reduce Scope 1 and 2 emissions, particularly those targeting Port-owned fleets and facilities.

### Ecology Charge Where You Are

The Washington State Department of Ecology's Charge Where You Are grant program provides funding for Level 2 electric vehicle charging stations to support both public and private fleet electrification. In 2024, the POT successfully secured funding through this program to install EV charging stations at the new Maritime Center. The PoT will continue to pursue this annual funding opportunity to support the ongoing transition of its passenger and light-duty fleet to zero-emission vehicles.

### Washington's Zero-Emission Incentive Program (WAZIP)

Funding through the CCA, the Washington Zero-Emission Incentive Program is expected to launch in late 2025. This program will offer financial incentives for the deployment of medium- and heavy-duty (M/HD) zero-emission vehicles and off-road equipment. In 2025, the Washington State Legislature allocated \$126 million dollars to support first phase of this program. The PoT plans to leverage WAZIP funding to help offset the higher upfront costs of zero-emission M/HD vehicles and equipment, which remain significantly more expensive and less commercially available than their diesel counterparts. In addition to seeking funding for PoT-owned assets, including vehicle and cargo-handling equipment, the PoT will advocate for long-term state funding in this program. Eligible equipment includes PoT-owned M/HD vehicles and assets at facilities such as the Tacoma Grain Terminal. Port staff will also ensure tenants are informed about the program upon its launch and will provide support with applications as needed.

### Industrial Symbiosis Program

The Washington State Department of Commerce's Industrial Symbiosis Program provides funding to support circular economy market initiatives and expand industrial symbiosis projects across the state. In 2025, the program awarded over \$3 million to 11 recipients, with each projects requiring a 50% cost match from the grantee. The PoT should be prepared to pursue future funding opportunities through this program to support the launch and growth of the newly established PIER-P program. This funding could play a critical role in advancing collaborative, resource-efficient projects that align with the PoT's sustainability and innovation goals.

## 6.2. Funding Needs

Several key projects identified in this implementation plan will require external funding to move forward. In many cases, a combination of external sources, such as grants, incentives, or other public contributions, and financial participation from industry partners will be necessary to close funding gaps. This section outlines the priority projects for which current funding is insufficient and highlights where additional investment will be essential to move forward.

### EV Charging Stations for Maintenance and Security Fleets

Sponsor: Port of Tacoma | Total cost: \$3m

Port funds: \$1.5m [50%]

Other external funds: \$1.5m [50%]

To meet the PoT's goal of transitioning its light-duty vehicle fleet to zero emissions by 2030, and ultimately eliminating Scope 1 and 2 emissions by 2040, significant investment in EV charging is required. Two primary challenges must be addressed:

1. Installing sufficient charging infrastructure to support the fleet.
2. Strategically locating chargers for the maintenance and security fleets to avoid stranded assets.

The PoT's current fleet includes 11 passenger and light-duty vehicles in the security department and 20 in the maintenance department. To support this transition, a minimum of 20 Level 2 chargers should be installed for the maintenance fleet, supplemented by Level 1 chargers for vehicles with lower usage.

### Zero Emission Fleet Roadmap

Sponsor: Port of Tacoma | Total cost: \$20,000

Port funds: \$20,000 [100%]

To support its commitment to eliminating Scope 1 and 2 emissions by 2040 or sooner, The PoT is developing an updated Zero Emission Fleet Roadmap. This

roadmap will build upon the Port's previous light-duty vehicle transition plan and expand its scope to include medium- and heavy-duty vehicles and equipment. The updated Roadmap will:

- Establish a phased timeline for replacing internal combustion engine vehicles with zero-emission alternatives.
- Identify when zero-emission technologies for heavier-duty vehicles are expected to become commercially available.
- Outline infrastructure needs, including when and where charging stations should be installed to support the transition.

### Zero Emission Facilities Roadmap

Sponsor: Port of Tacoma | Total cost: \$50,000

Port funds: \$50,000 [100%]

To meet its GHG reduction targets, the PoT will develop a Zero Emission Facilities Roadmap. This roadmap will provide a strategic framework and cost estimates for transitioning all PoT-operated facilities to zero emission by 2040 and all tenant-operated facilities to zero emission by 2050. Key components of the roadmap will include:

- Alignment with Washington State's Clean Buildings Performance Standards
- A benefit-cost analysis of alternate pathways including electrification and purchasing renewable energy credits to offset electricity and natural gas emissions.
- Recommendations for energy efficiency upgrades and electrification projects, identifying which investments should be prioritized during this implementation plan period and which may be deferred until or after 2030.

### Transition 30% of Port of Tacoma’s Cargo-Handling Equipment Fleet to Zero Emissions

Sponsor: Port of Tacoma | Total cost: \$2.5 million  
 Port funds: \$1.25 million [50%]  
 External funding: \$1.25 million [50%]

To meet its interim goal of transitioning 30% of its cargo-handling equipment fleet to zero emissions by 2030, the PoT plans to purchase at least three additional zero emission cargo-handling equipment units and install the necessary supporting infrastructure.

The PoT currently owns 15 internal combustion engine cargo-handling equipment units including:

- 8 forklifts
- 3 manlifts
- 2 miscellaneous equipment units

The cost of additional zero emission equipment varies significantly based on several factors, including equipment size and type; whether the equipment is new or used; timing of the purchase; required upgrades to electrical infrastructure; and availability and amount of incentive funding. For example, a new large zero emission large forklift (with a lift capacity over 36,000 lbs) can cost upwards of \$600,000, excluding infrastructure costs. While programs like WAZIP may offer incentives of up to \$500,000 per unit, actual funding is unlikely to cover more than 50% of total costs.

Given these variables, the total estimated cost for this phase of the transition is \$2.5 million. The PoT will seek to secure 50% in external funding to help close the cost gap and advance its decarbonization goals.

### Purchasing Renewable Natural Gas Credits in PoT-owned and operated facilities

Sponsor: Port of Tacoma | Total cost: \$50,000 annually  
 Port funds: \$50k [100%]

Natural gas combustion in PoT-owned and operated facilities accounts for approximately 24% of our Scope 1 and 2 GHG emissions. To address this, the PoT plans to purchase Renewable Natural Gas (RNG) credits from Puget Sound Energy to offset emissions from natural gas use in its facilities.

Currently, the PoT holds two natural gas accounts, for the Port Maintenance building and the Maintenance Satellite, which together consume approximately 33,435 therms of natural gas annually. This usage results in a estimated 181 metric tons of GHG emissions per year.

To offset these emissions, the PoT would need to purchase RNG blocks totaling approximately \$46,995 annually. This investment aligns with the PoT’s broader decarbonization strategy and builds on its existing efforts, such as the purchase of Evergreen Option kWh credits to offset electricity-related emissions at the Port Administration Building.

### Clean Buildings Compliance Pathway for Tier 1 and Tier 2 Buildings

Sponsor: Port of Tacoma  
 Total cost: \$2,000,000 (Estimated Cost)  
 Port funds: Up to \$2,000,000 | External funds: TBD

The PoT is preparing to comply with Washington State’s Clean Building Performance Standard, which may apply to up to four Tier 1 and four Tier 2 Port-owned buildings. Final compliance requirements will depend on potential exemptions for unconditioned warehouse facilities.

For Tier 1 buildings, compliance costs will vary based on each building’s current Energy Use Intensity (EUI)

and whether it meets the state’s EUI target. Buildings already in compliance, as well as Tier 2 buildings, will be required to develop Operations and Maintenance Plans and Energy Management Plans. These plans are estimated to cost approximately \$7,000 per building.

Tier 1 buildings that do not meet the EUI targets will require a comprehensive building energy audit and implementation of energy efficiency measures.

The cost of these upgrades is highly variable, ranging from \$50,000 to \$500,000 per building, depending on current performance and whether prior efficiency improvements have been made.

The total cost responsibility will be shared between the PoT and its tenants, depending on whether the building is PoT-operated or tenant-operated. PoT staff are assessing the full scope of compliance costs and will explore external funding opportunities to offset these investments where possible.

Table 15: CBPS Requirements

Tier 1 buildings requiring audits and EEMs	
Current # of buildings	Estimated cost per building
TBD (Up to 4)	\$50,000 to \$500,000
Tier 1 buildings in compliance with EUI targets	
Current # of buildings	Estimated cost per building
TBD (Up to 4)	\$7,000
Tier 2 buildings	
Current # of buildings	Estimated cost per building
TBD (Up to 4)	\$7,000

### Tacoma Grain Terminal Zero Emission Terminal Master Planning

Sponsor: Port of Tacoma | Total cost: \$100,000  
 Port funds: \$100,000

The Tacoma Grain Terminal’s sources of emissions include three switcher locomotives and one propane-powered forklift owned by TEMCO as well as emissions from vessels at berth. To support the PoT’s long-term decarbonization goals, this project will develop a Zero-Emission Terminal Master Plan for the Tacoma Grain Terminal.

Building on utility energy planning completed through the South Harbor Energy Roadmap (SHERM), this study will:

- Analyze potential decarbonization pathways for on-terminal sources, including electrification and hydrogen fuel cell technologies.
- Identify required infrastructure investments to support zero-emission operations.
- Align with similar terminal master planning efforts underway at NWSA terminals.

For emission sources that may not be suitable for electrification, such as vessels at berth, the PoT will partner with the NWSA to explore alternative solutions, including at-berth emissions capture systems that could be piloted at the Tacoma Grain Terminal.

### Tacoma Grain Terminal Near-Term Emission Reduction Action Plan

Sponsor: Port of Tacoma  
 Total cost: \$3,000,000 - \$12,000,000  
 Port funds: \$500,000 | External costs: TBD

As a part of this CAIP update, the PoT aims to reduce GHG and DPM emissions from on-terminal sources at the Tacoma Grain Terminal by 10% below 2021 levels by 2030.

One near-term action identified for the 2026–2030 timeframe is encouraging TEMCO to switch from diesel fuel to renewable diesel. While renewable diesel offers immediate emission reductions as a drop-in fuel, it alone is insufficient to meet the 10% reduction target.

Beginning in early 2026, the PoT will work closely with TEMCO to evaluate and implement additional near-term emission reduction strategies. Two potential actions include:

- Energy infrastructure planning and design to support electrification of locomotives
- Tier 3 engine repower of existing switcher locomotives
- Purchase of zero emission switchers and installation of supporting infrastructure

Preliminary cost estimates for these scenarios range significantly, depending on technology selection, infrastructure needs, and available incentives.

**Table 15: Potential Actions in Five-Year Tacoma Grain Terminal Action Plan**

	Scenario 1: Diesel-to-diesel Tier 3 engine re-power	Scenario 2: Diesel to zero emission switcher replacement
Near-term feasibility	Medium (depending on available external funding and TEMCO/ PoT funding commitment)	Low (depending on available external funding and TEMCO/ PoT funding commitment)
Cost estimate	\$1.7 - \$2.5m <sup>24</sup>	\$12m <sup>25</sup>
Estimated GHG reduction (tons)	238 <sup>26</sup>	327 <sup>27</sup>
Estimated GHG % Reduction (total Tacoma Grain Terminal emissions)	1.8%	2.4%
Estimated GHG % Reduction (on-terminal emissions)	5.6%	7.7%
Estimated DPM emission reduction (tons)	0.2	0.3
Estimated DPM % Reduction (total Tacoma Grain Terminal emissions)	5.8%	8.7%
Estimated DPM % Reduction (on-terminal emissions)	21%	31%

24. Lower boundary based on Port of Seattle quote from Tractive Power for Tier 4 switcher replacement; upper boundary based on CARB report: [Preliminary Cost Document for the In-Use Locomotive Regulation](#)  
 25. Estimate for infrastructure upgrade and locomotive purchase based on 2024 conversations with TEMCO  
 26. Based on EPA Diesel Emission Quantifier tool and Port of Seattle quote from Tractive Power for a Tier 4 switcher replacement; while an 89% reduction in fuel consumption was estimated, a more conservative 73% reduction was used for this exercise due to uncertainty on whether a Tier 4 engine could be fit onto current switcher equipment  
 27. PSEI scenario tool

**Port-Industry Emission Reduction Partnerships (PIER-Ps)**

Sponsor: Port of Tacoma | Total cost: \$200,000  
 Port funds: \$100,000 [50%]  
 External funds: \$100,000 [50%]

The PoT is launching the PIER-Ps program to foster collaborative, cross-sector strategies that reduce emission and support circular economy principles. As part of this effort, PoT staff will develop a program framework and conduct an in-depth analysis of industrial relationships within and around the Port.

While much of this foundational work will be conducted in-house, engaging external experts will be critical to designing effective industrial symbiosis models and implementing circular economy strategies. The initial phase will also position the PoT to pursue external funding opportunities, including grants from the Washington State Industrial Symbiosis Program.

**6.3. Estimated Budget**

The estimated capital budget for the 2026-2030 period is summarized in Table 16 below. In addition to the

**Table 16: 2026 - 2030 Budget**

Action / Performance Metric	Total Cost	Port cost	Grant funding secured	External funding gap
<b>Port Fleets</b>				
EV charging infrastructure for remaining light-duty and passenger vehicles	\$3,200,000	\$1,600,000	\$100,000	\$1,500,000
Net Zero Fleet Roadmap	\$20,000	\$20,000		
Transition 30% of Port of Tacoma’s CHE Fleet to Zero Emissions	\$2,500,000	\$1,250,000	\$0	\$1,250,000
<b>Port Facilities</b>				
Net Zero Facilities Roadmap	\$50,000	\$50,000		
Clean Buildings Compliance	\$2,000,000	\$2,000,000		
Purchasing renewable natural gas credits	\$50,000 annually	\$50,000		
<b>Tacoma Grain Terminal</b>				
Grain Terminal Action Plan	\$100,000	\$100,000		
<b>Port-Industry Emission Reduction Partnership (PIER-P) Program</b>				
PIER-P Program Launch	\$200,000	\$100,000	\$0	\$100,000

*\*Potential additional actions to be implemented at the Tacoma Grain Terminal include a switcher engine repower or a zero-emission switcher equipment replacement.*

capital investments outlined here, the PoT also funds ongoing programmatic activities including staffing and operational costs, which are not reflected in this total. It is important to note that many of the projects included in this estimate have not yet undergone full engineering design. As a result, cost estimates are preliminary, subject to change and may be conservative.

The total estimated cost of all projects during the 2026-2030 timeframe is \$8.1 million, with approximately \$2.9 million in external funding needed to fully implement the plan. To date, the only secured external

funding is a \$100,000 grant from the Washington State Department of Ecology’s Charge Where You Are program, awarded in 2024 to fund EV charging infrastructure at the Port Maritime Center.

Additional external funding will be required to advance several key initiatives, including:

- EV charging stations for the maintenance and security fleets
- Zero-emission cargo-handling equipment
- The PIER-P Program

(PM10) 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.

**Table 17: Estimated 2026 - 2030 Budget for Additional Tacoma Grain Terminal Actions**

Potential additional Tacoma Grain Terminal actions (e.g., switcher engine repower or ZE switcher engine replacement)	Estimated total cost	Estimated Port cost	External funding required	External funding gap
	\$3,000,000 - \$12,000,000	TBD	Up to \$12,000,000	\$12,000,000

## 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 (PM2.5 measures 2.5 micrometers and smaller. Coarse particulate matter

## 8. Acronyms

<b>CHE</b>	Cargo-Handling Equipment	<b>NIM</b>	North Intermodal Yard
<b>DERA</b>	Diesel Emission Reduction Act	<b>NWPCAS</b>	Northwest Ports Clean Air Strategy
<b>DPM</b>	Diesel Particulate Matter	<b>NWSA</b>	Northwest Seaport Alliance
<b>EV</b>	Electric Vehicle	<b>OGV</b>	Ocean-Going Vessel
<b>GHG</b>	Greenhouse Gas	<b>PCT</b>	Pierce County Terminal
<b>hp</b>	Horsepower	<b>PIDP</b>	Port Infrastructure Development Program
<b>HVAC</b>	Heating, Ventilation and Air Conditioning	<b>PNW</b>	Pacific Northwest
<b>IAPH</b>	International Association of Ports and Harbors	<b>PoS</b>	Port of Seattle
<b>IMO</b>	International Maritime Organization	<b>PoT</b>	Port of Tacoma
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<b>PSCAA</b>	Puget Sound Clean Air Agency
<b>LCFS</b>	Low Carbon Fuel Standard	<b>PSEI</b>	Puget Sound Maritime Emissions Inventory
<b>LED</b>	Light Emitting Diode	<b>SIM</b>	South Intermodal Yard
		<b>VFPA</b>	Vancouver Fraser Port Authority

# 9. Appendix: 2021-2025 Milestone Progress Dashboard

The table below summarizes the milestones established in the PoT's 2021-2025 Clean Air Implementation Plan, along with the current status of each. The "Note" column provides additional context or clarifications where applicable.

Of the 19 total milestones identified for this period, 14 have been completed, representing a 73% completion rate. A full version of the Milestone Progress Dashboard is included in the Appendix.

Sector	Key Milestones	Status	Note
Community Engagement and Partnerships	Complete a Community Clean Air and Climate Resource Guide.	Complete	NW Clean Ports Website <sup>28</sup>
	Begin providing quarterly updates on NWPCAS progress.	Complete	Clean Air Quarterly Newsletter <sup>29</sup>
	Develop and begin implementing a Tacoma community engagement and partnership program.	Complete	
Industry Engagement and Partnerships	Develop and begin implementing a tenant engagement program.	Complete	
Public Policy Engagement and Advocacy	The state Clean Fuel Standard and Climate Commitment Act contain funding mechanisms to support NWPCAS implementation.	Complete	
	Federal, state, and/or local/regional funding is secured to fill funding gaps for projects in this implementation plan.	Complete	
	Stronger emission standards for international shipping are developed.	Complete	

28. [Home - NW Clean Ports](#)

29. Available on the PoT's Clean Air webpage: [Air & Climate | Port of Tacoma](#)

Sector	Key Milestones	Status	Note
Infrastructure Planning and Development	Complete the South Harbor Electrification Roadmap.	Complete	
Technology Assessment and Advancement Action Plan	Begin conducting technology assessments (first one completed by the end of the year).	Complete	
Facilities	Energy efficiency improvements at Fabulich Center complete.	Complete	
	Sustainable Building Policy adopted.	Behind Schedule	Net Zero Facilities framework and CBPS compliance incorporated into 2026-2030 CAIP
	Tenant energy efficiency program established.	Behind Schedule	Incorporated in 2026-2030 CAIP
	Complete 1 additional energy efficiency or clean energy project	Complete	
Fleets	Sustainable Fleet Plan complete.	Complete	
	EV charging infrastructure installed at existing Port Administration Building.	Complete	
	EV charging infrastructure installed at Port Maintenance Building.	Behind Schedule	Incorporated in 2026-2030 CAIP
	EV charging infrastructure installed at EB-1 terminal.	Behind Schedule	Incorporated in NWSA CAIP
	EV charging infrastructure installed at North Intermodal Yard.	Behind Schedule	Incorporated in 2026-2030 CAIP
	Refresh the Port's commute trip reduction program.	Complete	

# Connect with your Port

 [portinfo@portoftacoma.com](mailto:portinfo@portoftacoma.com)

 (253) 383-5841

 1 Sitcum Plaza, Tacoma WA 98421

  @portoftacoma  
 

