

THE NORTHWEST SEAPORT ALLIANCE
MEMORANDUM

MANAGING MEMBERS

ACTION ITEM

Item No.

6A

Date of Meeting

September 1, 2020

DATE: August 19, 2020

TO: Managing Members

FROM: John Wolfe, CEO

Sponsors: Jason Jordan, Director, Environmental and Planning Services
Sandra Kilroy, Director, Maritime Environmental and Sustainability, POS

Project Managers: Steve Nicholas, Senior Manager, POT/NWSA
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SUBJECT: Briefing on Northwest Ports Clean Air Strategy (NWPCAS)

A. SYNOPSIS

The Northwest Ports Clean Air Strategy (NWPCAS) is a voluntary collaboration among four Pacific Northwest port authorities (NWSA, Tacoma, Seattle, and Vancouver-Fraser) to reduce air and climate pollution from seaport activities, including ocean-going vessels, cargo-handling equipment, and trucks. The NWPCAS was first adopted in 2007 and updated in 2013.

The goals of this 2020 update are to: (1) Further reduce local air pollution to improve worker and community health; (2) Align with current policy direction and technology trends; (3) Increase engagement and transparency; and (4) Position PNW ports for new funding opportunities and sustained commercial success.

The 2020 update to the NWPCAS is at an important juncture. Staff from the four ports drafted a high-level vision, sector-specific objectives and targets, and a preliminary list of joint actions, and conducted two rounds of engagement. The purpose of this briefing is to inform Managing Members about progress to date and gather input on key policy issues as staff pivots to drafting the strategy, developing more detailed implementation plans for each individual port, conducting a third round of engagement, and bringing the strategy back to Managing Members for adoption early next year.

B. BACKGROUND

In 2005, the Ports of Seattle, Tacoma, and Vancouver B.C., along with partner agencies including the USEPA, Puget Sound Clean Air Agency, Washington State Department of Ecology, and Environment Canada formed a partnership to reduce air emissions from maritime activities in the Puget Sound and Salish Sea. The ports and their agency partners set course to assess the magnitude of emissions from maritime sources and create strategies to reduce these emissions. The first Puget Sound Maritime Air Emissions Inventory (PSEI)¹ was completed in early 2007, providing foundational data to guide development of the first Northwest Ports Clean Air Strategy (NWPCAS), which was adopted by all three ports in 2008.

The NWPCAS was the first of its kind: a voluntary, multi-jurisdictional, international agreement between port authorities to reduce their impacts on air quality and climate change. It is a five-year strategy that sets overall program direction and helps ports prioritize air and climate pollution reduction investments. The PSEI was updated by the ports, along with government and industry partners in 2011, informing an update to the NWPCAS in 2013. The 2013 NWPCAS update included quantitative targets for emission reduction within the Puget Sound – Georgia Basin airshed, a notable advancement from the 2008 strategy. These emission targets were normalized to cargo throughput to account for growth and variability in activity (emissions intensity). The ports committed to tracking progress toward two targets through 2020:

- Reduce diesel particulate matter (DPM) emissions per ton of cargo moved by 80% by 2020 relative to 2005 levels.
- Reduce greenhouse gas (GHG) emissions per ton of cargo moved by 15% by 2020 relative to 2005 levels.

As of the 2016 PSEI, the NWSA is meeting the targets four years early, reducing GHG emission intensity by 19% and DPM emission intensity by 80% since 2005. The Port of Tacoma's emission trends have shown similar trajectories. Normalizing emissions to cargo throughput for Port of Seattle's operations does not adequately correct for activity, since emissions from cruise are much greater than from grain cargo operations. Even so, Port of Seattle's emissions intensities decreased by 79% and 8% for DPM and GHG emissions respectively, while Port of Seattle's absolute (non-normalized) emissions decreased by 82% and 20% for DPM and GHGs respectively. The substantial progress made by NWSA, Port of Seattle, and Port of Tacoma is largely attributable to the industry's implementation of cleaner fuels, cleaner engines, and efficiency measures, driven by international and domestic policies as well as Port programs. Achievement of the NWPCAS goals to date demonstrates the commitment of the ports and their partners to reduce impacts on air quality and climate.

The NWPCAS was adopted by the NWSA upon its formation in 2015. In 2017, the NWSA, Port of Tacoma and Port of Seattle each established GHG targets through individual Resolutions, in part to align with the Paris Climate Agreement goal to limit global temperature increase to 2° Celsius. These targets, relative to a 2005 baseline for the NWSA and PoT and a 2007 baseline for POS, are:

- Reduce all emissions by 50% by 2030;
- Reach carbon neutrality (i.e. net zero emissions) for “Scope 1” and “Scope 2” emissions (i.e. emissions from operations and energy usage, over which ports have direct control) by 2050;
- Reduce “Scope 3” emissions (i.e. emissions not under direct port control) 80% by 2050.

Since the adoption of the US Ports' GHG resolution in 2017, the Intergovernmental Panel on Climate Change (IPCC) released a report that found a significant difference in impacts between 2 degrees of warming and 1.5 degrees. The modeled pathway to limit warming to 1.5 degrees requires global emissions to reach zero around mid-century. Recognizing this scientifically demonstrated urgency to limit temperature increase to 1.5 degrees, the ports should strive to support future targets aligned with limiting warming to 1.5 degrees and seek to exceed our existing targets where possible.

This 2020 update to the NWPCAS outlines the overall pathways by which these GHG reduction targets will be advanced, while continuing efforts to further reduce diesel particulate matter and other air pollutants. The strategy helps coordinate and align efforts across the participating ports and identifies areas that are ripe for collaboration and collective action. In addition, the update is an opportunity to:

- align ports' emission reduction strategies with current technology trends and regional, state, and international policies and priorities, which have changed substantially since the last update in 2013;
- increase engagement of a wide range of partners and stakeholders and increase visibility and transparency around how ports prioritize and pursue emission reduction projects;
- further target and advance their efforts to help address the disproportionate impacts from air pollution that exist in some near-port communities;
- position the ports for potential new funding opportunities and sustained commercial success.

C. PROJECT DESCRIPTION AND DETAILS

As part of the 2020 NWPCAS update process we are reviewing past successes and challenges, developing a new strategic direction (i.e., vision and guiding principles), creating a new strategic framework (including goals, objectives, actions and metrics), and improving procedures for progress-reporting. Stakeholder engagement is an integral part of the process, and critical to creating a broadly supported, implementable strategy that incorporates community, government, and industry interests. Three rounds of stakeholder engagement are designed into the process; two have been completed and the third is planned for this fall.

At the beginning of the process in fall 2018 Commissioners Felleman and Meyer established the Managing Members Environmental Committee for providing input and direction on the NWPCAS update. In January 2020, Commissioners Ang and Cho were added to the committee. This committee has been and will be consulted and involved throughout the process. Staff briefed this committee in December 2018, June 2019, January 2020, June 2020, and August 2020, and there will be additional opportunities for commission involvement throughout the NWPCAS update process. All 10 Managing Members will be briefed at critical junctures in the NWPCAS update process. The first of these briefings occurred in August of 2019.

Phase 0 – Setting the Stage (Completed: August – October 2018)

The first Phase of the project was an opportunity to reflect on the first 10 years of NWPCAS implementation, and to identify the important successes and challenges, and to research likely changes in industry expected over the next 5-10 years and beyond. This included reviewing progress towards both emission targets and sector specific activity-based targets and identifying relevant changes and policy, technology, and industry trends in place now, or to be implemented soon. During Phase 0, targeted interviews were performed with stakeholders that had participated in the development and/or implementation of the NWPCAS over the past 10 years to solicit feedback on successes, challenges, and possible future directions.

The significant outcomes of Phase 0 were establishing the context for the new NWPCAS, telling the story of the past 10 years, and creating a starting place for discussion of the new strategic direction between the ports.

Phase 1 – Establishing the Vision (Completed: November 2018 – August 2019)

The first Phase of NWPCAS development established a new strategic direction. Throughout winter 2018 and spring 2019, the ports and partners agencies worked together to craft a draft vision statement, guiding principles, and a set of “technology shifts” that explore the changes necessary to achieve the vision. These elements were summarized in NWPCAS 2020 Discussion Document 1. Unlike previous iterations of the NWPCAS, the newly developed vision statement reaches beyond the traditional 5 and 10-year time horizons and includes a new focus on longer term actions, in alignment with accepted scientifically based pathways to minimize climate change.

Phase 1 engagement was completed in August 2019. On July 18, the U.S. ports held a stakeholder committee workshop, soliciting feedback on the strategic direction elements developed in Phase 1. Staff also reached out to stakeholders not in attendance at the workshop for feedback on the Phase 1 content and to understand their perspectives on the direction for the new NWPCAS. Simultaneously, Port of Vancouver completed their own stakeholder outreach on the Canadian side of the border. At the end of Phase 1 engagement, all feedback collected from both sides of the border was collated and used to inform further development of the NWPCAS in Phase 2.

Phase 2 – Defining the Strategy (August 2019 – June 2020)

During the second Phase of the strategy development, ports expanded upon the new strategic direction, formally recognizing emission targets set by the ports and local jurisdictions, as well as drafting new objectives and actions in support of working towards the vision. These elements are laid out in NWPCAS 2020 Discussion Document 2, along with conditions for success, which summarize the key barriers to phasing out emissions in each sector. The most recent strategy content from Discussion Document 2 and subsequent development by the staff working group is summarized in detail below.

Engagement on Phase 2 was completed in June 2020. Due to the COVID-19 complications, the Stakeholder Committee workshops were moved to an online format, including an overview webinar as well as three focus groups focusing on terminals, trucking, and marine vessels. Staff also aggressively conducted targeted outreach in addition to the Stakeholder Committee workshops including one on one meetings, written feedback, and a survey for the trucking community to ensure broad and balanced input.

Phase 3 – Preparing the Draft Strategy (June 2020 – October 2020)

The ports are presently developing a draft NWPCAS that incorporates feedback from previous rounds of engagement with stakeholders in both the U.S and Canada. The product of Phase 3 will be a complete draft strategy including all recommended emission reduction objectives, actions, conditions for success, and the reporting framework. A final round of stakeholder outreach, which will include broader outreach to the general public, will be completed to solicit feedback on the draft strategy and port specific implementation plans.

Phase 4 – Final Strategy / Managing Member Approval (October 2020 – December 2020)

After incorporating feedback on the draft strategy, the ports will develop a final NWPCAS to be presented to Managing Members for discussion and adoption in two readings.

Phase 5 – Adoption of the Strategy by Managing Members (Jan 2021 – Feb 2021)

Staff are presently planning for a first reading in January 2021 and adoption in February 2021.

D. STATUS OF THE STRATEGY UPDATE

Discussion Document #2

A second discussion document was produced to expand on the initial strategic direction (vision, guiding principles, and high-level technology shifts) presented during Phase 1 of the process, and put forward draft objectives, actions, and conditions for success. In addition, Discussion Document #2 more formally documented the emission targets that ports will work toward, depending on their locations. The following is a summary of new draft strategy elements and notable updates since Phase 1.

Vision: Aligning with the targets discussed above and the scientifically demonstrated pathways to limit global temperature rise to 1.5°C, the ports developed the following vision statement for the new NWPCAS, along with the accompanying context. This has changed from the earlier version presented to Managing Members, based on the feedback received and further discussions among the participating ports:

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

Conditions for Success: We know this is an ambitious vision, and that achieving it will require unprecedented levels of collaboration and investment among multiple parties. In addition, meeting these emission reduction targets will require achieving a set of conditions over which ports have limited control:

1. The technology is demonstrated to work for the necessary port applications and is commercially available.
2. The total cost of ownership for the technology is equivalent to other options and/or will not put adopters at a competitive disadvantage.
3. Necessary infrastructure installations on port property can be reasonably accommodated in the ports' capital budgets.
4. Necessary infrastructure installations outside of port property are in place.
5. Industry and labor partners agree to adopt and operate zero and lower emission technologies.

These conditions for success are intended to serve as a call to action to partners and stakeholders to join ports in efforts to in achieving the Strategy's vision. The status of our collective progress toward meeting these conditions will help guide the ports on how to prioritize and when to move forward with investments, programs and, policies to support the transition to zero and lower emission technologies. These conditions for success also help the ports better understand how present-day actions can help enable future adoption of zero emission technology.

Guiding Principles: Following the first round of engagement over the summer of 2019, ports received significant feedback from stakeholders on the proposed guiding principles. Discussion Document Two addresses the comments received. Overall, the revised guiding principles maintain focus on sustainability, with new attention to equity, community health and the need to prioritize and focus effort and resources on strategies with the highest impact.

Level of Port Influence: In Discussion Document Two, ports more clearly articulated their level of influence over achievement of the Strategy vision. The participating port authorities are primarily “landlord ports” and therefore do not own or operate the vast majority of vehicles, equipment and vessels that generate the emissions included in the scope of this strategy. However, the port authorities can play an important role in influencing action by establishing programs to incentivize desired outcomes, planning and installing infrastructure to support cleaner transportation, and aligning funding and investment among government and industry. Port authorities have different levels of influence in each sector, depending on the nature of the business relationship with the companies that own and operate the vehicles, equipment and vessels.

Emission Targets: Staff from the four ports agreed to align efforts under the NWPCAS with jurisdictional emission targets. For POT, POS, and NWSA the most relevant targets for GHG emission reductions are:

	By 2030	By 2040	By 2050
State of Washington	45% below 1990 levels	70% below 1990 levels	95% below 1990 levels and net-zero
Puget Sound Clean Air Agency	50% below 1990 levels		80% below 1990 levels

Port of Vancouver plans to work toward similar provincial and Federal GHG targets. The Province of British Columbia has set a target to reduce GHG emissions 80% by 2050, and there is a Canadian Federal target, currently under consideration, to be carbon neutral by 2050. These targets apply to all aspects of port operations except international vessels. Port of Vancouver plans to work towards IMO targets that currently call for a 50% absolute reduction in GHG emissions (and a 70% reduction in emission intensity) by 2050 for international vessels.

Draft Sector-Specific Objectives and Actions: Because the NWPCAS is an international agreement between ports that have different lines of business and operational paradigms, the objectives and actions within are set at a level of detail that can accommodate the varying approaches of the individual ports. This maintains requisite flexibility for the individual ports to implement actions, working towards the common objectives in ways that best fits their governing structure, operational models, lines of business, and customer needs. Stakeholder feedback will be considered when further refining the objectives and how the individual ports will work towards them.

In Discussion Draft 2, the ports put forth a set of draft objectives and supporting actions to work towards meeting the vision. The ports considered their level of influence, state of technology, and timelines of emission reduction goals, among other factors, when developing these objectives. A summary of the current draft objectives is provided in the table below.

	On-Going	By 2030	By 2050
Ocean-Going Vessels	Continuously increase vessel and equipment efficiency and implement interim emission reduction actions	Install shore power at all major cruise and container berths	All vehicles and equipment transition to zero-emission
Cargo-Handling Equipment		Install sufficient infrastructure to enable adoption of zero-emission technologies ¹	
Trucks			
Rail			
Harbor Vessels			
Port Administration & Tenant Facilities	Continuously increase efficiency of port fleets, buildings, and facilities	Ports transition light-duty administration fleets to electricity or renewable fuels.	Ports transition to zero-emission buildings, lighting, and heavy-duty fleets

¹This does not mean that all infrastructure will be installed by 2030, but rather that infrastructure is strategically installed so that it is not a barrier to anyone that desires to adopt.

Round 2 Engagement

U.S. ports recently completed a second round of outreach and engagement to inform the development of the Strategy. We consulted with more than 30 organizations, including industry partners, community-based groups, nonprofit organizations, and government agencies, as summarized below:

Industry & Labor	Governments	Community Groups	NGOs
<ul style="list-style-type: none"> • American Waterways Operators • Burlington Northern Santa Fe Railroad • Cruise Lines International Association • Harbor Trucking Association • Husky Terminal • International Longshore & Warehouse Union • Pacific Merchant Shipping Association • Pierce County Terminal • Portland Container • SSA Marine • Washington United Terminal • Washington Trucking Association 	<ul style="list-style-type: none"> • City of Tacoma • City of Seattle • Muckleshoot Tribe • Puget Sound Clean Air Agency • Puyallup Tribe • Seattle City Light • Suquamish Tribe • Tacoma Power • WA Department of Ecology • Washington Maritime Blue 	<ul style="list-style-type: none"> • Citizens for a Healthy Bay • Duwamish River Clean-Up Coalition • Urban League of Tacoma 	<ul style="list-style-type: none"> • American Lung Association • Climate Solutions • Environmental Defense Fund • Front & Centered

The engagement process – all conducted virtually due to the pandemic – included three sector-based focus groups, more than a dozen one-on-one consultations, a survey of truckers and trucking organizations (in which over a hundred truckers participated); and detailed written comments from more than a half-dozen organizations. The key themes that emerged are:

Areas of Agreement	Differences of Perspective
<ul style="list-style-type: none"> • Overall goal of zero emissions • Conditions for success • Address disproportionate impacts • Need and willingness to collaborate on implementation • Sustained focus on increased efficiencies as an important way to improve both economic and environmental performance 	<ul style="list-style-type: none"> • What are the most appropriate target dates for meeting sector-specific objectives, amid significant uncertainties? • Concerns about costs/possible adverse impact on cargo volumes • Need to consider lifecycle of vehicles and equipment; avoid “stranded assets” • What are the appropriate tradeoffs between cleaner (i.e. “near-zero”) solutions and zero-emission solutions?

The four ports now are working to process this feedback and integrate it into the draft strategy that will be written over the summer and will be the focus of a third round of outreach and engagement in the fall. As we do so, a key challenge will be reconciling the different perspectives on target dates.

E. IMPLEMENTATION PLANNING

Because each port in the NWPCAS has different lines of business, community need and desires, and governance structures, it is necessary to develop a NWPCAS that focuses more on high level common objectives and actions than implementation details, providing the opportunity for collaboration while also allowing each port the autonomy to implement in the most effective way for them. While these shared objectives and actions are important for collaboration and guiding relatively consistent air quality and climate programs at the ports, further detail is needed to describe precisely how each port will work towards the shared objectives. These Implementation Plans will add this additional level of detail and provide accountability between the participating ports and between the ports and their constituencies.

Implementation Planning Process and Timeline

Staff at the NWSA, Port of Tacoma, and Port of Seattle are developing individual NWPCAS Implementation Plans in parallel with the finalization of the NWPCAS update.

Port of Seattle Implementation Plan

POS’s NWPCAS Implementation Plan will fall within a comprehensive Maritime Climate and Air Action Plan (MCAAP), which presents climate and air pollution reduction actions for the NWPCAS’s Maritime Activity sectors and a more extensive and detailed set of strategies and actions to address emissions from Port Administration sources, such as those from port owned and leased buildings, solid waste, employee commuting, and POS’s vehicle fleets.

For Port Activity and Administration sources, the MCAAP provides emission reduction actions and impact estimates in the form of wedge analyses, recommendations for implementation, and the resources needed to achieve the POS’s Century Agenda climate targets. Like the other participating ports, POS is developing the MCAAP in parallel to the NWPCAS. Seattle-specific feedback received during engagement will be incorporated into the Plan’s focus. Specifically, POS’s MCAAP emphasizes the importance of equity and environmental justice and the need to sustain engagement with near-port community groups and work together to identify and prioritize implementation actions that reduce emissions in Seattle’s near-port neighborhoods that currently have the worst air pollution, such as Duwamish Valley neighborhoods.

One near-term action for POS identified in the MCAAP is development of a Seattle Waterfront Clean Energy Strategic Plan (SWCESP). The SWCESP—a partnered planning effort with Seattle City Light, industry, and others—is a critical near-term action to identify the waterfront energy distribution systems needed to decarbonize Seattle’s maritime industries by 2050. Completion of the SWCESP—expected by 2023—will provide the Port with additional implementation actions and associated estimated costs looking beyond 5 years.

POS’s MCAAP will be released in Q4 for review and presented for adoption with the 2020 NWPCAS in Q1 2021

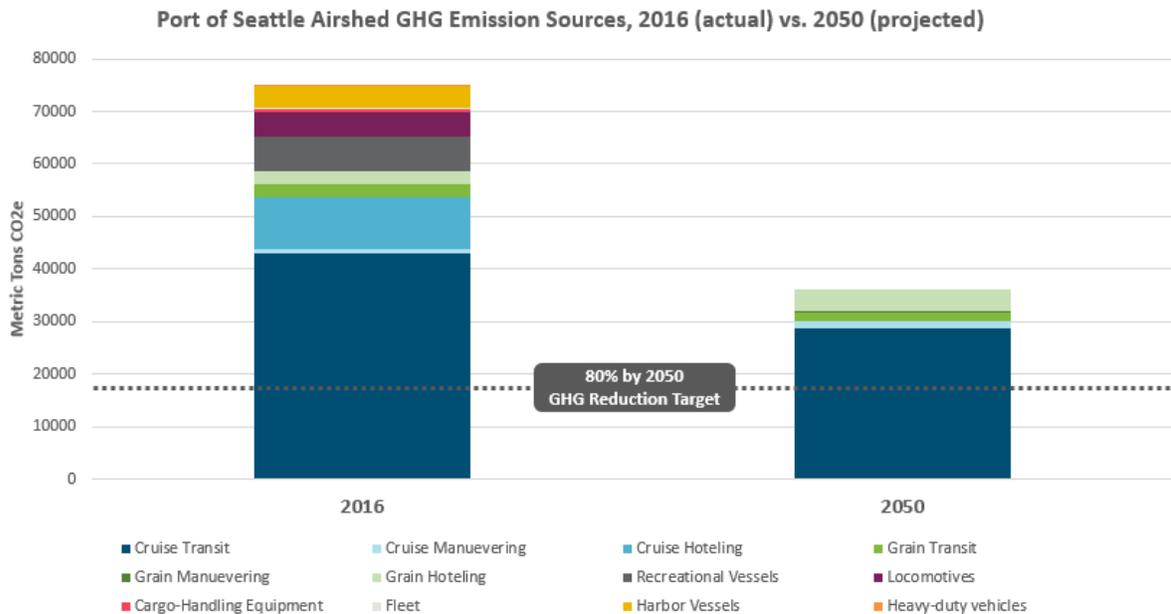


Figure 1: In 2050, 83% of remaining estimated emissions are projected to be from cruise ships in transit & maneuvering and 17% from grain ships in transit & maneuvering.

POS NWPCAS Project/Program	5-Yr Low Estimate	5-Yr High Estimate	NWPCAS Sector	Notes
Shore Power at P66	\$14M	\$17M	OGV	\$3M in Grant Funds Awarded
Fleet Replacement	\$8.5M	\$11M	Admin	
HVAC Upgrades (P66, World Trade Cent.)	\$6.4M	\$6.4M	Admin	World Trade Cent. Funds Approved
Building solar panels	\$1.2M	\$1.2M	Admin	
Lighting upgrades	\$250K	\$500K	Admin	
Clean Energy Plan Early Implementation/Pilots	\$100K	\$500K	Cross-cutting	
EV Charging Infrastructure	\$200K	\$450K	Admin	
Energy Management Software	\$100K	\$400K	Admin	
Shore power at HIM E-dock for tugs	\$385K	\$385K	Harbor Craft	Funds Approved
Building Tune-Ups	\$150K	\$300K	Admin	
Complete Clean Energy Plan	\$250K	\$250K	Cross-cutting	Funds Approved
Equity and Environmental Justice, Community Engagement	\$50K	\$250K	Cross-cutting	
Cruise Emission Inventory and Env. Plan	\$35K	\$50K	OGV	
Tenant Engagement, Green Leases	\$25K	\$50K	Cross-cutting	
Estimated Total Direct Cost Range	\$32M	\$39M		

Figure 2: Port of Seattle’s implementation costs are estimated out 5 years (2020-2025); estimates do not include staff time, shared costs between the Port and customers, or industry-only costs, due to future uncertainties. Longer term cost estimates will be developed as part of the SWCESP.

POT and NWSA Implementation Plan(s)

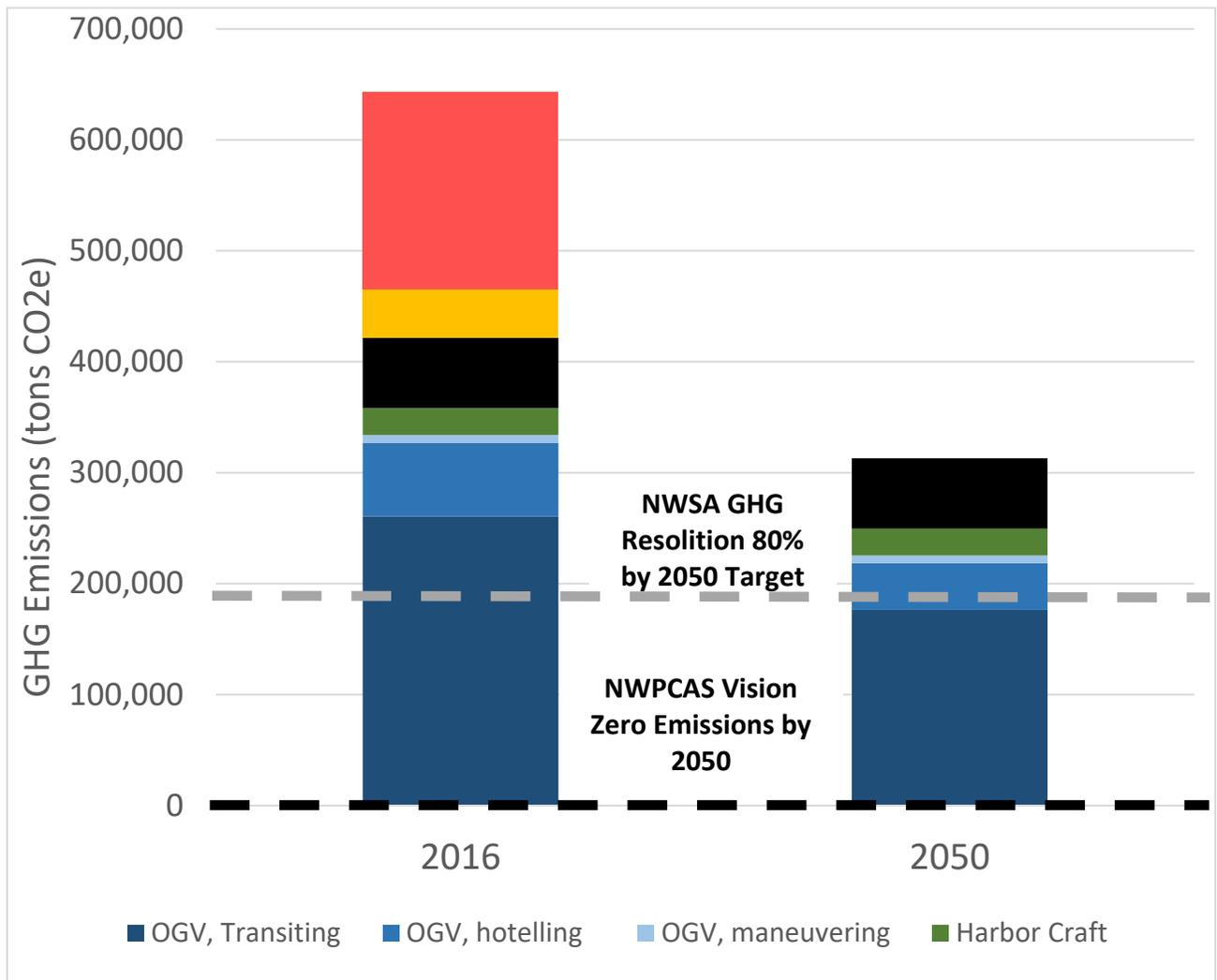
POT/NWSA staff are developing a “Discussion Draft” outlining the implementation plans for the POT and NWSA; whether the POT and NWSA implementation plans will be separate or joint remains to be discussed and decided. The Discussion Draft, which will include detailed action plans outlining how the NWSA and PoT will work towards the NWPCAS objectives in each sector, will be shared and discussed along with the draft NWPCAS itself during the third round of engagement in late September through October 2020. A preview of the NWSA Implementation Plan will be provided to Managing Members during the 9/1 briefing, and the full draft implementation plan will be presented with the NWPCAS when it is brought forward for adoption during the first quarter of 2021.

The final Implementation Plan will include important port specific context not highlighted in the NWPCAS document and present refined action plans. Specifically, at this stage, staff plan to include the following elements in the final implementation plans: port specific context on lines of business, governance structure, and emissions, a summary of GHG emission benefits relative to targets in the form of “wedge plots”, short term action plans describing the actions to be taken by 2025 to work towards the NWPAS objectives, long term “glidepaths” detailing the actions (and their phasing) that could be taken to work towards the objectives beyond 2025, a summary of benefits and costs associated with implementing the strategy, a description of how actions will be prioritized, and a summary of important metrics and the reporting framework. While work is still underway to complete many of these items for the Implementation Plans, staff feel that it is important to share the preliminary benefit/cost and wedge analysis items with Managing Members as part of this briefing.

NWSA “Wedge Analysis”

The wedge analysis seeks to answer the question: if we are successful in meeting the time specific sector draft objectives in the NWPCAS as it is presently constructed, will we reach our overarching port GHG goals? The graph below shows the progress that would be made towards our overarching emission goals by implementing the draft 2030 shore power objective, the draft zero emission CHE objective, the draft zero emission light duty fleet objective and the draft zero emission trucks objective, assuming a “business as usual scenario” where emissions are flat into the future. These are the objectives where the ports have enough control and influence to set definitive timelines for meeting the objectives. The analysis assumes that the international vessel fleet meets the IMO goal of a 50% reduction in emissions by 2050, shore power is installed at the major international container terminals by 2030 and connection rates reach 90% by 2050, and that the CHE, trucks, and light duty fleet sectors reach zero emission by 2040, 2050, and 2030 respectively.

If the objectives were to be met, total GHG emissions would be reduced by 59%, a significant achievement, but still short of the 80% target from the NWSA GHG resolution and the zero emission goal set forth by the IPCC in their 2018 report² on limiting climate change to 1.5 degrees and the NWPCAS vision. The 2050 bar in the graph below illustrates the projected emission distribution that would remain after the reductions shown in the wedge analysis are achieved, demonstrating that finding ways to reduce vessel transiting emissions and rail emissions are essential for closing the gap between the projected reductions and the targets. Because the ports do not have control over these segments and have limited influence, advocacy on the international and federal level for broad policies that would reduce emissions while not putting the Puget Sound ports at a competitive disadvantage are the best levers we have for influencing these reductions. Additional success in these areas would help the ports close the 21% shortfall between the projected 2050 emissions and the NWSA GHG Resolution Target and bring us closer to getting to zero.



² <https://www.ipcc.ch/sr15/>

NWSA Summary of Projected Benefits & Costs:

A vitally important component of the Implementation Plan is a comprehensive analysis of benefits and costs associated with implementing the NWPCAS to guide present and future decision making. In addition to the GHG benefits described in the wedge analysis above there are a number of other benefits associated with implementing the NWPCAS and achieving the objectives, as described in the table below, including diesel particulate matter emission reductions, community health, worker health, efficiency, equity, and potential cost savings in some areas.

NWSA Long-Term Benefits by Objective	Benefits (GHG, tpy)	Benefits (DPM, tpy)	Benefits (Other)
[CHE] Install infrastructure and accelerate the transition of cargo handling equipment to ZE by 2040	43,581	13	--Improved worker and community health --Increased equity --Increased efficiency and potential cost savings
[Trucks] Install infrastructure (as applicable) and accelerate the turnover of drayage trucks to ZE by 2050	177,909	14	--Improved worker and community health --Increased equity --Increased efficiency and potential cost savings
[Shore Power] Install shore power at all major cruise and container terminals by 2030	24,394	5	--Improved worker and community health --Increased equity --Increased efficiency and potential cost savings
[Light Duty Fleet] transition the light duty vehicle fleet to zero emission by 2030	592	0	Increased efficiency and potential cost savings

NWSA cost analyses are split in to two components: ranges of the long-term costs to the NWSA and PoT of achieving the zero emission objectives and the projected programmatic costs for external services over the first five years of implementation.

The estimated ranges of potential incremental costs associated with achieving the long-term objectives are displayed in the table below. Incremental costs include any costs greater than business as usual operations, i.e. continuing to buy and operate primarily diesel fueled technology. There is presently vast uncertainty about the trajectory of the costs of zero emission technologies relative to traditional alternatives both for technology advancement timelines and the future policy/regulatory environment, indicating a wide range of potential future costs. Cost ranges for this analysis are projected as a future scenario where zero emission technology becomes cost equivalent with traditional alternatives due to a combination of technology advancement, grant funding, and policy (i.e. \$0 incremental cost) on the low end and a high end represented by comparison with present day costs. The low end for infrastructure costs is assumed to be zero incremental cost recognizing the possibility that these costs may be offset by operational cost savings, policy driven cost savings/associated revenue, and/or grant and incentive funding. The sources of data for constructing the high end of the cost estimate are: The San Pedro Bay Ports Preliminary Clean Air Action Plan Cost Estimating Report³, the CARB Total Cost of Ownership Analysis for the Advanced Clean Truck Rule⁴, the 2018 San Pedro Bay Ports Drayage Truck Feasibility Assessment⁵, and the San Pedro Bay Ports 2018 CHE Feasibility Assessment⁶. For shore power, the low end of the cost range represents 50% grant funding of the NWSA’s 10-year shore power plan. The preliminary estimate of the overall cost range for port and industry costs combined is roughly \$33 million to \$2.9 billion and the range of port costs plus shared infrastructure costs is estimated at \$33 million to \$266 million. These cost estimates will be refined as we move into the early years of implementation and complete the Seattle Waterfront Clean Energy Strategic Plan and NWSA South Harbor Electrification Roadmap studies, critical planning efforts towards estimating infrastructure costs.

NWSA Long-Term Incremental Costs by Objective (i.e. cost of ZE replacement vs normal diesel)

Objective	Range of Direct Port Costs [Infrastructure]	Range of Direct Port Costs [Equipment]	Range of Shared Costs {Port/Customer}	Range of Industry Infrastructure Costs	Range of Industry Equipment Costs	Total
CHE	\$0 - \$19,060,456	\$0 - \$48,574,600	\$0 - \$133,186,197	-	\$0 - \$321,377,700	\$0 - \$522M
Trucks	Electric: \$5,250,000* Hydrogen: N/A	-	-	Electric: \$0 - \$420,000,000 Hydrogen: N/A ***	Electric: \$0 - \$960,000,000 Hydrogen: \$0 - \$2,320,000,000	\$5M - \$2.3B
Shore Power	\$27,900,000 - \$60,000,000**	-	-	-	-	\$28M - \$60M
Light Duty	\$0 - \$250,000	\$0 - \$150,000	-	-	-	\$0 - \$400k
Total	\$33M - \$84M	\$0 - \$49M	\$0 - \$133M	\$0 - \$420M	\$0 - \$2.6B	\$33M - \$2.9B

* Assumes 50 chargers on NWSA property

** Costs of installing shore power at 5 major terminals with 0% - 50% grant funding

*** Infrastructure to support a hydrogen truck fleet would likely take the form of filling stations similar to what we have today in terms of publicly-available diesel and gasoline filling stations. The number and ownership is unknown, as a regional network would need to be developed. Electric trucks would likely primarily use “behind the fence” charging infrastructure at private facilities.

³ https://kenticoportoflosangeles.org/getmedia/cf282054-d29a-495f-a042-b2c0ec33639b/CAAP_2017_Costing_Report-Final

⁴ <https://ww3.arb.ca.gov/regact/2019/act2019/30dayattc.pdf>

⁵ <https://kenticoportoflosangeles.org/getmedia/969f3b4a-e5cc-45d4-bfee-bb3071b2350b/2018-Feasibility-Assessment-for-Drayage-Trucks>

⁶ <http://cleanairactionplan.org/documents/final-cargo-handling-equipment-che-feasibility-assessment.pdf/>

In addition to the long-term costs of achieving the NWPCAS objectives, NWSA staff have also constructed a preliminary estimate of direct programmatic costs for external services for the first five years of implementation (2021 – 2025). These costs are summarized below in Table 4. These are staff estimates based on past experience and our best projections for new projects and programs.

Table 4: POT/NWSA Short Term (5 year) Estimated External Programmatic Costs

Measure	NWSA/POT Costs Over 5 years (2021 - 2025)
ZE Infrastructure Planning SH (South Harbor Electrification Roadmap)	\$300,000
ZE Infrastructure Planning NH (Seattle Waterfront Clean Energy Strategic Plan)	\$50,000
Vessel Incentive Program Research	\$15,000
Truck Scrapping Incentives (Grant funds, staff support)	\$0
Emissions Inventory (assumes ~200k of external support)	\$200,000
Pursue funding and partnerships (staff driven)	\$0
Continued enforcement of Clean Truck Program	\$50,000
Trucking community outreach and capacity building @20k/yr	\$100,000
Community Engagement North Harbor @25k/yr	\$125,000
Community Engagement South Harbor @25k/yr	\$125,000
Energy Efficiency Program @25k/yr	\$125,000
International Engagement @20k/yr	\$100,000
Federal/State Policy Engagement @15k/yr	\$75,000
Technology Advancement Program @10k/yr	\$50,000
Technical Support @ 20k/yr	\$100,000
TOTAL	\$1,415,000

F. KEY NWSA POLICY ISSUES

The Implementation Plans are a chance for the home ports and the NWSA to clearly spell out how they plan to meet the high-level goals and objectives established in the Strategy, what programs it will develop and implement, and who exactly will be involved. Based on their different operating models, lines of business, and governance structures, each port will need to work towards the objectives in different ways. The implementation plans provide this flexibility.

However, for our local stakeholders, the US ports must clearly state what programs or requirements will be coming to our gateway, and what will be expected of everyone. As staff prepare draft Implementation Plans to discuss with stakeholders during the upcoming Round 3 of engagement, Managing Members have an opportunity to provide valuable input on two key policy issues:

1. *Benefits, Costs, and Balance: Funding and executing our implementation plan while avoiding the unintended consequence of discouraging cargo away from our relatively “low carbon corridor”*

Our ports have set goals for carbon neutrality by 2050. Achieving this will require active and sustained investments. As tables 2 and 3 above show for NWSA, while achieving zero-emissions will deliver myriad and substantial benefits – economic, environmental, and social -- significant investment will be required by multiple parties. Given the necessarily long-term nature of the objectives, we cannot project either benefits or costs with a high degree of precision. The public health benefits associated with reducing diesel emissions, for example, are notoriously difficult to quantify. Incremental costs of zero emission technology will depend on many factors, including what happens in the realms of technology advancement, global energy prices, and local, state, federal, and international regulations and policies – all of which are highly uncertain.

Still, significant investments will be necessary – by the ports as well as by our industry partners, from ocean carriers to marine terminal operators to those who own and operate the trucks that serve our gateway. Throughout the development of the strategy, POT/NWSA staff have been wrestling with a number of related questions. Where will needed funding come from? How will funding responsibilities be shared across parties? Can we sustain and build on our successful record of securing grants from multiple sources to defray the costs to ports and industry partners – opportunities that may well increase in the coming years as concerns about climate disruption continue to rise, and as state, federal, and international governments impose stronger emission reduction requirements and/or provide increased funding and assistance for climate solutions? How do we avoid undermining our goal of sustaining and increasing the commercial competitiveness of our gateway, for example by adding costs that have the unintended consequence of discouraging cargo away from our gateway and toward higher-carbon options in the Southeast and East Coast?

2. *Voluntary vs. Mandatory: Deciding if voluntary action will be sufficient or if mandatory requirements will be necessary to meet target dates*

Whether achieving a goal should be mandatory or voluntary is an issue that applies across many of the sector goals (e.g. ocean-going vessels, cargo-handling equipment, trucks). The need to be clear from the outset about the port's position on how to meet an objective was a clear lesson learned through the original NWSA Clean Truck Program, where some stakeholders interpreted the deadline as voluntary, others mandatory. Whether an objective will be treated as ultimately mandatory, or as entirely voluntary, will influence staff's implementation approach. Below is an NWSA example of alternative approaches to achieving the draft, long-term objective for the trucking sector: "*Accelerate the turnover of the truck fleet to zero emission trucks by 2050*". Staff have developed potential glidepaths to meeting the 2050 zero emissions truck objective. While staff and the trucking community work towards achieving the 2050 zero emission objective, there are still considerable emission reduction efforts that could be ongoing in the 2020-50 timeframe, whether the objective is mandatory or voluntary. One option for how to implement the 2050 goal would be to have an entirely voluntary program to encourage and incentivize adoption of zero emission trucks without setting hard requirements. Other possible pathways for implementing via requirements are summarized below.

Ongoing and continuous efforts before the 2050 objective would include (for all potential scenarios):

- Trucking community engagement, support and capacity building.
- Continued enforcement of 2007/DPF standard via the Clean Truck Program
- Collaboration with regional and state stakeholders to align funding to assist with the transition and advocate for regional infrastructure investments to build out the charging/fueling network.
- Work with policy makers at the state level to create a level playing field between port and state programs.
- Support regional development of zero-emission charging and fueling infrastructure through grants

The NWSA Managing Members have committed to maintaining the current standards (2007 engine or equivalent) through 2025 to create some stability for the hundreds of independent business owners who service the gateway. Between 2020 and 2025, work will be focused on accelerating the adoption of newer, cleaner diesel trucks, and preparing for a zero-emission truck future.

2020-2025 activities for all potential scenarios would include:

- Technology advancement & pilots/demos
- Incentivized adoption of zero emission trucks via grants
- Incentivized modernization of the diesel trucking fleet via grants
- Implementation of Clean Truck Program at domestic terminals
- Charging infrastructure needs assessed through Electrification Roadmap and Seattle Waterfront Clean Energy Strategic Plan

<p>Scenario 1A: Implement mandatory requirements via Tariff and lease agreements to require all trucks entering NWSA terminals to be zero emission trucks before 2050. All new trucks entering the gateway from 2040 must be zero-emissions, with all existing diesel trucks “grandfathered in” from 2040-2050.</p>	
<p>2025-2050</p>	<p>Technology advancement & pilots/demos.</p> <p>Incentivized adoption of zero emission trucks via grants.</p> <p>Incentivized modernization of the diesel trucking fleet via grants.</p> <p>Update MTO leases to reflect new requirements</p>
<p>2040</p>	<p>Begin requirement for all new trucks registering to enter NWSA terminals to be zero emissions. All existing diesel trucks are “grandfathered in”</p>
<p>2050</p>	<p>Requirement for all trucks entering NWSA terminals to be zero emission. Turn those that are non-compliant.</p>

<p>Scenario 1B: Implement mandatory requirements via Tariff and lease agreements to require all trucks entering NWSA terminals to be zero emission trucks before 2050. Regular re-assessments to consider requirements for new trucks entering the gateway to meet zero-emission standards. The decision on whether to implement new requirements would be based on cost and benefit metrics.</p>	
<p>2025-2050</p>	<p>Technology advancement & pilots/demos.</p> <p>Incentivized adoption of zero emission trucks via grants.</p> <p>Incentivized modernization of the diesel trucking fleet via grants.</p> <p>Update MTO leases to reflect new requirements</p>
<p>2025, 2030, 2035, 2040</p>	<p>Consider a requirement for all trucks new to serving the gateway be zero emission, existing diesel trucks would be “grandfathered in”. The requirement would be implemented five years after the decision. The basis for the decision should be total cost of ownership of zero emission trucks, equity for the diverse range of operators, and projected emission benefits.</p> <p>Any implementation of decision would be made following extensive outreach.</p>
<p>2050</p>	<p>Requirement for all trucks entering NWSA terminals to be zero emission. Turn those that are non-compliant.</p>

<p>Scenario 2A: Implement mandatory requirements via Tariff and lease agreements to require all trucks entering NWSA terminals to be zero emission trucks before 2050.</p> <p>Implement interim requirement in 2030 for all new diesel trucks registering to enter the gateway to be model year 2020 or newer. Existing diesel trucks would be “grandfathered in”.</p>	
2025-2050	<p>Technology advancement & pilots/demos.</p> <p>Incentivized adoption of zero emission trucks via grants.</p> <p>Incentivized modernization of the diesel trucking fleet via grants.</p> <p>Update MTO leases to reflect new requirements.</p>
2030	<p>Interim requirement for all new diesel trucks registering to enter the gateway to be model year 2020 or better by 2030 (i.e. 10 years old).</p> <p>Existing trucks in the system would be “grandfathered in” and able to continue operating.</p>
2040	<p>All new trucks registering to enter NWSA terminals will be zero emissions. All existing diesel trucks are “grandfathered in”</p>
2050	<p>Requirement for all trucks entering NWSA terminals to be zero emission. Turn those that are non-compliant.</p>

<p><u>Scenario 2B:</u> Implement mandatory requirements via Tariff and lease agreements to require all trucks entering NWSA terminals to be zero emission trucks before 2050. Regular re-assessments to consider requirements for new trucks entering the gateway to meet zero-emission and/or more modern diesel standards. The decision on whether to implement new requirements would be based on cost and benefit metrics.</p>	
<p>2025-2050</p>	<p>Technology advancement & pilots/demos.</p> <p>Incentivized adoption of zero emission trucks via grants.</p> <p>Incentivized modernization of the diesel trucking fleet via grants.</p> <p>Update MTO leases to reflect new requirements</p>
<p>2025</p>	<p>Consider a requirement for all new diesel trucks registering to enter the gateway to be model year 2020 or better by 2030 (i.e. 10 years old). Existing trucks in the system would be “grandfathered in” and able to continue operating.</p> <p>The basis for the decision should be total cost of ownership of newer diesel trucks, equity for the diverse range of operators, current diesel fleet age, rediness of zero emission technology (risk of stranded assets) and emission benefits.</p> <p>Any implementation of decision would be made following extensive outreach.</p>
<p>2030, 2035, 2040</p>	<p>Consider a requirement for all trucks new to serving the gateway be zero emission, existing diesel trucks would be “grandfathered in”. The basis for the decision should be total cost of ownership of zero emission trucks, equity for the diverse range of operators, and emission benefits.</p> <p>Any implementation of decision would be made following extensive outreach.</p>
<p>2050</p>	<p>Requirement for all trucks entering NWSA terminals to be zero emission. Turn those that are non-compliant.</p>

G. NWSA CLEAN TRUCK IMPLEMENTATION UPDATE

Program status

The Clean Truck deadline, requiring all drayage trucks to have a 2007 engine or newer, or install an equivalent emissions control device, has been implemented at all NWSA international container terminals since December 31, 2018. The implementation of the program has decreased Diesel Particulate Matter (DPM) emissions from trucks serving the international terminals by 96%, reducing the pollutant load on our neighboring communities by 33.4 tons of DPM per year. Clean trucks not only reduce DPM – there are a number of co-benefits, such as other air toxics that are also reduced simultaneously by newer truck engines and emission controls. For example, NOx emissions are considerably lower from newer engines, with the Clean Truck fleet now emitting 78% less NOx than our original fleet – a reduction of 567 tons a year.

RFID tags are required by all trucks entering the terminals, to indicate whether they are a compliant truck or not, which are read at the terminal gates. Further RFID infrastructure has been installed by the NWSA since the Clean Truck deadline at strategic points surrounding the terminals to read RFID tags in trucks as they enter the gateway and provide more accurate wait and turn times on the NWSA website. This improved transparency allows supply chain partners to see real-time conditions and make decisions based on the current wait times at a specific terminal. Most MTOs have also utilized the RFID infrastructure installed by the NWSA and emodal software to implement an appointment system, allowing truckers a pick-up/drop-off window, and allowing the MTOs to manage the number of trucks on the terminal at a time, and keep the queue moving, reducing idling emissions.

The overall size of the truck fleet has not been affected by the implementation of the deadline, as there are still 3700-4000 unique trucks entering the international terminals every month.

RFID infrastructure is not currently installed at the domestic terminals. There is currently no enforcement of the Clean Truck Program at domestic terminals, staff monitor compliance of this fleet. Staff have tracked compliance rates for clean trucks at domestic terminals since 2018 - compliance rates have ranged from 78% to 87%. At the May 2019 Managing Members meeting, staff recommended focusing efforts on replacement of non-compliant (i.e. pre-2007 engine) trucks serving domestic terminals, accelerating fleet turnover to newer trucks by incorporating domestic truck owners in future trucker support programs (i.e. scrap bonuses).. There are now approximately 75 non-compliant (pre-2007 engine) trucks that enter the domestic terminals. Annual DPM emissions are currently about 0.6 tons higher than if all trucks serving the domestic terminals were compliant. The domestic scrap program (update below) should help take some of these 75 non-compliant trucks off the roads. Staff will continue to analyze compliance data on a monthly basis and send quarterly updates. If compliance rates fall below 75%, then staff will consult with Executive and Managing Members to reevaluate the staff recommendation.

Clean Diesel grant: Domestic Scrap Bonus Program 2020

Following an agreement with the WA Department of Ecology, the NWSA is authorized to use the remaining Clean Diesel grant funds from the Clean Truck Fund in 2019 until the end of 2020. Scrapping bonuses are now available to truck owners entering NWSA domestic terminals, who were previously unable to access previous truck support programs which were previously limited to international container drivers. Scrapping bonuses are available to truck owners who scrap their old, pre-2007 truck, and purchase a new truck – a \$6,000 bonus if they purchase a 2007 or newer truck, or a \$10,000 bonus if they purchase an even cleaner 2012 or newer engine truck. 18 bonuses are available to be distributed by December 31, 2020. As of August 2020, there are sixteen approved applications in total, where drivers then have to scrap their old truck and purchase a new, compliant truck. Of those sixteen, five \$10,000 scrap bonuses have been already been issued to drivers who have completed the process. All funds are expected to be distributed by the end of the year.

H. NWSA SHORE POWER PROGRAM IMPLEMENTATION UPDATE

The deployment of shore power infrastructure at NWSA-licensed terminals is a key component of our work towards meeting the goals set out in the Northwest Ports Clean Air Strategy (NWPCAS) and the NWSA Greenhouse Gas (GHG) Resolution. Connecting ships to shore power allows them to turn off their auxiliary engines while at berth, eliminating associated emissions of both air pollutants and GHGs. This reduces climate impacts, reduces the air pollutant burden on nearby communities, and improves worker health and safety, particularly for crane operators who work near the ship stacks. Staff has developed a 10-year plan for deploying shore power infrastructure across the NWSA's major international container terminals by 2030.

In NWSA's 10-year plan for deploying shore power across the gateway's major international container terminals, the order of installations is as follows: T-5, Husky, T-18, WUT, and finally PCT. T-5 and Husky Terminal are first on this list due to their status as the strategic "big ship" terminals in each harbor.

Terminal 5

To date, installation is underway at T-5 with funding from the NWSA's CIP and a \$4.4 million appropriation in the state budget. It is important to note that this appropriation requires that the NWSA apply for and be denied VW Settlement funding for the T-5 shore power project. The shore power system is integrated with the other electrical upgrades that are ongoing as part of the Terminal Rehabilitation project.

Husky Terminal

The Husky Terminal project is currently in the design Phase and staff have just finished procurement of a design consultant. The project is being funded from a \$1 million grant from the Federal Diesel Emission Reduction Act (DERA), a \$1 million grant from the TransAlta Coal Transition Grant Program, and \$1.1 million from the state VW settlement (re-appropriated unused funds from the Clean Truck loan program as described in previous Managing Member presentations). The total external funding for the Husky project is \$3.1 million of the estimated \$5.4 million project cost, greater than our internal target of 50% grant funding.

Terminal 18

The next project in the plan is T-18, which is just entering the fundraising Phase. As NWSA's busiest terminal, T-18 is the next priority after the strategic terminals, given the potential emission reductions. NWSA was offered a \$2 million VW grant from the Department of Ecology in July and has a pending grant application for the Washington Clean Energy Fund Electrification of Transportation grant program for up to \$2 million. Given that the current cost estimate is about \$27 million, staff continue to evaluate options to pursue further external funding and plan to work with Ecology on ways to create flexibility in how the \$2 million is expended.

I. NEXT STEPS

- September – October: Produce draft NWPCAS and implementation plans; conduct engagement Round 3
- November – December: Refine draft NWPCAS
- January 2021: First reading of NWPCAS and Implementation Plans
- February 2021: Second reading of NWPCAS and Implementation Plans

J. PREVIOUS BRIEFINGS

- July 2018: Adoption of ILA between the NWSA, PoS, PoT, and VFPA
- August 2019: NWPCAS Update Briefing



Item No: 6A
Date of Meeting: September 1, 2020

Northwest Ports Clean Air Strategy: 2020 Update

Presenters:
Steve Nicholas, Port of Tacoma/NWSA
Alex Adams, Port of Seattle

Purpose of Briefing

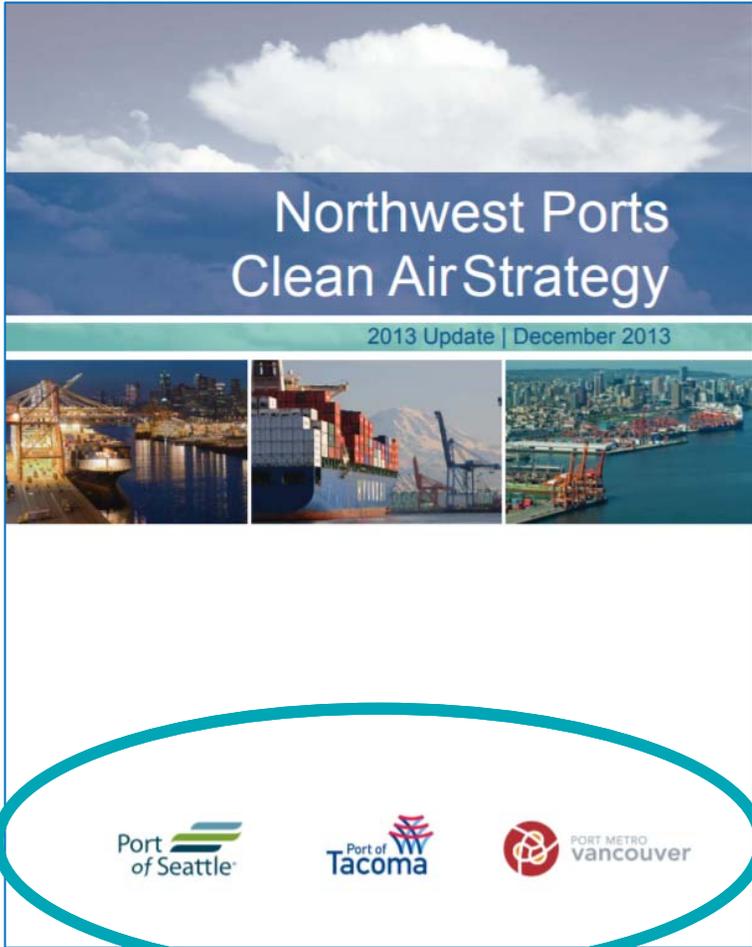
Status of NWPCAS 2020 Update

Summary of Round 2 Engagement

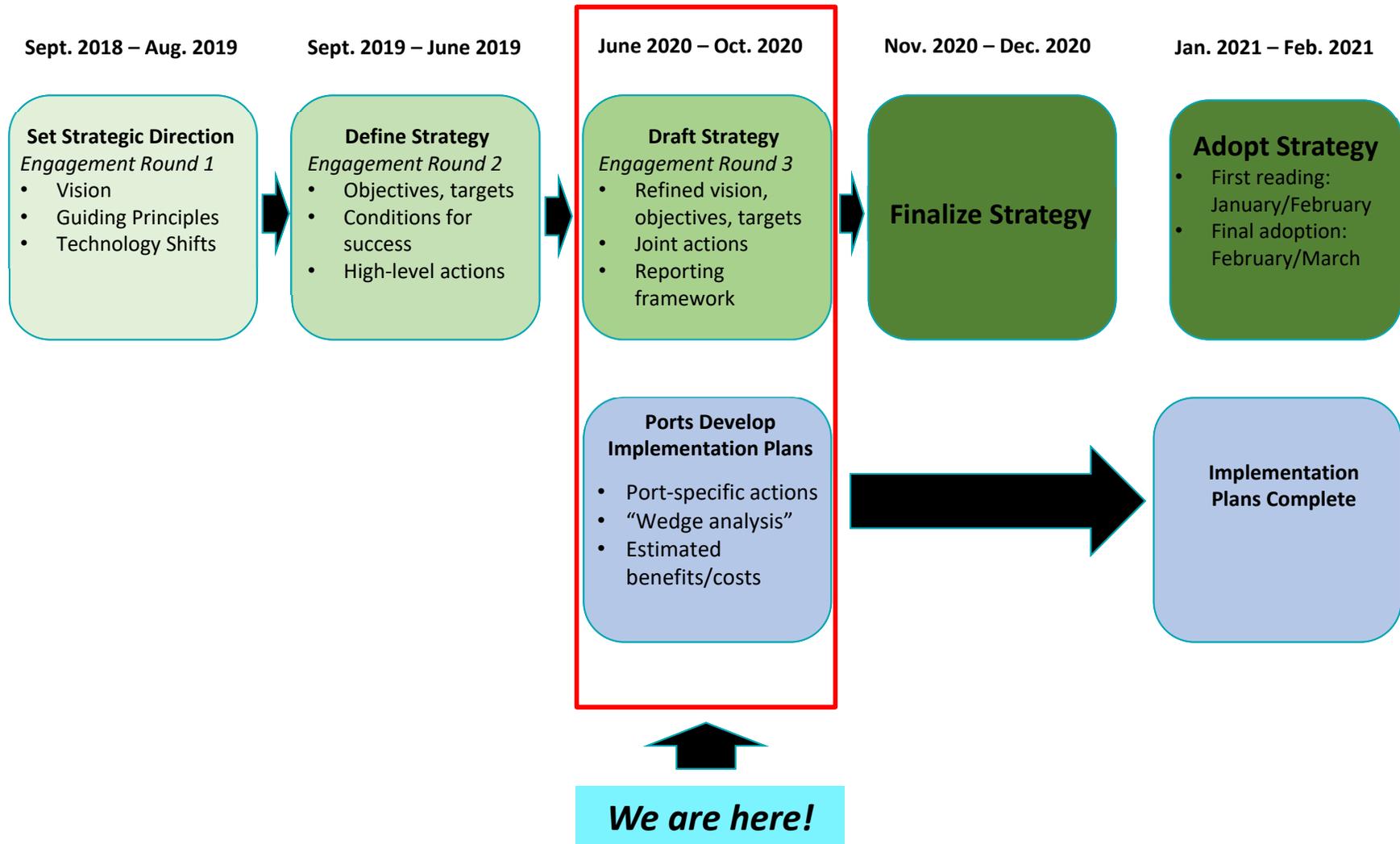
Update on Implementation Plans

Input on Key Policy Issues

Next Steps



NWPCAS 2020 Update: Process & Timeline

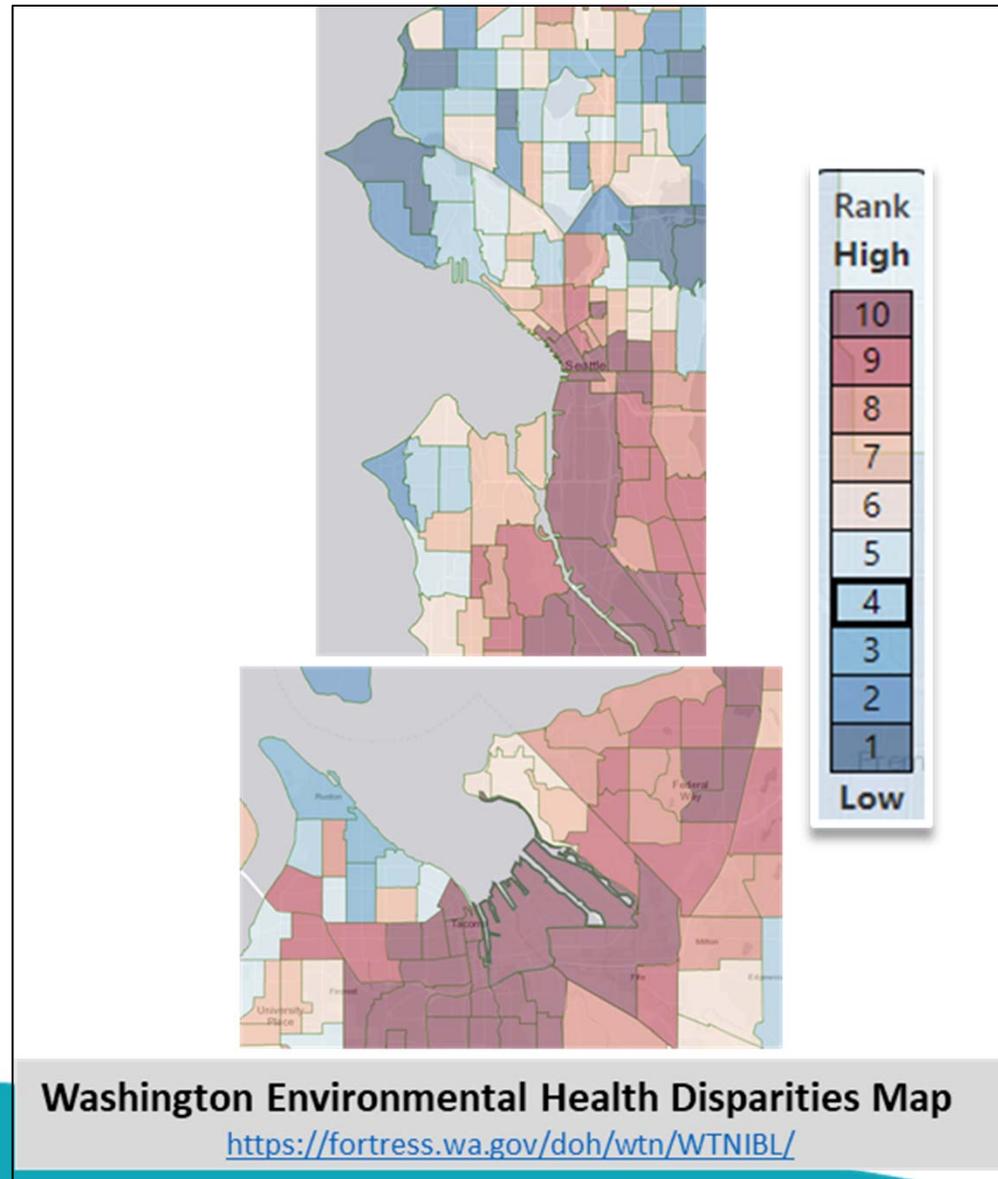
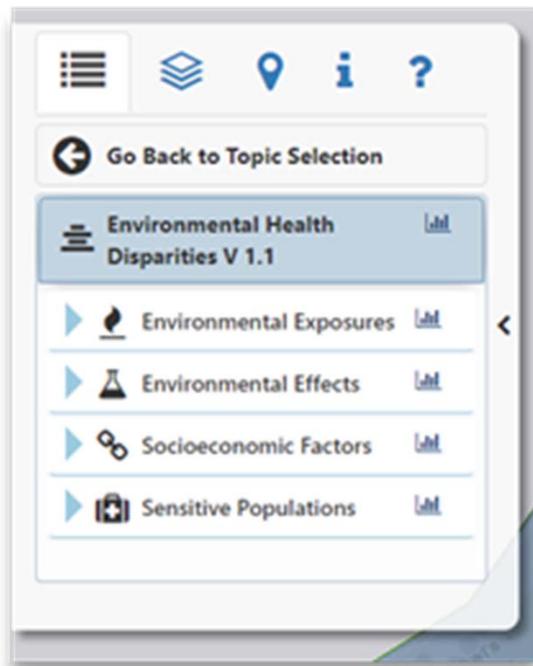


NWPCAS 2020 Update: Why?

- Further reduce local air pollution, especially disproportionate impacts
- Implement GHG resolution(s) and “do our part” on climate
- Align with current technology and policy trends
- Increase collaboration, engagement, and transparency
- Position ports for new funding, sustained commercial success



Addressing Environmental Health Disparities



Washington Environmental Health Disparities Map

<https://fortress.wa.gov/doh/wtn/WTNIBL/>

DRAFT Vision

Former Proposed

“Phase out emissions of seaport-related activities ***as early as possible this century***, supporting cleaner air for local communities and fulfilling our responsibility to help limit global temperature rise to 1.5°C.”

Current Proposed

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



DRAFT Joint Objectives by Sector

Sector	2020 - 2030	By 2030	By 2050
OGVs	Continuously reduce local air pollution and GHGs through increased vessel, vehicle, and equipment efficiencies and other measures	Shore power installed at all major cruise and container berths	Zero-emission vessels, vehicles, and equipment adopted
CHE		Sufficient infrastructure in place to enable adoption of zero-emission technologies	
Trucks			
Rail			
Harbor Vessels			
Administration	Continuously increase efficiencies and reduce emissions from port fleets and facilities	Ports transition light-duty administration fleets to electricity or renewable fuels	Zero-emission buildings, lighting, and fleets adopted



Round 2 Engagement: Who was invited

Industry Partners

- ✓ American Waterways Operators
- ✓ Burlington Northern Santa Fe Railroad
- ✓ Cruise Lines International Association
- ✓ Harbor Trucking Association
- ✓ Husky Terminal and Stevedoring
- ✓ International Longshore & Warehouse Union
- ✓ Pacific Merchant Shipping Association
- ✓ Pierce County Terminal
- ✓ Portland Container
- ✓ SSA Marine
- ✓ Washington Trucking Association
- ✓ Washington United Terminal

Community/NGO Partners

- ✓ American Lung Association
- ✓ Citizens for a Healthy Bay
- ✓ Climate Solutions
- ✓ Duwamish River Cleanup Coalition & residents of Duwamish Valley
- ✓ Environmental Defense Fund
- ✓ Front and Centered
- ✓ Urban League of Tacoma

Government Partners

- ✓ City of Seattle
- ✓ City of Tacoma
- ✓ Muckleshoot Tribe
- ✓ Puget Sound Clean Air Agency
- ✓ Puyallup Tribe
- ✓ Seattle City Light
- ✓ Suquamish Tribe
- ✓ Tacoma Power
- ✓ US Environmental Protection Agency
- ✓ Washington Department of Ecology
- ✓ Washington Maritime Blue



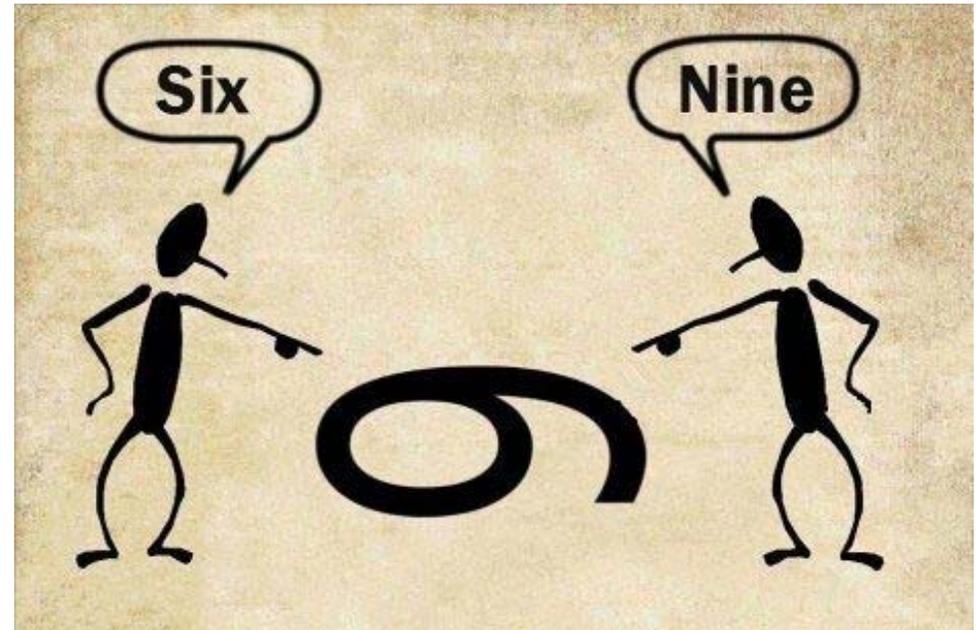
Round 2 Engagement: What we heard

Areas of Agreement

- Overall goal: zero emissions
- Conditions for success
- Address inequitable impacts
- Collaborate on implementation
- Focus on efficiency

Differing Perspectives

- Target dates: too slow/too fast
- Cost concerns
- Avoid stranded assets
- Zero - “Near-Zero” trade-offs



Port of Seattle Implementation Plan



Port of Seattle's (POS) Implementation Plan

The NWPCAS sets high-level joint commitments and objectives shared by the 4 ports

Ports are developing port-specific implementation plans to address unique regional and port approaches toward the joint Strategy objectives

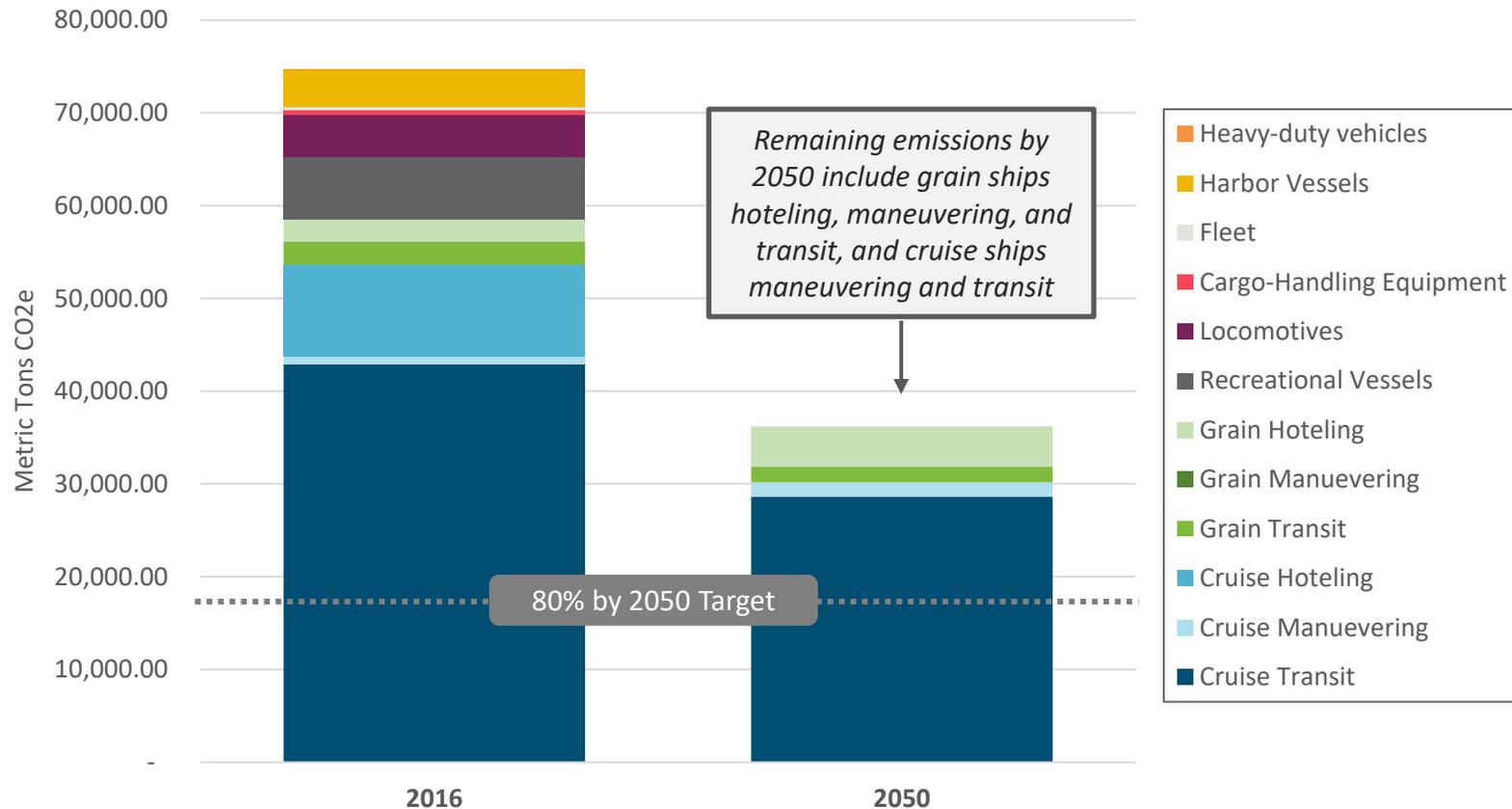
The NWPCAS will include a brief high-level summary of each port's implementation actions but ports may also develop more detailed plans

POS's Implementation Plan falls within a comprehensive Maritime Climate and Air Action Plan (MCAAP), which presents actions for both Maritime Activities and Port Administration and a focus on equity and environmental justice

POS's MCAAP will be released in Q4 for review and presented for adoption with the 2020 NWPCAS in Q1 2021

POS Implementation Plan: CO2 Reduction from Actions

Port of Seattle Airshed GHG Emission Sources, 2016 (actual) vs. 2050 (projected)



Remaining emissions in 2050 are 83% from cruise ships in transit & maneuvering and 17% from grain ships in transit & maneuvering



POS Implementation Plan: Draft 5-Yr Direct Cost Range Estimates

POS NWPCAS Project/Program	5-Yr Low Estimate	5-Yr High Estimate	NWPCAS Sector	Notes
Shore Power at P66	\$14M	\$17M	OGV	\$3M in Grant Funds Awarded
Fleet Replacement	\$8.5M	\$11M	Admin	
HVAC Upgrades (P66, World Trade Cent.)	\$6.4M	\$6.4M	Admin	World Trade Cent. Funds Approved
Building solar panels	\$1.2M	\$1.2M	Admin	
Lighting upgrades	\$250K	\$500K	Admin	
Clean Energy Plan Early Implementation/Pilots	\$100K	\$500K	Cross-cutting	
EV Charging Infrastructure	\$200K	\$450K	Admin	
Energy Management Software	\$100K	\$400K	Admin	
Shore power at HIM E-dock for tugs	\$385K	\$385K	Harbor Craft	Funds Approved
Building Tune-Ups	\$150K	\$300K	Admin	
Complete Clean Energy Plan	\$250K	\$250K	Cross-cutting	Funds Approved
Equity and Environmental Justice, Community Engagement	\$50K	\$250K	Cross-cutting	
Cruise Emission Inventory and Env. Plan	\$35K	\$50K	OGV	
Tenant Engagement, Green Leases	\$25K	\$50K	Cross-cutting	
Estimated Total Direct Cost Range	\$32M	\$39M		

Port of Seattle's implementation costs are estimated over 5 years (2020-2025); estimates do not include staff time, shared costs between the Port and customers, or industry-only costs, due to future uncertainties

NWSA Implementation Plan



NWSA Implementation Plan: Overview

- **Detailed Descriptions of Actions**
 - Short-Term (by 2025)
 - Middle-Term (by 2030)
 - Longer-Term (2030+)
- **Estimated Benefits & Costs**
- **Roles & Responsibilities**
- **Metrics & Reporting Framework**



Key Policy Issues for NWSA

Benefits/Costs

A key challenge will continue to be finding ways to fund and implement the strategy while avoiding the unintended consequence of discouraging cargo away from our relatively “low-carbon gateway”

Voluntary ↔ Mandatory

We’ll need to decide if voluntary measures will suffice to meet target dates, or if requirements will be necessary or appropriate



“Voluntary ↔ Mandatory” Example: Trucks

- **Scenario 1: Mandatory Approach**

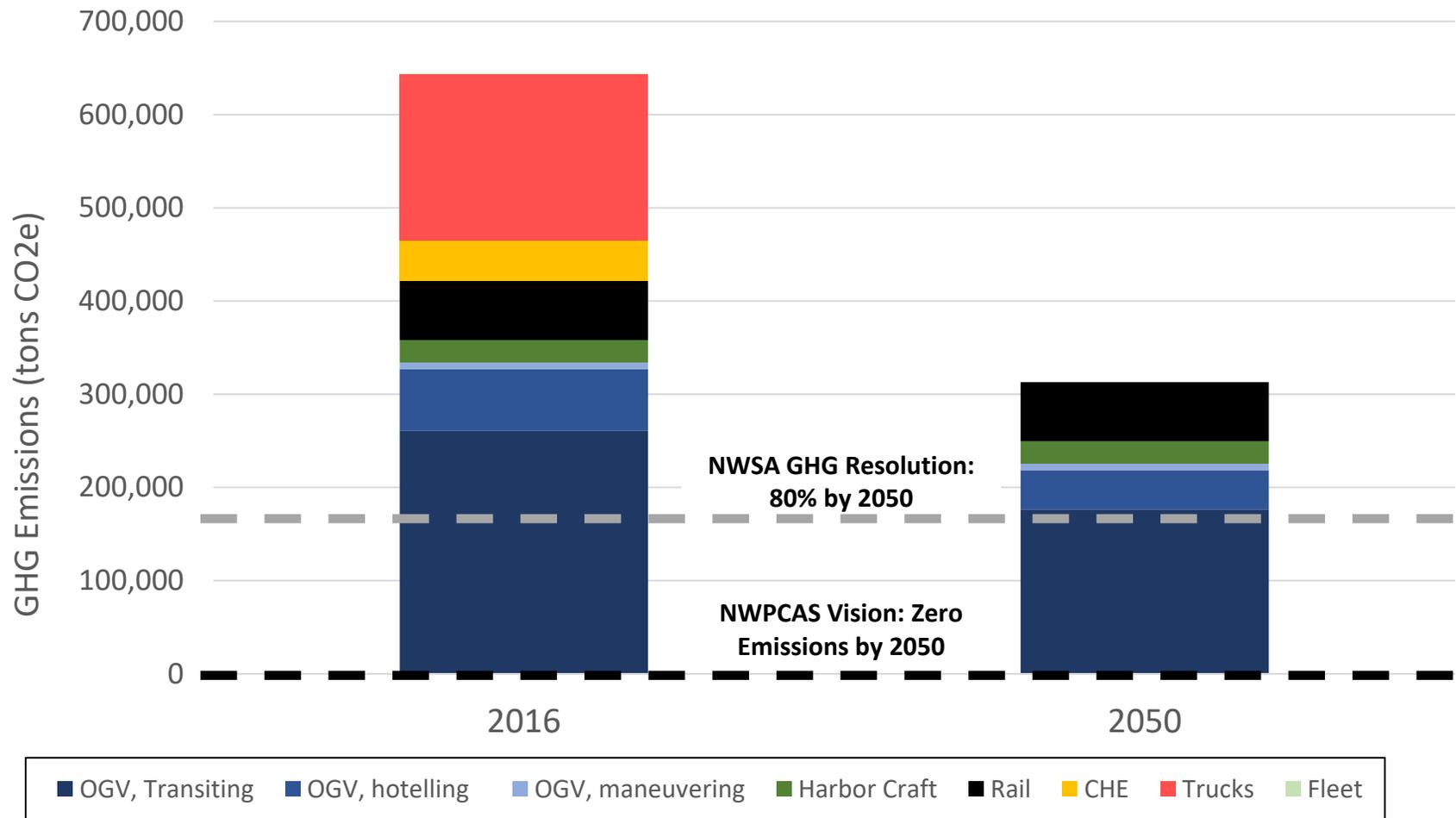
- Require that all new trucks serving the gateway are zero-emission by 2040; existing trucks are “grandfathered”
- Require that all trucks serving the gateway are zero-emission by 2050

- **Scenario 2: Adaptive Management approach**

- Do not impose mandatory requirements from the start, but revisit the idea every five years – in 2030, 2035, and 2040
- At each five-year juncture, base the decision on current information (e.g. availability and “uptake” of zero-emission truck technology, total cost of ownership of zero-emission trucks vs. existing, availability of fueling/charging infrastructure, etc.)



NWSA Implementation Plan: “Wedge Analysis”



Remaining emissions in 2050: 72% OGVs; 20% rail; 8% harbor craft.

Example: Ocean Vessels

Sample Actions	Estimated Benefits	Estimated Costs
Install shore power at all major container berths by 2030	<p>Projecting 90% usage rate by 2050:</p> <ul style="list-style-type: none"> • 24,394 tons of GHG emission reductions/year • 5 tons of GHG emission reductions/year <p>Improved worker/community health, equity</p> <p>Improved efficiency and potential cost savings</p>	\$28M-\$60M (50% grant funding – 0% grant funding)
Explore methods of reducing vessel emissions while in transit (e.g. encouraging slow-steaming)	<p>Opportunity to reduce emissions in the short term (i.e. 1-10 years)</p> <p>Potential reductions depend on outcome of program implemented</p>	<p>Study: ~\$15K</p> <p>Program costs if any are feasible: Unknown</p>
Aggressively support international efforts to phase out vessel emissions	<p>Opportunity to reduce emissions while maintaining a level playing field</p> <p>Major lever for addressing 2050 emission reduction shortfall; emission reductions depend on policy outcomes</p>	<p>International engagement program cost estimate: ~\$20K/year</p>



Example: Drayage Trucks

Sample Actions	Estimated Benefits	Estimated Incremental Costs
<ul style="list-style-type: none"> Continue enforcing 2007 or newer Transition the fleet serving domestic terminals to 2007 or newer Explore increased use of renewable diesel/lower-carbon fuels 	~1 ton of DPM emission reductions per year	Grant funded “scraps” only: negligible cost to port RFID installation at domestics: \$776K
Facilitate and support installation of infrastructure to support zero emission trucks on and off port property	Enable the transition to zero emissions	Port + Industry: Electric: \$5 - \$420M Hydrogen: N/A
Transition the gateway wide truck fleet to zero emissions (e.g. trucker outreach and assistance, grants, demonstration projects, etc.)	178,000 tons of GHG emission reductions/year 14 tons of DPM emission reductions/year Improved worker and community health, equity, and efficiency	Port + Industry: Electric: \$0 –\$960M Hydrogen: \$0 - \$2.3B

Example: Cargo Handling Equipment

Sample Actions	Estimated Benefits	Estimated Costs
<p>Continue Tier 4 requirements for new CHE in new leases</p> <p>Continue to pursue grants to help tenants replace old equipment</p>	Getting to 100% Tier 4: 13 tons of DPM emission reductions /year	Ports: Negligible
Facilitate installation of infrastructure to support zero-emission CHE	Enable the transition to zero emissions	Ports: \$0 - \$19M Shared: \$0 - \$133M
Support transition of the gateway-wide CHE fleet to zero-emission (e.g., grants, tenant assistance, demonstration projects, etc.)	<p>43,581 tons of GHG emission reductions/year</p> <p>14 tons DPM emission reductions/year</p> <p>Improved worker and community health, equity, and efficiency</p>	Ports: \$0 - \$49M Industry: \$0 - \$321M



Next Steps

Now – October	<ul style="list-style-type: none">• Draft the strategy• Organize final round of engagement• Ports draft detailed implementation plans
November – December	<ul style="list-style-type: none">• Produce final draft of Strategy• Meet with Environment Committee• Ports refine detailed implementation plans
January – February	<ul style="list-style-type: none">• Bring Strategy to Managing Members for adoption• Finalize implementation plans

