

THE NORTHWEST SEAPORT ALLIANCE
MEMORANDUM

MANAGING MEMBERS

STAFF BRIEFING

Item No.: 10C

Meeting Date: July 1, 2025

DATE: June 23, 2025

TO: Managing Members

FROM: John Wolfe, CEO

Sponsor: Jason Jordan, Sr. Director, Environmental & Planning

Project Manager(s): Graham VanderSchelden, Environmental Project Manager II

& Meghan Reckmeyer, Environmental Project Manager I

SUBJECT: NWSA 2026-2030 Clean Air Implementation Plan

A. SYNOPSIS

As part of the 2020 Northwest Ports Clean Air Strategy, participating ports all agreed to develop implementation plans for working towards the joint vision of phasing out emissions by 2050. The NWSA developed its first Clean Air Implementation Plan (CAIP) for 2021-2025, which was adopted by Managing Members in December of 2021. Because the 2021-2025 CAIP “expires” at the end of this year, staff are developing a new CAIP for years 2026-2030, which will be presented for Managing Member consideration to adopt by the end of the year.

This briefing is to provide Managing Members with an update on the CAIP development process, an overview of the preliminary CAIP draft action plan, and summarize the planned approach to external engagement.

The preliminary CAIP includes proposed actions and performance metrics for advancing the NWSA’s air quality and sustainability program in the 2026 – 2030 timeframe. The action plan focuses on established priority areas, including the following.

- Installing shore power at our major international container terminals and maximizing connection rates.
- Driving the transition to zero emission (ZE) cargo handling equipment in our gateway through strategic investment in planning, infrastructure development, and equipment deployments.
- Supporting the transition to zero emission drayage through the NWSA’s ZE Drayage Program and the Puget Sound Zero Emission Truck Collaborative.
- Catalyzing the uptake of future marine fuels through implementation of green corridor projects and our Future Marine Fuels program.

To inform and refine the CAIP, NWSA staff plan to conduct robust external engagement over the summer of 2025. A comprehensive list of key industry, community, government, and NGO stakeholders (list provided in section E of this memo) will be engaged in one on one and group consultations.

B. BACKGROUND

The 2020 Northwest Ports Clean Air Strategy (NWPCAS) – unanimously adopted by the Managing Members of The Northwest Seaport Alliance (NWSA) in April 2021 – set a bold new vision for clean air and climate action by the NWSA: **“phase out emissions from seaport-related activities by 2050.”** The adoption of this Strategy was followed by the development, adoption, and implementation of the NWSA’s 2021-2025 Clean Air Implementation Plan (CAIP). The 2021-2025 CAIP laid out actions and milestones to be achieved by the end of 2025 to advance the NWPCAS vision. While continuing to implement on the 2021-2025 CAIP, the AQSP Team is shifting towards the development of the forthcoming 2026-2030 CAIP. Staff of the NWSA, Port of Seattle, Port of Tacoma, and Port of Vancouver B.C. met in the fall of 2024, agreeing that the 2020 NWPCAS does not need to be updated at this time. There have not been significant developments in technology and/or policy that warrant accelerating the 2050 vision and as such, we are better off focusing our energy on implementation than additional process.

The goals of this 2026-2030 CAIP update are to continue advancing the NWPCAS vision of phasing out emissions by 2050, accounting for new information and current conditions. Some of the factors that will inform the 2026-2030 CAIP are:

- Updates to the NWSA, Port of Tacoma, and Port of Seattle greenhouse gas goals, accelerating targets to achieve net zero scope 1 and 2 emissions to 2040.
- 2021 Puget Sound Maritime Air Emissions Inventory (PSEI) results.
- Technology developments, including the commercial availability of renewable diesel and zero emission heavy duty (HD) trucks and cargo handling equipment.
- Changing federal and state government priorities and funding opportunities.

Key Accomplishments 2021-2025:

Over the course of the past five years, the NWSA’s Air Quality & Sustainable Practices (AQSP) Team led the implementation of the 2021-2025 CAIP. As of July 2025, 22 of the 45 identified milestones (49%) have been achieved; 15 more will be achieved in 2025, yielding an estimated completion rate of 82%. The remaining 11 milestones will be considered as a part of this upcoming implementation plan update.

A non-exhaustive, summary list of major accomplishments between 2021 and 2025 is provided in the following table.

Sector	Accomplishment
Shore Power	Completed shore power installations at T-5 and Husky.
	Completing shore power design at T-18 by end of 2025.
Trucks	Led creation of the Puget Sound Zero Emission Truck Collaborative and completed the “Decarbonizing Drayage Roadmap” ¹ .
	Initiated our first ZE drayage deployment project, which will be completed in 2026 and will result in more than 15 electric trucks deployed.
CHE	Deployment of 6 battery-electric yard tractors at the SIM Yard.
	Husky and SSA purchased hybrid RTGs.
	Initiating the EB-1 Electric forklift project using state funding.
	NWSA deployment of a battery-electric heavy-duty forklift
Green Corridors	US-Republic of Korea green corridor prefeasibility assessment complete.

¹ [Puget Sound ZE Truck Collaborative Roadmap.pdf](#)

	Container and ro/ro green corridor feasibility assessments expected to be complete in 2025.
Energy Planning	South Harbor Electrification Roadmap (SHERM) and Seattle Waterfront Clean Energy Strategy (SWCES) complete.
Policy	Climate Commitment Act funding secured to support T-18 shore power and ZE drayage projects.
	Funding for state MHD incentive program secured
Engagement	“Clean Air Quarterly” newsletter launched.
	“nwcleanports” website launched.

Puget Sound Maritime Air Emissions Inventory (PSEI) Results:

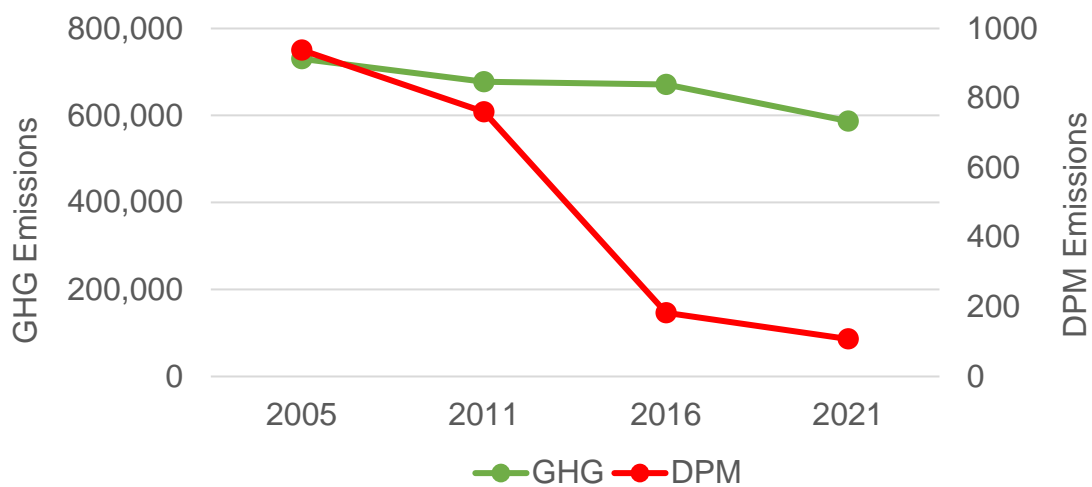
Emission inventories have been the foundation of the NWPCAS since its inception, providing an analytical basis for how to prioritize emission reduction measures across the operational sectors to maximize benefits, as well as tracking emission reduction progress. Every five years, the NWSA participates in an emissions inventory study with other ports and maritime stakeholders in the region to produce the Puget Sound Maritime Air Emissions Inventory (PSEI). The most recent PSEI was completed for activity occurring in calendar year 2021. The PSEI tracks emissions of key air pollutants, including nitrogen oxides (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), sulfur dioxide (SO₂), coarse particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), diesel particulate matter (DPM), and black carbon. The PSEI also includes greenhouse gases (GHGs) including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), which are aggregated into the single metric: CO₂ equivalents (CO₂e). Emissions are tracked over a broad geographic area we call the Puget Sound Airshed, spanning roughly from the Cascade to Olympic mountains east to west and the Canadian border to Olympia north to south. Vessel traffic is tracked for the entire trip from the entrance to the Strait of Juan-de-Fuca into the ports and back out.

To illustrate trends over time, we generally highlight diesel particulate matter (DPM) as the primary indicator of air pollutant burden, since it's been shown to be the biggest regional contributor to air toxics-related cancer risk according to Air Toxics monitoring studies conducted by the Puget Sound Clean Air Agency. We aggregate GHG emissions in units of carbon dioxide equivalents (CO₂e) to track GHG emission trends. The graph below shows the NWSA's DPM and GHG emission trends from the first PSEI in 2005 through the 2021 inventory, showing emissions of DPM down 89 percent and emissions of GHGs down 20%.

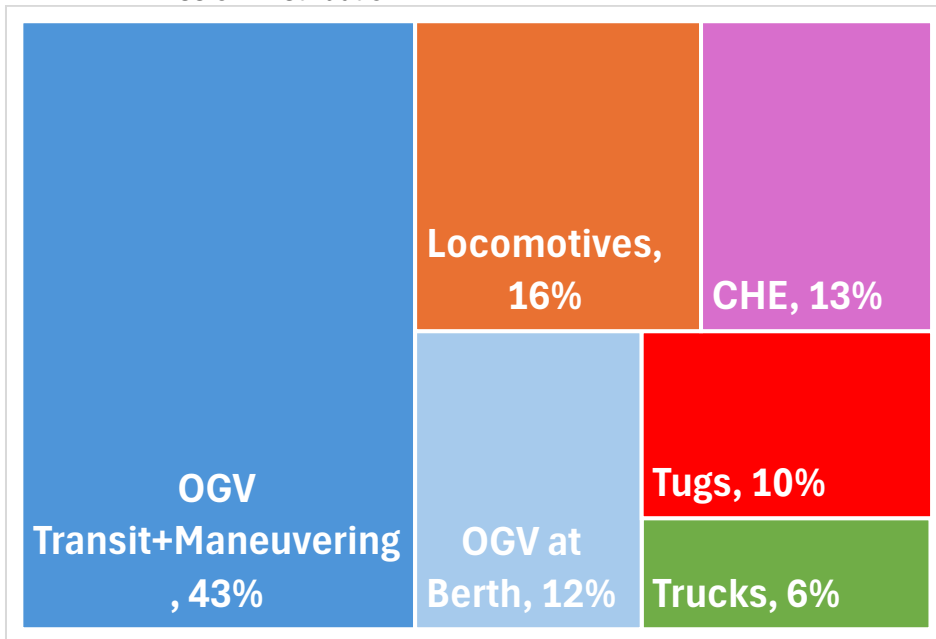
These reductions are the result of a combination of policy changes, fleet turnover, and port programs. For example, the North American Emissions Control Area, enacted by the International Maritime Organization in 2015, requires that ships burn fuel with a 0.1% sulfur content, greatly reducing emissions of DPM and oxides of sulfur. Additionally, the EPA has enacted several policies to increase emission standards for new on-road and non-road engines and decrease allowable fuel sulfur contents of diesel fuel. The NWSA, along with industry partners, have implemented a number of projects and programs to reduce emissions such as our clean truck program requirements and installing shore power at TOTE Terminal. Our clean truck program requirements were a major driver of the DPM emission reductions that occurred between 2016 and 2021.

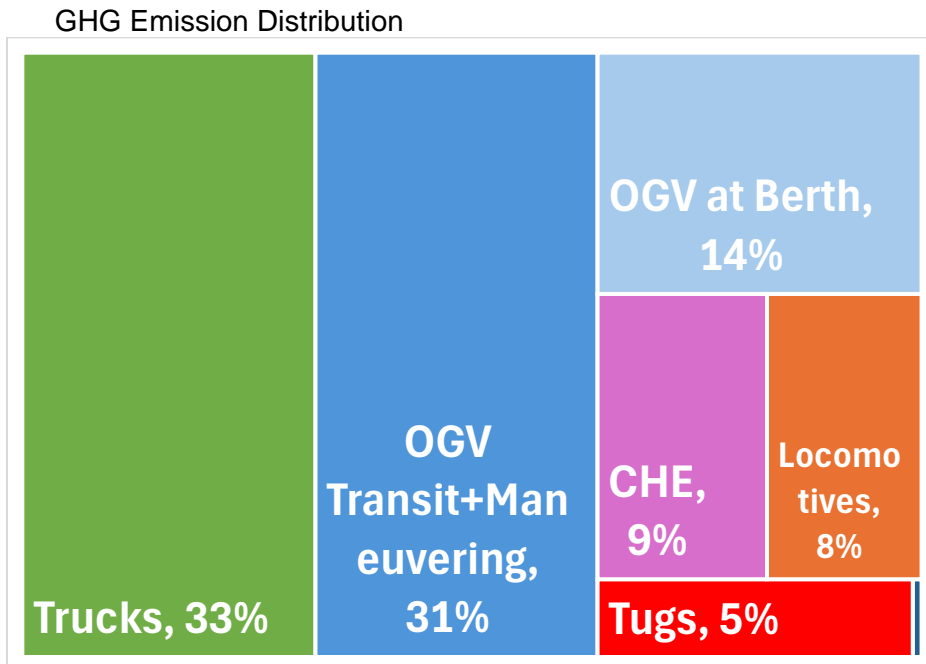
In addition to tracking progress, emission inventories assist in prioritizing emission reduction actions by identifying the areas of greatest potential impact. The charts below portray the NWSA's emission distributions for DPM and GHGs, showing the percentage of the NWSA's emissions from each operational sector. Ocean-going vessels (OGVs) are the largest source of both GHG and DPM, when transit, maneuvering, and at berth activities are included. Drayage trucks are the next largest source of GHG emissions. Interestingly, due to significant action taken in the sector to reduce air pollutant emissions from trucks, trucks are the smallest source of DPM.

While potential emission reductions are important criteria for prioritizing actions, it is not the only one. Other criteria, such as technology readiness, cost, the NWSA's level of influence, community priorities, and commercial priorities are also considered as we prioritize our work.



DPM Emission Distribution





C. IMPLEMENTATION PLAN DEVELOPMENT PROCESS:

The process to develop the 2026-2030 CAIP is being led by the AQSP Team in close consultation with other NWSA and Homeport business units. Development of the preliminary action plan was rooted in a series of internal workshops, engaging staff from the Commercial Team (Business Development, Real Estate, and Marketing & Business Services), Operations, Engineering, Maintenance, NWSA Communications & Outreach, Government Affairs, PoT Government & Community Affairs, PoS External Relations, and Human Resources.

Staff briefed the Managing Members' Environmental Working Group (commissioners Ang, Cho, Felleman, McCarthy) on February 20th to receive input on this approach.

The high-level 2025 schedule for the CAIP development process is as follows:

Time Period	Activities
January – May	<ul style="list-style-type: none"> - Environmental Working Group input on CAIP development process. - Develop preliminary draft action plan and prepare for internal workshops. - Conduct internal workshops for input to refine preliminary draft action plan.
May – June	<ul style="list-style-type: none"> - Develop "Discussion Draft" of the 2026-2030 CAIP, designed to communicate the preliminary draft action plan to external stakeholders. - Review of preliminary draft action plan and external engagement approach by NWSA leadership and Managing Members.
July – September	<ul style="list-style-type: none"> - Conduct external engagement. - Develop final draft of the 2026-2030 CAIP. - Interdepartmental and leadership review of the final draft.

October – December	<ul style="list-style-type: none"> - Managing Member Environmental Working Group review of the final draft. - Managing Member adoption of the 2026-2030 CAIP.
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D. PRELIMINARY DRAFT ACTION PLAN

The preliminary discussion draft of the CAIP includes proposed actions and performance metrics for advancing the NWSA's air quality and sustainability program in the 2026 – 2030 timeframe. The following is a detailed overview of the action plans for priority sectors.

Ocean-Going Vessels (OGVs):

As the largest source of DPM and GHG emissions within NWSA's emissions profile, ocean-going vessels are a high priority sector. Additionally, technologies are developing to significantly reduce emissions in the sector including shore power, which is a proven technology for reducing emissions while at berth and alternatively fueled vessels, which are being built with increasing frequency.

The key priorities identified for this sector are as follows:

- Meet the NWPCAS goal of installing shore power at our major international container terminals (T-5, Husky, T-18, WUT, and PCT) by 2030
- Maximize shore power connection rates.
- Promote increased operational efficiency and attract cleaner vessels.
- Catalyze the uptake of future marine fuels through implementation of green corridor projects and our Future Marine Fuels program.

Based on these priorities the OGV sector action plan is summarized in the table below.

Action	Timeline
<i>OGVs At Berth</i>	
Secure funding for WUT, PCT, and T-18 "phase 2" projects	Ongoing
Install Shore Power at T-18 "phase 1" (2 berths)	By 2028
Install Shore Power at WUT	Design by 2027 Construct by 2030
Install Shore Power at PCT	Design by 2027 Construct by 2030
Install Shore Power at T-18 "phase 2" (final berth)	By 2030
Annually assess and seek to maximize shore power connection rates	Ongoing
Plan for next phase of shore power installations (non-international container terminals)	By 2030
Track alternative shore power technologies	Ongoing
<i>OGVs in Transit</i>	
Establish vessel recognition/incentive program. - Consider shore power incentives	Develop by 2026 Implement by 2027
Complete Future Marine Fuels Program Research. - Market Analysis - Bunkering Infrastructure Needs Assessment - Regulatory/safety roadmap	Complete by 2027
Develop and implement a future marine fuels strategy, based on foundational research, with a focus on methanol and LNG.	

Implement PNW-Republic of Korea Green Shipping Corridors. - Implement MOU with Port of Busan and Port of Ulsan	First e-methanol-Fueled Vessel Call By 2028
Participate in Puget Sound Sustainable Marine Fuels Collaborative.	Ongoing

Trucks:

Drayage trucks are the second largest source of GHG emissions in the NWSA's emission profile (behind OGVs) and the smallest source of DPM emissions. The decoupling of GHG and DPM emissions is due to the NWSA's Clean Truck Program requirements and on-road vehicle new engine emission standards. Given the effectiveness of our existing requirements and expected additional benefits associated with expanding the program to the domestic terminals this year, staff is not recommending making the 2007 model year requirement more rigorous. Additionally, there is no known funding available to support the replacement of trucks newer than model year 2007. Instead, we recommend focusing on catalyzing the use of renewable diesel and a heavy focus on the transition to zero emission trucks, which are now commercially available. Renewable diesel is of particular interest because it can continue to reduce DPM emissions while also significantly reducing GHG emissions, whereas shifting to newer model year trucks does not yield significant GHG emission reductions. The key priorities in the trucking sector are as follows:

- Increase use of renewable diesel by trucks moving port cargo.
- Support the deployment of zero emission trucks and installation of associated charging and fueling infrastructure.
- Explore opportunities for truck charging on port property

Based on these priorities, the Truck sector action plan is summarized in the table below.

Action	Timeline
Develop and implement a program to increase use of RD.	Develop in 2026 Implement by 2027
Continue implementing the ZE Drayage Program to support ZE truck deployments <ul style="list-style-type: none"> - Develop a funding strategy to support ZE truck deployments - Deploy existing funding to incentivize purchase of ZE trucks and charging/fueling - Develop education and technical assistance program to bolster trucker confidence in ZE truck technologies and improve access to Incentive Program funding - Host ride-and-drive events, webinars, and peer learning opportunities from California ZE truck drivers - Develop and implement ZE truck deployment strategy for long-haul drayage providers 	Ongoing Develop funding strategy by 2026
Continue partnering with ZE Truck Collaborative to address regional challenges associated with the transition to ZE trucks.	Ongoing
Explore opportunities for ZE charging/fueling infrastructure on port property; perform study to assess business case & inform strategy.	Complete study by 2027
Establish Trucker Advisory group to increase engagement with the drayage community	Establish by 2027

Marine Terminal Operator Owned Cargo-Handling Equipment (CHE):

Cargo-handling equipment (CHE) is the NWSA's 3rd largest source of both GHG and DPM emissions and is the largest source of the NWSA's scope 1 GHG emissions. Some types of zero emission CHE are now commercially available and can make it through two shifts, such as light-duty forklifts and yard tractors, while other types of heavier equipment (like top picks) are improving, but are not yet fully industry accepted. Our priorities for the CHE sector in the next five years are as follows.

- Encourage the use of renewable diesel.
- Collaboratively plan for the transition to ZE with terminal operators.
- Install key enabling infrastructure to support near-term CHE purchases.
- Build tenant confidence in zero emission technologies.
- Support tenant CHE purchases (i.e. help secure grant funding)
- Continue transitioning the NWSA fleet to zero emissions.

Based on these priorities, the CHE action plan is presented in the table below.

Action	Timeline
Continue use of renewable diesel (RD) for NWSA-owned equipment and encourage/support tenant use of RD.	Ongoing
Continue including tier 4 requirements in leases.	Ongoing
Develop terminal ZE transition master plans.	Priority terminals by 2027 All terminals by 2030
Develop and Implement a Technology Demonstration Program, focused on heavier equipment, such as top handlers.	Develop in 2026 Implement by 2027
Install key enabling infrastructure to support ZE fleet transitions	2029
Support purchases of ZE CHE	Ongoing
Explore ZE CHE incentive mechanisms to incorporate into leases	Assess by 2026

NWSA-Owned Fleets

The NWSA is responsible for fleet assets that serve NWSA managed cargo facility operations, including the North Intermodal (NIM) yard, EB-1 Terminal, and Terminal 7. This includes approximately 15 forklifts, 3-yard tractors, two reach stackers, 28 straddle carriers, and 25 light-duty vehicles. Many of these assets are currently Port of Tacoma owned, but the NWSA pays for their fuel and maintenance and will be responsible for replacing them when needed. While the straddle carriers are the biggest source of scope 1 emissions, they will be the costliest to replace and zero emission straddle carriers are not yet fully commercially available. Therefore, the priorities for 2026-2030 are as follows.

- Continue using renewable diesel across the entire fleet.
- Install charging and transition the NWSA's light-duty vehicles to zero emissions.
- Begin transitioning forklift and yard tractor fleets to zero emissions.

Based on these priorities, the action plan for the NWSA owned fleet is as follows.

Action	Timeline
Continue using renewable diesel in NWSA-owned/operated vehicles and CHE	Ongoing
Install EV Charging at EB1	2026
Install EV charging for NIM Fleet	2028
Begin transitioning the forklift and yard tractor fleets to ZE.	Ongoing

Purchase zero emission CHE for use at the Thorne Road Development.	2030
Work with Port of Tacoma to develop CHE transition master plan for port-owned CHE, with a focus on the straddle carrier fleet.	2030

Harbor Vessels:

The NWSA's emissions inventory includes only one type of harbor vessel; the assist tugs that help vessels maneuver into and out of their berths. This is a sector where the NWSA has limited influence and zero emission technologies to achieve zero emission operations in Puget Sound are nascent. However, there are some opportunities reduce emissions and advance planning to support future implementation of zero emission technologies. The harbor vessel action plan is summarized in the table below.

Action	Timeline
Explore opportunities to encourage/support tug operators in switching to renewable diesel	Ongoing
Identify and pursue opportunities for engine replacements and fuel efficiency	Ongoing
Support and engage in the Port of Seattle "Powering the Maritime Transition in the PNW" study	Ongoing
Identify/pursue opportunities to support tugboat shore power installation	Ongoing
Assess feasibility of a centralized hub/facility for tug mooring, shore power, and future charging <ul style="list-style-type: none"> - Leverage available tug location / transit data to estimate emission reduction benefits from potential sites 	Assess sites and business case by 2027

Locomotives:

Similar to the harbor vessel sector, the locomotive sector is one where the NWSA has limited influence and technologies for achieving zero emission operations are still in development. However, our partners at Tacoma Rail are leaders in the rail emission reduction space and have secured funding to purchase two battery electric switcher locomotives and repower 4 other diesel locomotives to Tier 4. Our strategy in this sector remains focused on supporting Tacoma Rail, as well as developing relationships with Class I railroads to explore project possibilities. The locomotive sector action plan is summarized in the table below.

Action	Timeline
Support Tacoma Rail funding applications to repower/replace locomotives/engines with cleaner diesel and/or ZE technologies	Ongoing
Explore options for locomotive repowers/replacements with Temco	Ongoing
Perform targeted outreach to Class 1 Railroads to build relationships and identify potential opportunities for locomotive emission reduction projects	Ongoing
Develop rail emission reduction strategy to identify actions to increase pace of progress in the locomotive sector.	By the end of 2027

Community Engagement:

Engaging with near-port residents and communities in Tacoma and Seattle is a critical component of implementing the NWPCAS, to ensure that our actions and investments incorporate community priorities and experience.

Building on the development of our monthly newsletter “Ports Clean Air Quarterly” and development of our clean air and climate web portal in the 2021-2025 timeframe, Community Engagement Action Plan is summarized in the table below.

Action	Timeline
<i>Seattle Harbor</i>	
Develop a Seattle Harbor community engagement framework with Port of Seattle.	By 2026
Develop a gateway-wide communications and community engagement strategy for low to near-zero emission maritime fuels.	Complete by end of 2026 and revisit annually
Provide support to community-based organizations in interpreting NWSA emission inventories, as needed.	Ongoing
<i>Tacoma Harbor</i>	
Continue to leverage existing Port of Tacoma communications platforms and co-develop messaging with Port of Tacoma communications staff to share progress on NWPCAS implementation	Ongoing
Update Port of Tacoma Air and Climate website content	Update by the end of 2026 and revisit annually
Annual webinar/workshop to provide progress on NWPCAS IP and engage with community	Annually

Policy Engagement:

Supportive policy at the local, state, federal, and international levels is critical to ensure adequate incentives and funding are in place to support emission reduction projects and programs. These policies need to provide direct financial support for NWSA’s capital projects and send market signals to private parties to invest in zero emission technologies.

Building on our work in the 2021-2025 timeframe to support adoption of the Washington State Clean Fuel Standard and Climate Commitment Act, win nearly \$90 million in state and federal grant funding to support emission reduction projects, and coordinate with numerous local, regional, and state agencies, our Policy Engagement Action Plan is summarized in the table below.

Action	Timeline
International	
Continue to identify and seize strategic opportunities to support strong international policies that advance NWPCAS goals <ul style="list-style-type: none"> Closely track international policy developments (e.g., IMO policies and IAPH guidelines) and develop regional strategy in partnership with the homeports 	Ongoing
Continue to engage actively in IAPH activities (e.g., Climate & Energy Technical Committee, Clean Marine Fuels Working Group, World Ports Conference) and more closely track/engage other international associations and activities (e.g., International Chamber of Shipping, Port Authorities Roundtable, Singapore Maritime Week)	Ongoing
Strengthen the NWSA's capacity to engage in and influence international policy through consulting support and increased staff involvement	Ongoing
Federal	
Continue to seek and secure Federal funding for NWPCAS implementation. <ul style="list-style-type: none"> Prioritize continuing programs (e.g., Hydrogen Hub, DERA). Seek to embed NWPCAS actions in infrastructure/economic development-oriented funding opportunities (e.g., PIDP) Leverage industry support and partnerships in grant applications Identify and align with potential new funding opportunities (e.g., increased US fuel production, strengthened US manufacturing, USMCI, new technologies)	Ongoing
Continue to cultivate relationships with key staff and business units with relevant Federal departments. (USEPA, USDOE, USDOT, State Department, and Coast Guard)	Ongoing
Continue to advocate for and engage in Federal policies and programs that advance NWPCAS implementation	Ongoing
State	
"Execute with excellence" and successfully administer on current state grant funds <ul style="list-style-type: none"> \$6.24M allocation of Climate Commitment Act (CCA) funding to NWSA's ZE Drayage Incentive Program \$28M allocation to the T-18 shore power installation Funding for Maritime Center (\$100K from Ecology, \$2.4M from Commerce) 	Spend currently secured state funding by next biennium
Track and advocate for future funding opportunities in state budget biennium processes (e.g., Port Electrification Grant Program)	Ongoing
Reduce barriers to implementation of federal funding administered by state agencies	Ongoing
Support successful implementation of Washington State MHD ZEV Incentive Program to increase funding pathways for ZE drayage trucks and CHE <ul style="list-style-type: none"> Share information with and support applications from NWSA drayage companies and Maritime Terminal Operators Advocate for increased funding for Incentive Program in next state biennium	Ongoing
Support study of at-berth ship emissions regulation and any engage in related policy development	Ongoing
Track existing state policy developments (e.g., Clean Vehicles Program, Air Quality in Overburdened Communities, Comprehensive Climate Action Plan)	Develop tracking

and develop a system to proactively track and engage in state policy developments	system by 2027
Strengthen relationships with key staff at Governor's Office and key state agencies.	Ongoing
<i>Local/Regional</i>	
Strengthen existing regional government relationships and cultivate new opportunities for local government engagement	Ongoing

Other Strategy-Wide Actions:

There are a number of actions that are critical to advancing our efforts to reduce, and ultimately phase out emissions, but may across more than one operational sector. This section includes these actions, which are summarized in the table below.

Action	Timeline
<i>Utility Energy Planning/Implementation</i>	
Advance implementation of the Seattle Waterfront Clean Energy Strategy (SWCES) and South Harbor Electrification Roadmap (SHERM) <ul style="list-style-type: none"> - Pursue funding for near-term infrastructure projects; work to ensure key enabling grid upgrades are completed. - Continually update understanding of key grid infrastructure upgrade needs 	Ongoing
<i>Renewable Diesel</i>	
Perform a study to collect baseline data on availability and price of renewable diesel and identify the best opportunities for RD use, to inform actions in specific sectors.	Complete Study by 2026
<i>Operational Efficiency</i>	
Continue to pursue initiatives to shift cargo from truck to intact intermodal; quantify the emission reduction benefits of these initiatives.	Ongoing
Model emission reduction benefits of key operational efficiency measures, such as truck turn time and vessel on time arrival. Include emission reductions benefits as benefits of these programs are communicated.	Ongoing

Performance Metrics

The following metrics will be used to track performance and impact of the proposed actions in the highest impact sectors over the 5-year implementation period.

Sector	Metric	Target
Vessels at Berth	Container Terminals with shore power available	5* by 2030
	Percentage of shore power capable calls at shore power equipped terminals that connect	-
Vessels in Transit	Number of alternatively fueled vessel calls associated with green shipping corridor projects	40 by 2030
Tenant CHE	Percentage of terminals using renewable diesel	100%
	Number of ZE CHE deployed between 2026 and 2030	30
Trucks	Number of ZE trucks deployed in the gateway between 2026 and 2030	100

NWSA-Owned Fleets	Percentage of light duty fleet that is zero emissions	100% of fleet
	Number of pieces of ZE CHE in NWSA's fleet	10

* NWSA's goal to install shore power at its major international container terminals by 2030 includes T-5, T-18, Husky, WUT, and PCT.

E. FUNDING STRATEGY

Transitioning to zero emission technologies will be costly and recent political developments have created significant new challenges to securing external funding to support this work, especially on the federal level. Given these challenges, it is imperative to be prepared to take advantage of each and every applicable funding opportunity, which may require proactively funding planning and design before grant funding is secured, to increase competitiveness and accuracy of grant applications, reduce timelines to fully deliver projects, and increase our odds of executing with excellence on all grants we secure. More direct investment from the NWSA, particularly in the shore power, cargo-handling equipment, and drayage truck programs would help us move more quickly to deploy zero emission technologies, but doing so will have opportunity cost. The NWSA's level of direct investment in the deployment of zero emission technologies, vs. reliance on grant funding, is a key policy question to be considered by Managing Members as this plan moves toward adoption. Staff plan to go deeper on this question with the Environmental Working Group before presenting the final plan for Managing Member consideration.

The following is a short list of the most promising opportunities to secure funding to support zero emission technology deployments outlined in this implementation plan. We expect the funding strategy will be expanded and refined as part of developing the final version of the plan.

State Climate Commitment Act Funding: CCA funding is the biggest bucket of clean air and climate related funding is certain to be available in the coming years. We are currently using CCA funding to support our Zero Emission Drayage program and T-18 Shore Power project. Staff plan to develop detailed plans for CCA funding asks for the 2027-2029 and 2029-2031 biennia to support our projects. Given recent frustration from lawmakers about the speed at which we've been able to deploy our existing CCA funding, staff recommend that we invest in getting projects as close to "shovel ready" as possible so that we can execute quickly and within the biennium funding is awarded. The CCA program is likely the best opportunity to secure large chunks of grant funding to support shore power installation at WUT and PCT.

State Port Electrification Grant Program: The NWSA was a recipient of this program in its first offering, utilizing \$2.6 million to support deployment of zero emission CHE in the NWSA's fleet. While no additional funding will be available from this program in the 2025-2027 biennium, the NWSA should advocate for its continuation in the 2027-2029 biennium. If structured like the last round, the Port Electrification Grant Program could be a good source of funding for zero emission CHE purchases and/or infrastructure installations.

Diesel Emission Reduction Act (DERA): The NWSA has used DERA funds to support our truck scrap and replace program, electric yard tractor purchases, and shore power installations in the past. Our understanding is that the program currently still exists.

Because the maximum award for our region is likely to be relatively small (historically it has been \$1 million), DERA is likely to best fit smaller projects or incremental replacement of cargo-handling equipment fleets, once the enabling infrastructure is in place.

Port Infrastructure Development Program (PIDP): As a grant program with a high maximum award, PIDP could potentially fund large transformational projects. However, the current administration's priorities inject uncertainty around the competitiveness of electrification/emission reduction focused projects. The optimal balance may be to incorporate electrical system upgrades and/or other electrification elements into larger projects.

F. EXTERNAL ENGAGEMENT PLAN

The AQSP team plans to conduct a robust external engagement effort in summer 2025 to achieve the following goals:

- Solicit feedback into development of the CAIP update from a wide range of external stakeholders
- Strengthen existing partnerships and collaboration
- Increase understanding around the CAIP and existing programs/initiatives

Through deliberate internal consultation, staff narrowed down a broad list of identified stakeholders representing industry, community, and government interests.

The following table reflects the prioritized list of stakeholders. The team plans to engage these stakeholders in both one-on-one and group consultations. Ahead of consultations, the team will share a draft version of the 2026-2030 CAIP to allow for focused discussion on highest-priority sectors and enable stakeholders to provide detailed and informed feedback.

Priority Stakeholders	Plan for Engagement
BCOs/importers: TBD (consult with Commercial)	1:1 Consultations; share draft document ahead of discussion
BCOs/exporters: TBD (consult with Commercial)	
Ocean carriers: WWL, ONE, CMA, Swire Shipping	
Drayage / logistics companies: Zero Emission Truck Collaborative and Washington Trucking Associations, plus 2-4 of the following: Mercer Logistics, Crane Logistics, Afar Logistics, GSC, Mitco	
Freight forwarders & warehouse: TBD (consult with Commercial)	
Rail operators: BNSF, Tacoma Rail, UP	
Tug companies: Crowley, Foss	
Labor unions: ILWU (19 and 23), IBEW (76 and 77)	
Operating partners (Marine Terminal Operators, Railyard Operators, etc.): All	
CBOs: Duwamish River Communities Coalition (DRCC), Port of Seattle Community Action Team (PCAT), Communities for a Healthy Bay (CHB)	

NGOs: Climate Solutions, Pacific Environment	
Hydrogen Fuel Providers: Air Liquide, HTEC, CHARGE	
Tribal Governments: Puyallup Tribe of Indians, Suquamish Tribe, Muckleshoot Indian Tribe (consult with Homeport staff)	
State Government: Governor's Office, Department of Commerce, Department of Ecology, WSDOT	Group consultation; share draft document ahead of discussion
Regional Government: Puget Sound Clean Air Agency (PSCAA), Puget Sound Regional Council (PSRC)	
Local Government: City of Tacoma, Pierce County, City of Seattle, King County	
Utilities: Seattle City Light, Tacoma Power, Puget Sound Energy	

G. PREVIOUS ACTIONS OR BRIEFINGS

- April 2021: Adoption of the 2020 Northwest Ports Clean Air Strategy
- December 2021: Adoption of the NWSA's 2021-2025 Implementation Plan for the Northwest Ports Clean Air Strategy
- November 2023: Resolution to update the NWSA's Greenhouse Gas Reduction Targets

Item No.: 10C
Meeting: July 1, 2025

2026-2030 Clean Air Implementation Plan Briefing



**THE NORTHWEST
SEAPORT ALLIANCE**

SEATTLE + TACOMA

Graham VanderSchelden
Environmental Project Manager II

Meghan Reckmeyer
Environmental Project Manager I

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Overview

- The NWSA's 2021-2025 Northwest Ports Clean Air Strategy (NWPCAS) Implementation Plan "expires" at the end of 2026
- Process is underway to develop new 2026-2030 Clean Air Implementation Plan (CAIP)
- The 2026-2030 CAIP develops a fresh action plan based on:
 - Policy and technology developments; projected funding availability
 - Progress to date/lessons learned
 - New information (e.g., PSEI update)
 - Stakeholder input

Briefing Purpose: MM visibility and feedback on

- **IP development process**
- **Preliminary action plan**
- **External engagement plan**

Meetings with Environmental Working Group to go deeper on key issues will follow.



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Northwest Ports Clean Air Strategy

“Phase out emissions from seaport activities by 2050”



NWSA GHG Resolution:

By 2030: 50% reduction, for scopes 1, 2, and 3

By 2040: Net zero for scopes 1 and 2, 70% reduction for scope 3

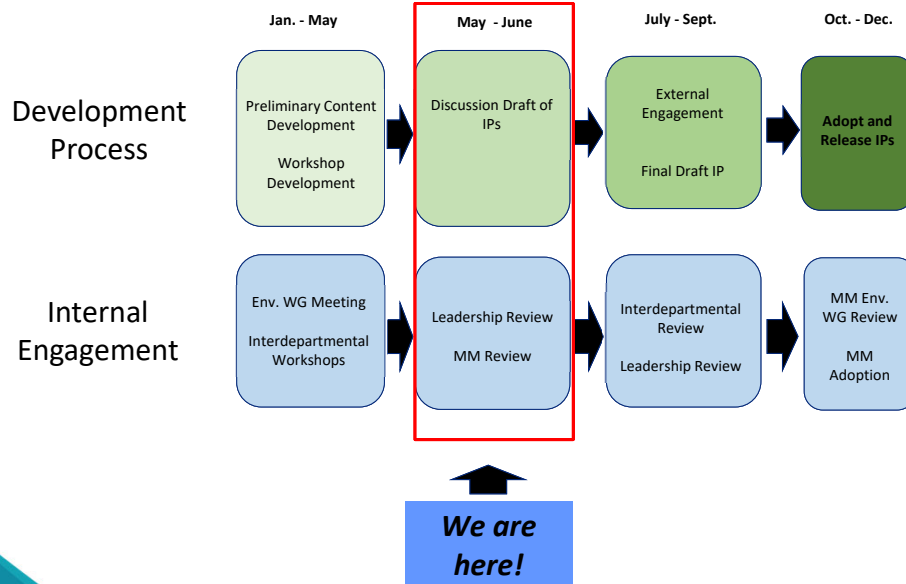
By 2050: Net zero for scope 3



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NWPCAS Implementation Plan Development Process



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2021-2025 Major Accomplishments

Shore Power

- Completed shore power installations at T-5 and Husky.
- Will complete shore power design at T-18 by end of 2025.

Trucks

- Led creation of the Puget Sound Zero Emission Truck Collaborative
- "Decarbonizing Drayage Roadmap" complete
- Initiated first ZE drayage deployment project, which will be completed in 2026
- Will result in more than 15 electric trucks deployed

CHE

- SIM Yard deployment of 6 battery-electric yard tractors
- NWSA deployed battery-electric heavy-duty forklift
- EB-1 Electric forklift project initiation, state funding secured
- Husky and SSA hybrid RTG purchases

Green Corridors

- Prefeasibility assessment complete
- Feasibility assessments expected to be complete fall 2025

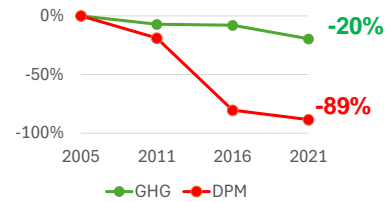
2021-2025 Investments in NWPCAS Implementation (\$M)

Completed Projects				Projects In Progress			
Total	NWSA	Grant	Private	Total	NWSA	Grant	Private
40.7	29.0	9.5	2.2	66.8	10.0	41.9	14.9

*Excludes programmatic and non capitalized staff costs

** Does not include costs for any new projects proposed in the 2026-2030 CAIP

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Energy Planning

- SHERM and SWCES complete

Policy

- Funding secured to support T-18 shore power and ZE drayage
- Funding for state MHD incentive program secured

Engagement

- "Clean Air Quarterly" newsletter
- "nwcleanports" website launched



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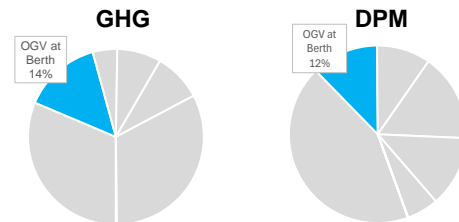
Ocean-Going Vessels at Berth Action Plan

Opportunities:

- Proven technology
- Standardization
- 53% of container fleet shore power capable (2018-2023 avg)

Challenges:

- Cost
- Technical complexity
- Operational challenges



Action Plan Summary

Action	Target Completion Date
Achieve the NWPCAS goal to install shore power at major international container terminals, which includes T-18, WUT, PCT.	Design by 2027 Construction by 2030
Annually assess and seek to maximize shore power connection rates.	Ongoing
Plan for next phase of shore power installations [non-international container terminals].	2030

Performance Metrics

Metric	Target
International Container Terminals with shore power available	5* by 2030
Percentage of shore power capable calls at shore power equipped terminals that connect	-

* NWSA's goal to install shore power at its major international container terminals by 2030 includes T-5, T-18, Husky, WUT, and PCT.

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Ocean-Going Vessels in Transit Action Plan

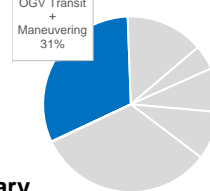
Opportunities:

- Support from RMI & MMC
- IMO Regulations
- Industry trends/orderbook

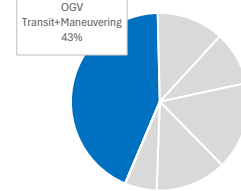
Challenges:

- Fuel Cost & Availability
- Infrastructure needs
- Indirect influence

GHG



DPM



Action Plan Summary

Action	Timeline
Establish vessel recognition/incentive program.	Develop by 2026 Implement by 2027
Complete Future Marine Fuels Program Research. <ul style="list-style-type: none"> - Market Analysis - Bunkering Infrastructure Needs Assessment - Regulatory/safety roadmap 	Complete by 2027
Develop and implement a future marine fuels strategy, focused on e-methanol and LNG/RNG.	
Implement Green Shipping Corridors. <ul style="list-style-type: none"> • Implement MOU with Port of Busan and Port of Ulsan 	First green methanol-fueled vessel call by 2028
Participate in Puget Sound Sustainable Marine Fuels Collaborative.	Ongoing

Performance Metric

Metric	Target
Number of alternatively fueled vessel calls associated with green shipping corridor projects	40 by 2030

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Trucks Action Plan

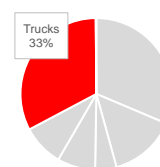
Opportunities:

- Battery-electric trucks are commercially available
- State funding available to support early deployments

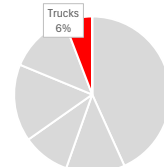
Challenges:

- Purchase price of ZE trucks
- Availability of charging/fueling infrastructure
- Operator confidence
- Equity for smaller fleets

GHG



DPM



Action Plan Summary

Action	Target Completion Date
Develop and implement a program to increase use of renewable diesel.	Develop in 2026 Implement by 2027
Continue implementing the ZE Drayage Program to support ZE truck deployments <ul style="list-style-type: none"> - Develop a funding strategy to support ZE truck deployments 	Ongoing Develop funding strategy by 2026
Continue partnering with ZE Truck Collaborative to address regional challenges associated with the transition to ZE trucks.	Ongoing
Explore opportunities for ZE charging/fueling infrastructure on port property; perform study to assess business case & inform strategy.	Complete study by 2027
Establish Trucker Advisory group to increase engagement with the drayage community	Establish by 2027

Performance Metrics

Metric	Action
Number of ZE trucks deployed in the gateway between 2026 and 2030	100

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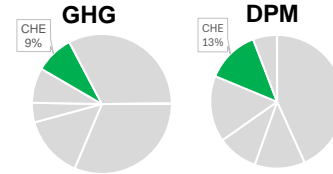
Cargo-Handling Equipment Action Plan

Opportunities:

- Technology readiness is improving
- Increasing awareness/receptiveness from industry

Challenges:

- Purchase price of ZE equipment
- Infrastructure needs/constraints
- Limited operator experience with the technology in PNW



Action Plan Summary

Action	Target Completion Date
Continue use of renewable diesel for NWSA-owned equipment and encourage/support tenant use of RD.	Ongoing
Continue including tier 4 or better requirements in leases.	Ongoing
Develop terminal ZE transition master plans.	Priority terminals by 2027 All terminals by 2030
Develop and implement a Technology Demonstration Program, focused on heavier equipment, such as top handlers.	Develop in 2026 Implement by 2027
Install key enabling infrastructure to support ZE fleet transitions.	2029
Support purchases of ZE CHE.	Ongoing
Explore ways to incentivize ZE CHE deployments through leases.	Ongoing

Performance Metrics

Metric	Tenant Fleets Target	Metric	NWSA Fleet Target
Percentage of terminals using renewable diesel	100%	Percentage of light duty fleet that is zero emissions	100% of fleet
Number of ZE CHE deployed between 2026 and 2030	30	Number of pieces of ZE CHE in NWSA's fleet	10

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External Engagement Framework

Priority Stakeholders	Plan for Engagement
BCOs/importers: TBD (consulting with Commercial)	1:1 consultations; share draft document ahead of discussion
BCOs/exporters: TBD (consulting with Commercial)	
Ocean Carriers: WWL, ONE, CMA, Swire Shipping	
Drayage-Logistics Companies/Freight Forwarders/Warehousers: Zero Emission Truck Collaborative; Washington Trucking Associations; Mercer Logistics; Crane Logistics; Mitco Logistics; ProLogis	
Rail Operators: BNSF, Tacoma Rail, UP	
Tug Companies: Crowley, Foss	
Labor Unions: ILWU (19 & 23), IBEW (76 & 77)	
Marine Terminal Operators/Railyard Operators, etc.): All	
Community Based Organizations: Duwamish River Communities Coalition (DRCC), Port of Seattle Community Action Team (PCAT), Communities for a Healthy Bay (CHB)	
NGOs: Climate Solutions, Pacific Environment	
Charging/Fueling Infrastructure Developers: Forum Mobility; Zeem Solutions; Air Liquide; HTEC; CHARGE	
Tribal Governments: Puyallup Tribe of Indians, Suquamish Tribe, Muckleshoot Indian Tribe (consult with home port staff)	
State Government: Governor's Office, Department of Commerce, Department of Ecology, WSDOT	Group consultation; share draft document ahead of discussion
Regional Government: Puget Sound Clean Air Agency (PSCAA), Puget Sound Regional Council (PSRC)	
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Next Steps

