COMMISSION
AGENDA MEMORANDUM **Item No.** 10c

BRIEFING ITEM **Date of Meeting** October 26, 2021

DATE: September 17, 2021

TO: Stephen P. Metruck, Executive Director

FROM: Arlyn Purcell, Director, Aviation Environment & Sustainability
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SUBJECT: **Carbon Emissions and Accelerating Century Agenda Objectives**

EXECUTIVE SUMMARY

This briefing will present the Port of Seattle's (Port) annual greenhouse gas (GHG) emissions inventory, carbon reduction initiatives, and potential impacts of revising Port GHG goals to be more aggressive. Staff will present data showing that port-wide Scope 1&2 GHG emissions have decreased approximately 20 percent through 2020 largely due to carbon-reduction strategies. We anticipate achieving a 50 percent reduction at end of 2021 due to RNG at the airport. Alternatively, for Aviation Scope 3 emissions are generally on the rise, but due to the COVID-19 pandemic decreased by 35 percent from the average of the previous five years. Maritime Scope 3 emissions decreased 20 percent in 2016 from 2005 levels due to new international and national regulations, increased use of shore power by cruise vessels, improved vessel and equipment efficiency, replacement of older equipment, and use of cleaner maritime fuels. Both Divisions are implementing GHG reduction plans with some initiatives currently underway.

Given the urgency of the climate crisis and the Port's desire to transform operations to eliminate GHG emissions, the Executive Director is proposing to accelerate our GHG reduction objectives. Changing the Scope 1&2 reduction goal from carbon neutral or negative by 2050 to net zero or better by 2040 could increase costs for both Aviation and Maritime divisions due to the compressed implementation schedule. Neither Division anticipates substantial impacts from increasing the Scope 3 goal from 80 percent to carbon neutral by 2050 since the key strategies to reduce those emissions would largely stay the same.

BACKGROUND

The Port conducts GHG emissions inventories on an annual basis for both SEA and the Maritime and Economic Development Divisions (Maritime/EDD). Port inventories follow the GHG Protocol Corporate Accounting and Reporting Standard to estimate:

(1) Scope 1&2 emissions from sources directly or indirectly controlled by the Port such as electricity use, fuels for Port-owned vehicles, and natural gas for heating Port facilities; and,
(2) Scope 3 emissions from sources under Port influence such as aircraft, ships, and passengers traveling to and from SEA.

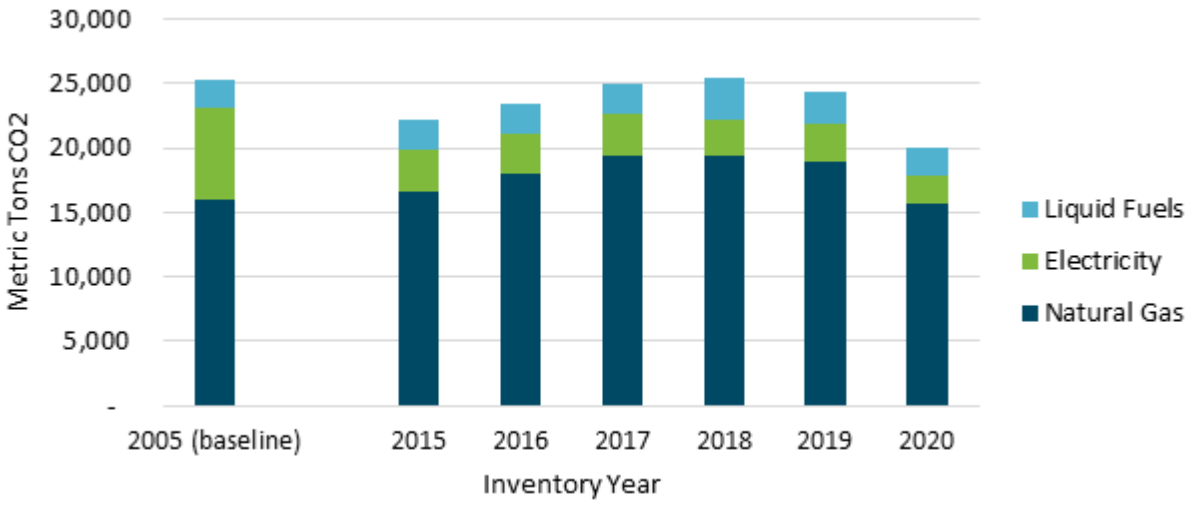
Most of Scope 1&2 emissions are from heating and cooling Port facilities and fueling Port fleet vehicles. These emissions are quantified annually, as are Scope 3 emissions from aviation sources. Scope 3 Maritime/EDD emissions from cruise, grain and commercial fishing operations are quantified every five years through the Puget Sound Maritime Air Emissions Inventory. The Port's Scope 3 Maritime/EDD GHG emission totals do not include emissions from marine cargo terminals controlled by the Northwest Seaport Alliance (NWSA), which are inventoried separately.

GHG EMISSION TRENDS, 2005-2020

As shown in Figure 1 below, Port-wide Scope 1&2 GHG emissions have decreased approximately 20 percent as of 2020 compared to the 2005 baseline due to a combination of factors. These include using renewable natural gas (RNG) Q4 2020 in SEA boilers and bus fleet, joining Puget Sound Energy's Green Direct electricity program, and using renewable diesel in aviation and maritime fleet vehicles and equipment.

Changes to operations in response to the COVID-19 pandemic contributed to decline in emissions from maritime fleet vehicles and natural gas use at maritime properties. However, natural gas use increased at SEA during COVID-19 as more heating was required as fewer passengers occupied the Terminal.

Figure 1. Port-wide Scope 1&2 emissions



Scope 3 emissions for Aviation decreased by 35 percent in 2020 since 2015 due to the COVID-19 pandemic that dramatically reduced air travel. This also reduced emissions from related ground transportation and tenant operations. However, Scope 3 emissions steadily increased prior to 2020 due to increasing demand for air travel and associated services.

While Maritime Scope 3 emissions aren't quantified annually, emissions in 2020 declined significantly as well since COVID-19 led to the cancellation of the 2020 cruise season. Cruise calls account for approximately 70 percent of the Port's maritime Scope 3 emissions. Prior to COVID-19 and as of the last Maritime scope 3 inventory for the year 2016, Maritime-related Scope 3 emissions declined 20 percent since 2005. This decline was largely due to new international and national regulations, such as the North American Emissions Control Area, increased use of shore power by cruise vessels, improved vessel and equipment efficiency, and successful port policies and programs that encouraged replacement of older equipment and use of cleaner maritime fuels.

CURRENT INITIATIVES

Both the Aviation and Maritime/EDD divisions are implementing GHG reduction plans with many initiatives and some currently underway.

Aviation Division

Key Aviation Division reduction efforts include:

(1) Signing a 10-year contract in Q2 2020 to supply renewable natural gas (RNG) to fuel both the boilers and Rental Car Facility (RCF) bus fleet at SEA
(2) Using renewable diesel in diesel fleet vehicles
(3) Procurement of Green Direct electricity for our Puget Sound Energy electricity accounts

Also, staff are partnering with both internal and external experts including the National Renewable Energy Laboratory (NREL) to evaluate alternatives for updating the central mechanical plant with low-carbon fuels and advanced technologies. Similarly, Aviation's Facilities and Infrastructure team continues to implement energy saving projects throughout the Terminal including lighting and HVAC upgrades.

In addition, the Aviation Division continues to develop partnerships and initiatives to reduce Scope 3 emissions such as advocating for policies (e.g., Clean Fuels Standard) in Washington, reducing aircraft APU run-times, and conducting economic and technical research on infrastructure needs, feedstock availability, and production facility costs for sustainable aviation fuel (SAF).

Lastly, the Aviation Division is developing several initiatives to reduce carbon emissions from passenger vehicles driving to and from SEA. These include working with NREL to evaluate access fees, evaluating policy incentives to encourage GT service providers (e.g., taxis, transportation network companies or TNCs and airporters) to transition to electric vehicles and

use renewable fuels, working with King County Metro on digital ticketing for transit, and installing EV charging stations across SEA facilities.

Maritime and Economic Development Division Initiatives
Key Maritime/EDD GHG reduction efforts include implementing the objectives within the 2020 Northwest Ports Clean Air Strategy (NWPCAS) and the strategies in the Port's implementation plan, *Charting the Course to Zero: Port of Seattle's Maritime Climate and Air Action Plan* (MCAAP).

The MCAAP identifies emission reduction actions by 2025 and by 2030 for each source of maritime-related emissions to achieve a 50 percent reduction in GHG emissions by 2030 and remain on course to phase out seaport-related emissions by 2050. Key commitments include:

(1) Continuing to engage and form partnerships with community, industry, and government to reduce emissions
(2) Transitioning 100% of Port-owned light-duty vehicles to electric models or use renewable fuels
(3) Eliminating fossil natural gas use in Port-owned buildings
(4) Installing shore power at all cruise ship berths
(5) Reaching 100% of homeport cruise ship calls connecting to shore power
(6) Addressing key constraints to deploy infrastructure for zero-emissions equipment, locomotives, vehicles, vessels, and building through the completion and early implementation of the Seattle Waterfront Clean Energy Strategy (SWCES).

UPDATING GHG REDUCTION OBJECTIVES

The Port's current and proposed Century Agenda greenhouse gas reduction objectives are the following:

	Current	Proposed
Scope 1&2 Port Directly and Indirectly Controlled Emissions	• 15% below 2005 levels by 2020 • 50% below 2005 levels by 2030 • Carbon neutral by 2050 OR Carbon negative by 2050	• 15% below 2005 levels by 2020 • 50% below 2005 levels by 2030 • Net-zero or better by 2040
Scope 3 Port Influenced Emissions	• 50% below 2007 by 2030 • 80% below 2007 by 2050	• 50% below 2007 by 2030 • Carbon neutral or better by 2050

To recognize the urgency of action needed to address climate change, Port staff recommend the Port Commission support updating the greenhouse gas reduction objectives to the following:

(1) Accelerate the Port's Scope 1&2 emission reduction efforts by 10 years to be net-zero or better by 2040 instead of carbon neutral by 2050.

(2) Increase the magnitude of the Port's Scope 3 objective to be carbon neutral by 2050 instead of an 80 percent reduction below 2007 by 2050.

The term *net-zero* is proposed to bring the Port in line with international carbon accounting definitions, and in keeping with the Port's emphasis on minimizing the use of offsets to eliminate in-sector emissions. Net-zero means that any greenhouse gases released into the atmosphere from an organization's activities are balanced by an equivalent amount being removed.[1] Carbon neutral is slightly different, whereby emissions can be offset with a reduction that includes buying carbon offsets to make up the difference. Given the Port's limited ability to directly reduce these emissions, we recommend the additional flexibility carbon neutral provides for the Scope 3 objective.

For Aviation, the potential budget impacts for moving the Scope 1&2 year from 2050 to 2040 and changing to net zero are expected to be relatively small. This is because the main strategies discussed above require significant investments well before 2040 to align scheduled asset management and replacement with the transition to low-carbon technologies and fuels. For example, fleet vehicles are typically replaced within 12 to 15 years, and Aviation's Maintenance Department will replace many if not most fleet vehicles with EVs by 2040. Similarly, the Airport is currently conducting the Utility Master Plan to meet future utility demands including a review of its central mechanical plant (CMP). Recommended updates to the CMP will include low-carbon strategies that can reasonably expected to be implemented prior to 2040.

There may be a 5-year interval between 2040 and 2045 when some small portion of the Port's electricity supply would not yet be net zero carbon. The Clean Energy Transformation Act (CETA) requires all electrical utilities in Washington to be net zero carbon (100% clean) by 2045. For that five-year period, the Port could purchase Renewable Energy Credits (RECs) for this small portion of electricity as a means of achieving the goal rather than building on-site renewable sources.

The Aviation team is already moving in this direction with many projects underway. Although there will be some cost increases due to compressing the implementation schedule, it is unlikely that moving the goal up by ten years will change the budget dramatically. However, the Port will need to commit financial and other resources to ensure the organization remains on track to meet its goals.

For Maritime and EDD, given that the Port's Maritime/EDD emissions have increased in recent years, achieving an accelerated GHG reduction target of net-zero Scope 1&2 GHG emissions by 2040 will require several conditions and significant additional effort.

[1] There is no global shared definition of net zero, but SEA (along with airports worldwide) uses the distinction that carbon neutral allows for offsets, whereas net zero does not. The World Economic Forum defines the terms differently; our draft text includes the WEF definition. In addition, SEA adopts and follow what ACI World has stated that matches the WEF definition (https://aci.aero/wp-content/uploads/2021/06/LTCG-FAQ.pdf).

(1) Accelerate the elimination of fossil natural gas heating ventilation and cooling (HVAC) systems in port-managed properties and at all port properties.
(2) Purchase renewable natural gas for HVAC and Domestic Hot Water systems within their useful life or prohibitively expensive to electrify.
(3) Purchase renewable electricity from Seattle City Light and/or invest in additional onsite renewable energy production ahead of the CETA deadline.
(4) Accelerate implementation of the Sustainable Fleet Plan to deploy EV charging across waterfront properties and purchase electric vehicles.

The Maritime team expects that changing the GHG targets will result in significant new urgency to prioritize capital projects with carbon reduction opportunities—which in today's market, without a uniform price on carbon, come at an incremental price above the conventional approach. Accelerating decarbonization will put pressure on the capital budget immediately and the Port must not forgo any opportunities to eliminate emissions as they arise in the annual budget. Under the Sustainable Evaluation Framework, this may mean prioritizing approaches and technologies that eliminate emissions over options that may carry a lower cost but also lower emissions reductions. In addition to capital expenditures, achieving the goals 10 years earlier will likely require additional staff support or increased use of outside services.

Scope 3: Potential impacts of accelerating from 80% to carbon neutral or better by 2050

For Aviation, the potential impacts of shifting from 80 percent to carbon neutral by 2050 for Scope 3 for Aviation do not reduce or increase the challenges. Scope 3 emissions are outside the Port's direct control, and it is difficult to predict future technologies and behavior for the main sources of emissions: aircraft and on-road vehicles. Still, the Port can continue to reduce emissions by:

(1) Advocating for state and national policies that strengthen tailpipe standards for carbon emissions, support initiatives to require all vehicles sold in the U.S. to be EV and install charging infrastructure.
(2) Increasing environmental performance requirements for Transportation Network Companies (TNCs) and taxis through service agreements and expand those requirements to all ground transportation providers at SEA.
(3) Continuing to lead in developing Sustainable Aviation Fuel (SAF) although feedstocks for this fuel may be limited, particularly as those feedstocks compete with other on-road renewable fuels (e.g., renewable diesel).

Electric- and/or hydrogen-powered aircraft are being developed on a global scale and might replace some regional aircraft travel by 2050. It is difficult at this time to predict, much less plan for, the airport of the 2050s. Urban air mobility concepts such as electric air taxis could complicate emissions forecasts. In addition, electric and autonomous surface vehicles could change vehicle ownership and use substantially. The Port will continue to track industry trends and significant developments, and signal when it makes sense to bring in resources to identify future scenarios, analyze potential impacts on resources, and plan for changes in capital and operating budgets.

For Maritime, the impacts of changing the Scope 3 goal are not significant since the Commission has already adopted the 2020 NWPCAS vision to phase out seaport-related emissions by 2050. Accelerating the Port's Scope 3 goal would help align the Century Agenda GHG targets with the NWPCAS vision. Much of the Port's ability to reach this target rests with the private sector and the Port's ability to continue to form partnerships with other ports, governments, and industry both nationally and globally. Specifically, the Port can influence maritime-related Scope 3 emissions by:

(1) Completing the installation of shore power at Pier 66 and working with the cruise lines to reach 100 percent of homeport cruise ships equipped with shore power by 2030 and a 100 percent connection rate.
(2) Completing and implementing the Seattle Waterfront Clean Energy Strategy, which will create a roadmap to decarbonize maritime operations in Seattle.
(3) Engaging at the national and international levels to strengthen standards to support sustainable maritime fuels and the transition to zero-emission technologies.
(4) Implementing green leasing policies that incorporate sustainability best practices into landside leases.

ATTACHMENTS TO THIS BRIEFING

(1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

June 9, 2020 – The Commission approved adoption of Resolution No. 3775 (item 6i.) establishing the Century Agenda Policy Directive.

October 24, 2017 – The Commission approved a motion (item 6b.) implementing recommendations of the Energy and Sustainability Committee and setting strategic greenhouse gas reduction priorities to add Scope 2 GHG reduction goals to the Century Agenda.

April 11, 2017 – The Commission approved a motion (item 6e.) to amend the Century Agenda greenhouse gas reduction goals to adopt more stringent goals of 15% below 2005 levels by 2020, 50% below 2005 levels by 2030, and carbon neutral or carbon negative emissions by 2050 for Scope 1; and 50% below 2007 levels by 2030 and 80% below 2007 levels by 2050 for Scope 3.