

COMMISSION AGENDA

Item No: 4B

Meeting: 09/21/17

DATE: September 6, 2017

TO: Port Commission

FROM: John Wolfe, Chief Executive Officer

Sponsor: Jason Jordan, Director, Environmental and Planning Services

Project Manager: Sara Cederberg, Environmental Senior Project Manager

SUBJECT: Second Reading and Final Adoption: Greenhouse Gas Policy Resolution
2017-04-PT

A. ACTION REQUESTED

To adopt by resolution an update to the Port of Tacoma's (POT) greenhouse gas (GHG) reduction goals and define the scope and boundary of which emissions sources are included.

Staff recommends that the Port of Tacoma adopt GHG emission reduction targets as follows:

By 2030:

- 50% below 2005 levels (scope 1, 2, & 3 emissions)

By 2050:

- Carbon Neutral (scope 1 & 2 emissions)
- 80% below 2005 levels (scope 3 emissions)

To accomplish these goals, the Port will advance initiatives specific to the operations it controls and work to influence other stakeholders whose emissions fall beyond the Port's authority. The Port is committed to partnering with tenants, cargo owners, shipping lines, manufacturers, warehousing and other key stakeholders to drive demand for cost-effective and innovative greenhouse gas reduction technologies and solutions to meet our collective goals.

Staff will develop an implementation plan over the next six months.

Port of Tacoma acknowledges carbon emission offsets may be a useful short-term tool, but will not be included in the ultimate evaluation of the target. See *Appendix A: Defining Emission Language* for the definition of scopes 1, 2, 3, boundary and methodology.

B. BACKGROUND

First Reading

At the first reading on August 17, 2017, six members of the public provided comment. Comments were generally supportive of the Resolution and urged staff to develop a plan for implementing the goals, a comment also made by Commissioners. Several commenters questioned how adopting such goals relates to Puget Sound Energy's LNG facility development.

Commissioners asked staff to consider adopting more aggressive targets and striving for carbon neutrality by 2050. Commissioners also questioned the capacity of the local grid to support electrification, how this Resolution relates to the City of Tacoma goals, and how much environmental benefit would result from such adoption.

Staff anticipates the overwhelming majority of emissions to be Scope 3 emissions and the emissions that have been tracked through the Puget Sound Maritime Emissions Inventory since 2005. Therefore, staff expects many of the programs and strategies in place through the Northwest Ports Clean Air Strategy and other Port initiatives, like installing shorepower at Piers 3/4, will be supportive of these new goals.

Regardless, staff will complete a comprehensive inventory and develop an implementation plan over the next six months. The 2016 Puget Sound Maritime Emissions Inventory data will also be complete by the end of 2017. The implementation plan will account for efficiencies to be gained through current technologies, state of emerging technologies, and identify partners to close gaps where there are no clear solutions today.

This Resolution along with the results of the inventories will be the basis by which staff develops the update to the Northwest Ports Clean Air Strategy over the course of 2018.

Regarding more aggressive goals, given the current state of technology and IMO projections for shipping emissions, POT has limited control over these emissions and would need to rely heavily on external entities to provide commercially available solutions for vessel fuel, zero emission cargo handling equipment, locomotives and heavy-duty trucks. Staff recommends tracking emissions toward this goal, but not formally adopting this target.

Previous conversations with Tacoma Power indicate there is excess electrical capacity in the Tideflats. A more complete review of capacity and projections for growth will be developed over the next year.

The City of Tacoma's 2008 Climate Action Plan set an overall reduction goal of 80% from 1990 levels by year 2050. The 1990 baseline was commonly adopted when many climate actions plans were developed since it was the Kyoto Protocol's baseline. More recent baseline years have been adopted in several jurisdictions, particularly since the Paris Agreement includes the US nationally determined contribution of 26-28% reduction below 2005 levels. The City may revise its baseline, since there is greater confidence in more recent data and more data available. Staff will continue to work with the City and participate in the Central Puget Sound Climate Preparedness Partnership to coordinate efforts.

The 2011 Puget Sound Maritime Emissions Inventory estimates an 18% reduction in CO₂e between 2005 and 2011. In 2005, approximately 485,000 tons of CO₂e of emissions in the Puget Sound airshed were associated with POT – roughly equivalent to the emissions from 100,000 passenger vehicles driven for one year.

The Port previously completed a non-project SEPA review on the Northwest Ports Clean Air Strategy. Staff have created an addendum to the Determination of Nonsignificance for a Non-Project Action, Northwest Ports Clean Air Strategy and the associated Environmental Checklist to reflect the goals in this Resolution.

Updating POT targets will align our work with industry best practices, set challenging but attainable emissions reduction targets, guide our strategic direction and business decisions for capital improvement projects, and establish a framework by which we may reward and partner with customers.

Puget Sound Maritime Emissions Inventory & Northwest Ports Clean Air Strategy

In 2005, 2011, and 2016 the Ports of Seattle and Tacoma contributed to the Puget Sound Maritime Air Emissions Inventory which modeled activity-based emissions for maritime-related sources in the greater Puget Sound region air shed.

The inventories include greenhouse gases (CO₂e) as a contaminant, however, the inventory only accounts for emissions from equipment and transportation and does not include all sources of emissions from the ports, e.g., tenant purchased energy, marine terminal operator electricity, employee commuting, etc. That is, the inventory reflects the amount of fuel used over time to perform a task and is linked to the volume of cargo moving through the port. Overall emissions can be hidden by changes in cargo throughput. The proposed Greenhouse Gas Reduction Resolution calculate total emission reductions from a 2005 baseline and would not change as cargo throughput changes.

The Northwest Ports Clean Air Strategy (NWPCAS) was developed in 2007 and adopted in 2008 in collaboration between Port Metro Vancouver (PMV), the Port of Seattle (POS), and the Port of Tacoma (POT) with the aim of reducing air emissions from maritime and port-related activities that affect air quality and contribute to climate change in the Puget Sound-Georgia Basin air shed. The strategy is the first such port program in the U.S. to proactively and voluntarily outline emission reduction targets.

The goals of the strategy are:

- Goal 1: Reduce diesel particulate matter (DPM) emissions per ton of cargo by 75% by 2015, and by 80% by 2020, relative to 2005.
 - In 2010/11, the average reduction was 22%. This will be updated following the 2016 emissions inventory.
- Goal 2: Reduce greenhouse gas emissions (GHG emissions) per ton of cargo by 10% by 2015 and by 15% by 2020, relative to 2005.
 - In 2010/11, the average reduction was 9%. This will be updated following the 2016 emissions inventory.

The targets in the strategy are activity-based, like the reporting in the emissions inventory. The targets in the strategy do not take into account other indirect emissions for which the port is responsible, e.g., electricity use.

Updating our targets would align the Port of Tacoma with current global and regional commitments (e.g., Port of Seattle (POS) and King County targets). These goals are on par with those defined in the Paris Accords, which the POT has already committed to upholding by joining the “We Are Still In” coalition. Most importantly, these targets are in alignment with the global reductions necessary for keeping warming to within a 2-degrees Celsius increase.

Staff recommends setting an absolute target (e.g., total metric tons of CO₂e emitted) as opposed to an intensity-based target and specific goals for different scopes of emissions. This streamlines efforts between POT and POS (and therefore the Northwest Seaport Alliance) and allows POT to directly compare and benchmark ourselves to competitor ports such as the Port of Vancouver (see other industry targets in *Appendix B: Review of Government & Port Targets*).

By adopting GHG reduction targets and scope and boundary definitions that are in line with regional and global commitments, we can further align our capital improvement decisions with strategic goals, better utilize resources and further collaborate with local entities.

C. FINANCIAL SUMMARY

All costs associated with annual inventories, capacity building and capital improvements are not estimable at this time and will follow the standard approval and authorization process. The 2017-2021 CIP budget includes \$560,000 for Environmental Sustainability Initiatives and \$4.6 million for the Northwest Ports Clean Air Strategy. No additional funds are being requested, and the goal of associated programs and projects is to demonstrate overall cost savings through efficiency measures.

Historic costs for Port of Tacoma for air emissions reductions were \$2.2 million from 2010-2015. The \$5.1 million noted above includes both north and south harbor projects under the Northwest Seaport Alliance. Examples of some of the programs the budget covers include consultant costs for annual emissions inventories, developing the annual progress report for the Northwest Ports Clean Air Strategy, pilot project funding (e.g. Clean Ships, new equipment), and time for three staff members. Additional capital improvement projects, like lighting upgrades or smart meters, would be capitalized in project costs.

D. ECONOMIC INVESTMENT/JOB CREATION

Adopting the proposed Greenhouse Gas Reduction Resolution would have direct and indirect economic implications for the port and its tenants. Driving inefficiency out of both port and tenant systems (i.e., reducing wasted fuel, time and materials) will reduce costs and create new opportunities for investment.

Potential tenant economic investments from adoption of Greenhouse Gas Reduction Resolution:

- Investment in energy management and/or emission tracking technology, with resulting savings.
- Investment in waste reduction and tracking technologies, with resulting savings in waste management costs.
- Investment in alternative fuels for vessels and cargo related equipment.
- Investment in electric cargo-handling equipment.
- Reduction in fuel costs from increased electrical equipment usage.
- Investment in employee commuting schemes (i.e. carpools, electric vehicle charging points), with efficiency improvements and fuel savings due to fewer single-occupancy vehicle trips on the Tideflats.

Potential port economic investments resulting from adoption of Greenhouse Gas Reduction Resolution:

- Partnership with utility companies for both waste and energy usage (electricity, natural gas, etc.) to streamline report, reward efficient tenant behavior and internal port operations, resulting in reduced waste and energy costs.
- Investment in port-owned electric cargo-handling equipment.
- Reduction in fuel costs from increased electrical equipment usage.
- Incentivizing port staff to alternatively commute through incentive schemes, metro passes, etc.
- Investing in electric vehicles within the port fleet and charging stations for port business travel, with a resulting reduction in fuel costs for the port fleet.

Below are a few of the many examples from ports who have realized significant cost savings through their climate and sustainability initiatives and how they relate to initiatives undertaken by POT.

Efficiency Program	Vancouver	New York/New Jersey	Savannah	POT
Tenant Training	Introduced voluntary training for port tenants – saved \$670,000/yr (waste reduction and energy efficiency).	No official program.	No official program.	Annual stormwater training with tenants. No comparable energy-efficiency training.

Lighting Upgrades	Upgrade lighting where practicable. Refitting cranes and RTG	LED lighting projects in Lincoln Tunnel (\$283,000/yr savings) and Holland Tunnel (\$250,000/yr savings).	Reduced energy & costs by 59% from new lighting for container yard. Synced with dawn & dusk.	Upgrade lighting when practicable, alongside other facility upgrades. Lighting at Earley Business Center upgraded to LED lighting with motion sensors.
Electrifying cargo-handling equipment	Charge tenants fees for operating Tier 1 and older equipment	Scrapping program for replacing diesel tenant CHE.	27 cranes converted from diesel to electric. Upgraded 45 RTG cranes to electric for \$17.5 million – plan to have all 169 RTG to electric by 2026.	8 new cranes due in POT. Upgrading diesel straddle carriers to diesel-hybrid. Trialed electric yard truck in 2016.

(table continued on next page)

Efficiency Program	Vancouver	New York/New Jersey	Savannah	POT
Tenant Utilities	<p>Energy Action Initiative with BC Hydro – tenants eligible for a Blue Circle Award if participate:</p> <p>Energy Mgmt Assessment and Plan</p> <p>Set targets and monitor</p>	<p>Aggregated accounts and held reverse auction.</p> <p>Installed advanced utility meters.</p> <p>Reduced utility costs by \$2.2 million/yr.</p>	No official program.	Some tenant utilities on same meters as POT operations – no submeters.

With the adoption of this Greenhouse Gas Reduction Resolution, there is the opportunity to create a number of new jobs within tenants' organizations. These could include jobs created to internally monitor, track and account for greenhouse gas reporting and resulting reductions, manage piloting new emission reduction technologies or creating programs to reduce tenant commuting. New and emerging industries may be attracted to locate their premises on the Tideflats, creating new jobs.

E. NEXT STEPS

Staff recommends the adoption of Greenhouse Gas reduction resolution 2017-04-PT. If adopted, the next steps would be:

- To propose to NWSA Managing Members the adoption of the POT and POS GHG emissions targets via resolution at their October 3 meeting (second reading).
- Internal training of POT and NWSA environmental, engineering, commercial, and operations staff on GHG inventories and related return on investment by end of 2017.
- Complete a GHG inventory for POT and NWSA by end of 2017, track progress annually.
- Develop Implementation Plan for how the meet the goals for POT and the NWSA over the next 6 months.
- Use the results of the POT and NWSA inventory to prioritize environmental projects.
- Work with tenants and staff to develop and implement meaningful programs to support GHG reductions.

Appendices:

- A: Defining Emission Language
- B: Review of Government & Port Targets

APPENDIX A: DEFINING EMISSION LANGUAGE

Boundary

Staff recommends the Puget Sound airshed serve as the operational boundary for measurement as it is a realistic target for the port to collect data. The boundary determines which emission sources are included in the GHG inventory and goals and what sources are omitted.

The current Puget Sound Maritime Air Emissions Inventory uses the Puget Sound airshed and excludes emissions from the Georgia Basin as well as any emission sources outside of the Puget Sound airshed. Staff recommends aligning the POT's scope 3 boundary with this airshed as it is consistent with the World Ports Climate Initiative recommendations and similar to other port leaders on this issue. This is also aligned with the geographical boundary used in the Puget Sound Maritime Air Emissions Inventory to assign activity-based emissions to the ports.

If any boundary target outside of the airshed were to be adopted, there may be issues of "double-counting" emissions (counting what another entity has already accounted for). The port has strong relationships with entities inside the Puget Sound airshed boundary, compared with relationships that stretch as far back as the cargo manufacturers (a global boundary) which makes collecting data more attainable.

Scope

The proposed Greenhouse Gas Reduction Resolution recommends reductions of port emissions across scope 1, 2 and 3 emissions – emissions that POT and NWSA have varying levels of control over.

Due to the global acceptance of the Greenhouse Gas Protocol, scope 3 emissions are now expected to be included in an organization's calculations and goal setting. Therefore, in order to set comprehensive GHG emission reduction targets, POT must identify which value chain activities to include in scope 3 emissions.

Scope 1 – accounts for all direct emissions under the operations of the port

- Fuel combustion in facilities (boilers, furnaces, etc.)
- Fuel used by port-owned vehicles
- Fuel used by any port-owned and operated cargo handling equipment

Scope 2 – accounts for all indirect emissions

- Purchased electricity, steam, heating and cooling for port-owned building consumption
 - 1) e.g. POT Administration building, Fabulich Center, and Maintenance

Scope 3 – accounts for all other sources of GHG emissions created within the port’s value chain. Recommended sources are listed below in Table 1.

- Several of these emission sources are already tracked through the Puget Sound Maritime Emissions Inventory (identified with an “X” below). For reference, SeaTac airport is already tracking staff commuting and business travel, waste management and tenant electricity/natural gas usage for the Airport Carbon Accreditation.

Table 1. Scope 3 Recommendations

Scope 3 Sources	Port’s Level of Influence over the Source	Already tracked in Emissions Inventory
Port Owned/Operated Sources		
Mgmt. of waste (transport, disposal, recycle)	High – Direct control	
Port staff business travel	High – Direct control	
Port staff commuting	High – Direct control	
Tenant Owned/Operated Sources		
Tenant electricity use	Medium – Influence through lease/incentives	
Tenant natural gas use	Medium – Influence through lease/incentives	
Tenant commuting	Low – Influence through incentives	
Tenant cargo-handling equipment	Medium – Influence through lease/incentives	X
Ocean-going vessels	Medium – Influence through MTO lease/incentives	X
Harbor craft (e.g., tugboats)	Medium – Influence through incentives	X
Cargo-related locomotives	Low	X
Cargo-related drayage trucks	Medium – Influence through incentives	X

Global Standardization

The urgency of acting on climate change continues to increase at a growing rate. Measuring and managing GHG emissions allow government and industry to calculate and reduce their impact and contributions to climate change.

To date, several organizations have driven efforts in standardizing GHG emission practices and methodologies.

Paris Accords: Setting a Global Goal

The Paris Accords were adopted out of the 21st Conference of the Parties (COP21), where countries identified and adopted a global goal that provides the guiding track for organizations who are setting their own targets. The global goal is as follows: **Countries are to establish national contributions to hold the increase in the global average temperature to below 2°C above pre-industrial levels by 2050 and aim to limit the temperature increase to 1.5°C.**

Science-Based Targets Initiative (SBTi): Standardizing Target-Setting

SBTi has done this by developing three main approaches to setting science-based targets that equally limit emissions, but allow for an organization to choose how they reduce, whether it is based on:

- 2) the global reduction target
- 3) its contribution to its respective sector's impact or,
- 4) its contribution to global economic activity.

It is an effort following the Paris Accords to provide structure for how companies could achieve the target.

GHG Protocol: Standardizing Calculations (and adding scope 3)

The GHG Protocol was developed by a partnership between The World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The Protocol has created the most widely accepted and used collection of comprehensive, global, standardized guidebooks for calculating greenhouse gas emissions. It enables organizations to measure, manage and verify GHG emissions in a way that provides comparability. In 2011, the Scope 3 Standard was published, indicating the importance of including scope 3 emissions and driving a global movement for reporting those emissions.

These organizations have created globally accepted ways of calculating emissions and setting targets, and because stakeholders have demanded rigorous accountability of companies to protect themselves from false claims, those that do not include scope 3 fall short in the public eye. Moreover, science based targets are becoming increasingly expected.

Methodology

There are two accepted methodologies for measuring GHG emissions and setting reduction targets: absolute and intensity-based target setting. While both are widely used, the POT must decide which method aligns best with its strategic goals. Also included under each method is an example of a tool or approach to help organizations set their reduction goals.

The absolute targets proposed in the POT Greenhouse Gas Reduction Resolution are in line with current best practice and hold greater accountability for the port. Intensity-based targets can change every year depending on growth. For example, if an intensity-based target is based on metric tons of CO₂e produced per ton of cargo, the target can become diluted as the organization grows in tons of cargo shipped. In turn, the reductions necessary to uphold our commitment could be jeopardized.

Absolute Target Method

Measure, track and reduce the total quantity of GHGs emitted by an organization (e.g., metric tons of CO₂e emitted). Under this approach, an organization may choose to align its GHG target with the absolute quantity of emission reductions required globally (i.e., 49% by 2050 from 2010 levels).¹

- The 3% Solution Tool

WWF's Carbon Target Profit Calculator tool (developed by WWF, CDP, McKinsey & Co., and Point 380) helps organizations calculate a "back of the envelope" absolute reduction target for 2020. It is not intended to replace customized, science-based target calculations for goal setting but can help an organization determine approximate ranges for absolute emissions reduction, taking into consideration emissions within a base year and expected change in market share between the base year and 2020.²

Intensity Target Method

Measure, track, and reduce the quantity of total emissions per unit of economic output of an organization (e.g., metric tons of CO₂e per ton of cargo). Under this approach, an organization may choose to align its GHG target based on the organization's relative economic contribution to its respective sector's carbon intensity.³

- The Sectoral Decarbonization Approach

Sectoral Decarbonization is a science-based calculation approach used to set a GHG target by deriving an organization's relative economic contribution to its respective industry sector. Carbon intensity is calculated for each sector (e.g. metric tons of CO₂e per ton of cargo). Then, based on an organization's total economic activity (e.g., how many tons of cargo are shipped in one year), one can derive the quantity of metric tons to reduce in order to return to base year levels.⁴

¹ <http://sciencebasedtargets.org/methods/>

² <https://www.worldwildlife.org/projects/the-3-solution#overview>

³ <http://sciencebasedtargets.org/methods/>

⁴ <http://sciencebasedtargets.org/sda-tool/>

APPENDIX B: REVIEW OF GOVERNMENT & PORT TARGETS

Numerous government and industry organizations have set aggressive climate targets to reduce emissions at the international level (e.g., Paris Accords), at the country, state, and city level and at the maritime industry level (e.g., IMO, Green Marine). The POT was an early adopter of climate targets through the Northwest Ports Clean Air Strategy.

Institutions	GHG Goals
City of Seattle	Zero net emissions by 2050
City of Tacoma	80% below 1990 levels by 2050
King County	80% below 2007 levels by 2050 (same goal as LA/LB)
Pierce County	Currently n/a
Puget Sound Clean Air Agency (PSCAA)	80% below 1990 levels by 2050
State of Washington	57.5% below 2005 levels by 2050 (scope 1 & 2) 50% below 1990 levels by 2050 (scope 3)

As the POT determines what actions it wants to take on climate and sustainability, it is important to set emission targets and reduction goals. The table below summarizes targets set by leading and competitor ports as well as local and state GHG reduction goals to compare against.

Many ports around the world have just now begun to tackle the issue of defining scope 3 emissions, despite having guidance from the WPCI since 2010. The POT will be a leader in the industry by defining its scope 3 emissions, with most other ports likely to follow our lead.

The following ports have set GHG reduction targets for 2050:

- Port of LA: 80% below 1990 levels by 2050
- Port of Long Beach: 80% below 1990 levels by 2050
- Port Authority of NY/NJ: 80% below 2006 levels by 2050

The following ports have not set GHG reduction targets past 2020:

- Vancouver Fraser Port Authority (NWPCAS)

The following ports have not set any public GHG reduction targets:

- Port of Oakland
- Prince Rupert
- Port of Savannah

To inform the POT in its discussion to define scope 3 sources, four examples of how competitors have defined the scope of their emissions are identified below.

Port	Scope 1	Scope 2	Scope 3
Port Authority of New York / New Jersey ⁵	Fuel consumption and activity of cargo handling equipment, heavy-duty diesel vehicles, railroad locomotives, harbor craft	Heating and air conditioning	<ul style="list-style-type: none"> • Tenants (e.g., aircraft movements, electricity consumption) • Customers (vehicle movement across tunnels and bridges) • Employees (port employee commuting)
Vancouver Fraser Port Authority ⁶	Fuel consumption	Electricity and hot water consumption	Port staff business travel and commuting, paper, waste
Prince Rupert Port Authority ⁷	Equipment fleets and fuel consumption of marine vessels, rail locomotives, on-road vehicles, cargo handling equipment	Electric-supplied cargo handling equipment	Tenant activity, vendor ship movements within port boundaries, and a landside area that incorporated most of the local rail and truck movement to and from marine terminals
Port of Los Angeles ⁸	GHG emissions under direct control of the port (e.g., municipal harbor department vehicles and equipment)	GHG emissions generated by the purchase of electricity, heat, steam purchased by the Harbor Department	GHG emissions from sources not directly influenced by the port but related to maritime activities at the port (all port tenant emissions)

To inform the POT in its discussion to define its boundary, four examples of how other ports have defined the boundary of their emissions are identified below:

⁵ <https://www.panynj.gov/about/pdf/EY2014-report-final.pdf>

⁶ <https://www.portvancouver.com/wp-content/uploads/2017/05/Sustainability-Report-2016.pdf>

⁷ <http://www.rupertport.com/port-authority/sustainability/carbon-emissions>

⁸ <https://www.portoflosangeles.org/Publications/POLA%20FY13-14%20Sustainability%20Report%202016%2002%2029.pdf>

Port	Boundary
Port Authority of New York & New Jersey	OGV geographical domain to include all vessels that call on Port Authority marine terminals within the three-mile demarcation line off the eastern coast of the United States
Port of Houston Authority	inventory includes over 45 nm of channels to the sea buoy
Ports of Los Angeles and Long Beach	have included the South Coast Air Basin over-water boundaries which extend over 130 nautical miles (nm) out to sea and are bounded by the basin's borders to the north and south
Vancouver Fraser Port Authority	Geographical domain spans the Lower Fraser Valley, out to Vancouver Island and up to Squamish