

The Northwest Ports Clean Air Strategy

Application for the 2021 AAPA Lighthouse Environmental Improvement Award

Category	Environmental Improvement: Comprehensive Environmental Management
Port Authorities	Port of Seattle, Port of Tacoma, The Northwest Seaport Alliance (NWSA), Vancouver Fraser Port Authority
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Project Summary

The Northwest Ports Clean Air Strategy (NWPCAS) is a voluntary collaboration among four port authorities to reduce seaport-related air pollutant and greenhouse gas (GHG) emissions throughout the Georgia Basin-Puget Sound airshed. This unique collaboration between the Port of Seattle, Port of Tacoma, Northwest Seaport Alliance, and Vancouver Fraser Port Authority (“the Northwest Ports”) started with the [creation of the NWPCAS in 2007](#), followed by a substantive [update in 2013](#). Since its inception, the NWPCAS has guided Northwest Ports in their efforts to work collaboratively with community, industry, non-profit, and government partners in the United States and Canada on reducing emissions.

Building on over a decade of successful collaboration, the Northwest Ports released a renewed [2020 NWPCAS](#) in April 2021 with a new, shared vision: “to 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.” Under this bold vision, the 2020 NWPCAS recognizes the urgent need to act to reduce emissions that contribute to air quality and climate change. It demonstrates that ports must do their part to help limit global warming to 1.5 degrees Celsius (°C) this

century and recognizes that continually reducing air pollution is important for the health of local communities. At the same time, the 2020 NWPCAS must carefully balance this urgency to reduce emissions with the Northwest Ports' mandates to ensure the continuity and competitiveness of the ports. Adding to the challenge is that the vast majority of seaport-related emissions are outside the direct control of port authorities. Through commitment to a shared vision, objectives, actions, and progress reporting in the 2020 NWPCAS, the Northwest Ports are taking an important step to catalyze collaboration across ports, industry, government, and community to put the ports on the path to phase out seaport-related emissions in the Georgia Basin-Puget Sound airshed.

This application for an American Association of Port Authorities (AAPA) Lighthouse Environmental Improvement Award in the Comprehensive Environmental Management category is on behalf of the entire fourteen-year history of the ports' collaboration on the NWPCAS effort. Through partnership, the Northwest Ports have made significant progress to reduce emissions while remaining competitive; and now, under the 2020 NWPCAS, seek to phase out emissions entirely by 2050, helping facilitate the maritime industry's transition to zero-emission operations in the region.

Goals and Objectives

The 2007 NWPCAS set three primary objectives, listed below, and sector-specific targets for 2010 and 2015: (1) Reduce maritime and port-related air quality impacts on human health, the environment, and the economy; (2) reduce contribution to climate change through co-benefits associated with reducing air quality impacts; and (3) help the Georgia Basin-Puget Sound airshed continue to meet air quality standards and objectives. At the time, the Northwest Ports each had plans for continued investment and development that needed to also balance and advance the ports'

commitment to improving the environment, public health, and regional economy through reducing their impacts.

The 2013 Update to the NWPCAS updated sector-specific objectives for 2015 and 2020 and set the following targets for reducing the emissions intensity (emissions per ton of cargo) of port operations relative to 2005:

- Reduce diesel particulate matter (DPM) emissions per ton of cargo by 75% by 2015 and 80% by 2020, to decrease immediate and long-term health effects on adjacent communities.
- Reduce GHG emissions per ton of cargo by 10% by 2015 and 15% by 2020, to limit contributions to climate change and reduce associated environmental, health, and economic impacts.

The 2020 NWPCAS extends beyond the goals of the previous strategies, and even beyond the existing GHG emission reduction targets of each Northwest Port. It sets a bold, new vision to advance the long-standing collaborative effort while aligning with the latest climate science and continuing to acknowledge the impact of air emissions on local communities: *“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.”*

As part of the 2020 NWPCAS, the Northwest Ports identified objectives to transition to zero-emission operations in each sector. The shared objectives follow three themes: (1) Implement programs that promote equipment efficiency, phase out old high-emitting equipment, and support lower-emission interim fuels; (2) facilitate collaboration to identify and address key infrastructure constraints by 2030; and, (3) facilitate collaboration to advance commercialization of zero-emissions equipment and enable adoption before 2050.

Discussion

Background

The NWPCAS was first developed in 2007 as a collaborative effort among Port of Seattle, Port of Tacoma, and Vancouver Fraser Port Authority in British Columbia to reduce port contributions to air quality and climate change. The Northwest Seaport Alliance (NWSA), a marine cargo partnership between the ports of Seattle and Tacoma, became a participating port in the collaborative after its formation in 2015. The collaboration has set environmental action above competition and has promoted working collectively to reduce air emissions from six sectors of port activity – oceangoing vessels, cargo-handling equipment, trucks, harbor vessels, rail, and, port administration and tenant facilities — through primarily voluntary actions. At the time, it was the first of its kind within the port community and has since achieved significant results over the last fourteen years of collaborative action. In 2018, the Northwest Ports began the process to develop a renewed strategy to set objectives and actions beyond 2020 that further recognize the urgency of addressing port-related contributions to climate change and air quality.

Objectives and Methodology

Objectives: The NWPCAS is a unique and groundbreaking collaboration. When originally formed, the main objective for the partnership among the four commercially competing Ports was to create common ground to advance clean air and climate action. The strategy follows a flexible, results-based approach, allowing the ports to work toward common goals in a way that makes the most sense for each port and their respective stakeholders. The Ports are all located within the Georgia Basin-Puget Sound Airshed, so activities that produce air pollutant emissions at any port can impact air quality throughout the airshed. Having a shared strategy for the Northwest Ports creates a common platform for leadership in clean air and climate action, ensuring each port addresses these issues, and that lower

costs or competitive advantage are not realized in one port due to a lack of environmental action. Under the NWPCAS, the four ports take voluntary action ahead of regulation; to reduce air quality related emissions and to do their part to address the global climate crisis. This approach creates a “level playing field” to enable the Ports to cooperate on environmental leadership while being economically competitive. Working together also allows the Northwest Ports to pool ideas and resources to save time and money, reduce duplication of effort, and accomplish more through collaboration than by acting alone. For example, the four Ports can send a stronger market signal and create a larger market to spur development and deployment of clean fuels and technologies for port applications in the Northwest, and together form a more impactful, common voice when advocating for policy change at the international level.

With the 2020 NWPCAS renewal, the Northwest Ports also sought to amplify the focus on climate action and the need for ports to do their part to limit global temperature rise to 1.5° Celsius by establishing a zero-emission by 2050 vision and objectives in alignment with the latest climate science. . With a vision to ultimately eliminate air emissions, including diesel particulate matter, at the tailpipe by 2050 and guiding principles of Community Health and Social Equity, the 2020 NWPCAS also advances the long-standing strategy objective to reduce port impacts on human health and the environment and supports ports’ efforts to prioritize action in communities that have been most impacted by port operations. The Northwest Ports engaged community representatives alongside industry, government, and others in the development of the 2020 NWPCAS and will continue engagement through the implementation process. The 2020 NWPCAS engagement process is discussed in more detail in the next section (Methodology).

Methodology:

The four Ports developed the 2020 NWPCAS with support from Pinna Consulting, Inc starting in 2018. Development of the 2020 NWPCAS took two years and involved internal engagement with staff and leadership within each port and external engagement with community members, environmental and health advocacy organizations, non-profits, industry representatives, and Tribal, federal, state, provincial and local government agencies. As the four Ports span two different countries and experience different state, provincial, and local policy and community dynamics, the U.S. Ports and Vancouver Fraser Port Authority conducted engagement in separate forums. External engagement for the four ports however, followed a consistent three-part process. The first round established the vision, guiding principles, and gathered initial ideas for the renewed NWPCAS. The second round discussed sector-specific objectives, key challenges, and how to further define the role of port authorities and others in the port network to advance the NWPCAS vision. The final round of engagement sought feedback on the full draft of the Strategy and previewed port-specific implementation actions. The Northwest Ports announced the final 2020 NWPCAS in April 2021.

Due to the unique nature of each port's governance, operations and business, the Northwest Ports are each developing port-specific plans to implement the 2020 NWPCAS vision and objectives. Port-specific implementation plans enable ports to identify, prioritize, and focus resources on actions in a way that is strategic and relevant to their varying business and policy contexts, and the regions where they operate while still maintaining the long-standing collaborative effort and working toward overarching shared objectives. The ports are also not limited in how fast implementation actions are taken and are encouraged to achieve commitments as quickly as possible. Port-specific implementation plans will be finalized in 2021.

The Northwest Ports will take an adaptive management approach to both monitoring and reviewing the 2020 NWPCAS. Technology, policy, and funding opportunities are expected to change and

advance over the next decade and this adaptive approach will allow the participating Ports to incorporate changes into implementation in the near-term as well as consider implications of the changing landscape into working toward the 2050 objectives and vision over time. The Ports will review collaborative actions, monitor key metrics, and identify areas that are on track or areas that are falling behind on an annual basis. The ports will review the vision, objectives, metrics, and all key aspects of the NWPCAS a minimum of every 5 years. Additionally, each Port will review progress on their own implementation efforts and make updates as needed. Successful transition to zero-emission operations will require continued collaboration with government, utilities, industry, non-profit, community entities, and others.

How the Project Fulfils the Award Criteria

Environmental benefits: Although maritime transport is an efficient means of transporting goods and people compared to other modes, the port network (including the shipping industry, ports, terminals, and port supply chains) relies heavily on fossil fuels. Recent data suggest that GHG emissions from international shipping are increasing, not decreasing. According to the International Maritime Organization, GHG emissions from shipping alone increased 10 percent between 2012 and 2018 and are projected to increase by another 50 percent by 2050 if no additional actions are taken.¹ At a regional scale, even as the Northwest Ports have implemented emission reduction strategies, total GHG emissions across all activity sectors at the four ports as of the latest emissions inventories in 2015/2016 has increased by 5 percent above the 2005 baseline. Transitioning port and shipping activities toward low and zero-emissions options is a critical part of the urgent action needed to prevent the most devastating effects of warming beyond 1.5°C and will require efforts at a global scale.

¹ Saul, J. (2020). "Shipping's share of global carbon emissions increases." Reuters. Retrieved 12 May 2021 from <https://www.reuters.com/article/us-shipping-environment-imo/shippings-share-of-global-carbon-emissions-increases-idUSKCN2502AY>.

The NWPCAS collaboration also offers environmental benefits of reduced emissions of criteria air pollutants, with a specific emphasis on DPM. As of the most recent emissions inventories in 2015/2016, total DPM emissions for the four ports decreased 75 percent from the 2005 baseline. Recent research suggests that the health impacts of air pollution—and the associated economic costs in terms of illness, hospitalization, lost worker productivity, and premature deaths—are much higher than previously thought.² DPM is specifically known to cause cancer. Other air pollutants can also lead to adverse health outcomes and environmental impacts.³ Air quality in the Georgia Basin-Puget Sound region is generally good, and several organizations (private companies, government agencies, and ports) in the region have worked hard to maintain and improve local air quality. However, higher concentrations of air pollutants can occur near sources of emissions. In some circumstances, lower-income communities and communities of color are located closer to pollution sources, amplifying the importance of improving air quality to advance social equity and environmental justice.

Reducing contributions to this urgent and complex challenge - in particular by reducing and ultimately eliminating diesel pollution from port-related sources in communities that experience environmental health disparities - is a central goal of the 2020 NWPCAS and the associated implementation plans of each port. The Northwest Ports are committed to better understanding and addressing those disparities and, through implementation of this strategy, advancing environmental justice and social equity.

Community involvement: The Northwest Ports developed the 2020 NWPCAS through extensive engagement with government partners, industry representatives, non-profit organizations, and community members. The ports led a three-part engagement process, that consisted of in-person and

² The Cost of Air Pollution, Organization for Economic Co-operation and Development (OECD), accessed November 2020

³ Diesel Exhaust and Cancer, American Cancer Society, accessed November 2020

virtual workshops, meetings and discussion that allowed stakeholders to review strategy discussion documents and the draft strategy itself. These opportunities facilitated gathering of stakeholder input as well as identifying priorities and discussing the feasibility of actions. Engagement led to fundamental changes to the vision and objectives and helped the ports shape the renewed Strategy.

Through the 2020 NWPCAS, the Ports committed to continuing to engage communities to build support and capacity to advance the vision and objectives, identify opportunities for partnership, and prioritize implementation actions to mitigate adverse impacts. Ongoing engagement is important to help port authorities understand the impact of port operations on communities, better plan and manage operations and development projects, and identify and prioritize areas for improvement. The Northwest Ports also recognize the importance of building stronger relationships with communities as the 2020 NWPCAS is implemented.

Independent involvement and effort by the port: The NWPCAS is a fully voluntary collaboration among four port authorities. The Ports may advocate for regulatory changes that advance the NWPCAS vision and objectives or offer incentives that encourage industry change. The Ports may also take actions to change port tariffs, lease agreements or policies as a means to achieve the NWPCAS commitments. However, the participating Ports and port-related industries are not legally required achieve the NWPCAS. In the past, the Northwest Ports have successfully advocated for regulatory changes to help achieve NWPCAS emission reduction goals—one such example is the implementation of the North America Emissions Control Area (ECA).

Creativity of the solution or programs: When the NWPCAS was first developed in 2007, it was the first international clean air strategy of its kind in the Port community and the multi-port, cross-border, airshed-wide approach continues to stand out. The Northwest Ports believe the 2020 NWPCAS positions them squarely in the vanguard of North American ports working to reduce pollution and advance

sustainability. Furthermore, the vision of the NWPCAS to phase out emissions by 2050 extends beyond the climate action targets of the International Maritime Organization and many nations. In addition, when the pandemic struck right in the middle of the 2020 NWPCAS renewal process, the Northwest Ports pivoted quickly to virtual, COVID-safe ways of engaging and collaborating with government, industry, nonprofit, and community partners.

To achieve the 2020 NWPCAS vision and joint objectives, and leverage the benefits of collaboration, the Northwest Ports commit to working together on a set of shared near-term implementation actions within the next five years:

- (1) Conduct technology and investment studies to track technology readiness and understand costs and investments needed to transition to zero emissions
- (2) Conduct studies to assess and plan for infrastructure needs
- (3) Advocate for public and private investment in the transition to zero emissions
- (4) Engage industry to identify leaders willing to work with ports to advance the strategy
- (5) Facilitate engagement between government and industry on decarbonizing ports and shipping
- (6) Facilitate demonstration and pilot projects of low- and zero-emissions technologies
- (7) Undertake or support air quality studies and prepare comprehensive emissions inventories to improve understanding of port-related emissions and their impact on local air quality
- (8) Engage near-port communities and non-profit sector to advance the 2020 Strategy

Results: Over the last fourteen years, the collaboration of the four Northwest Ports under the NWPCAS has achieved significant results. Started in late 2007 and updated in 2013, the 2013 NWPCAS set targets to reduce DPM and GHG emissions per ton of cargo by 2020, by 80 percent and 15 percent, respectively,

relative to 2005 levels. The reductions can be attributed to changes in international, national, and provincial regulations, industry action, and port policies and programs to accelerate the turnover of older equipment and use of cleaner fuels. Here are a few of the significant actions taken over the past decade:

- NWSA's Clean Truck Program has significantly decreased diesel emissions from trucks serving international container terminals in Seattle and Tacoma. Starting in 2019, all trucks entering these terminals must have a 2007 engine or newer, which have emission controls that reduce DPM emissions by 90 percent. The program is expected to reduce 33 tons of DPM annually.
- Port of Seattle was the first port in the world to offer shore power at two cruise berths. Each cruise ship that plugs in at the Smith Cove Cruise Terminal at Terminal 91 avoids as much CO₂ as driving a car from Seattle to New York 30 times. In 2019, 89% of cruise ships equipped with shore power plugged in while at berth, avoiding 2,900 tonnes of CO₂. The Port plans to install shore power at the Bell Street Cruise Terminal at Pier 66 by 2023.
- The Northwest Ports advocated for the designation of the North American Emissions Control Area (ECA). Since 2015, the ECA has required ships to use 0.1% sulfur content in diesel fuel or have equivalent emission controls, reducing air pollutant emissions in the region.
- Key initiatives that the Vancouver Fraser Port Authority is advancing to reach its air emission reduction targets include incentivizing cleaner and quieter vessels through its EcoAction program, promoting the phase-out of older, high-emitting, diesel-powered equipment, and providing shore power connections at cruise and container terminals for ships to connect to clean, hydroelectric energy while docked.

Progress towards sector objectives from the 2013 NWPCAS continues to be published annually in the NWPCAS Implementation Reports through 2020.

Cost Effectiveness: As mentioned previously, working together within the NWPCAS framework allows the Northwest Ports to pool ideas and resources to increase impact and save time and money. The relationships built among port staff and leadership created a forum to share with and learn from others, reducing duplication of efforts. The flexible, results-based approach also allows each port to make decisions that make the most business sense for them while working toward the common goals.

With the new 2020 NWPCAS vision, a Port and industry transformation to zero emissions will require unprecedented investment from a combination of public and private sources. In particular, funding will be important to reduce the risks of early adoption. Innovative financing mechanisms, expanded grant funding, public-private partnerships, and many other tools will need to be explored. Ports will facilitate government and industry discussions to identify preferred mechanisms that ensure ongoing port competitiveness while working to achieve the vision. That said, transitioning to zero-emission operations proactively and strategically can reduce costs in the long term and avoid costs of inaction. The shared vision within the NWPCAS levels the playing field, allowing Ports and industry to invest in clean air and climate action and spur development and deployment of clean fuels and technologies without impacting their competitiveness with other Northwest Ports.

Transferability: The Strategy framework creates a model for how competing ports can work together toward a common goal. The Northwest Ports are committed to sharing their experience in developing and implementing the NWPCAS with other ports throughout the U.S., Canada and beyond, through organizations such as the AAPA, the International Association of Ports and Harbors (IAPH), the U.S. Environmental Protection Agency (EPA) Ports Initiative, the new C40 Cities Green Ports Program, and others. The ports cannot succeed in their vision alone and will continue to lead and convene partners across the port network to overcome the substantial technological, policy, investment and other barriers to phasing out emissions.