

Item No.: 4B Supp
Date of Meeting: November 6, 2018



**THE NORTHWEST
SEAPORT ALLIANCE**
Gateway to Solutions

ILA with WSU for Air Quality Modeling Study

Presenter: Dr. Graham VanderSchelden
Title: Environmental Project Manager I

Action Requested

As referenced in NWSA Resolution No. 2018-01, Exhibit A, Delegation of Authority Master Policy, Paragraph 8.b.i. requires authorization from Managing Members to enter into an ILA with another public agency.

Request Managing Members of the Northwest Seaport Alliance (NWSA) authorization for the Chief Executive Officer or their delegate to enter into an Interlocal Agreement (ILA) with Washington State University (WSU) in the amount \$130,823, for a total authorized amount of \$130,823, for Air Quality Modeling Study, Master Identification No. 201007.01.



Overview

- This contract would cover labor, equipment, and facilities for Washington State University (WSU) to perform an air quality modeling study for port-related sources in the Puget Sound.
 - Estimate resulting air pollutant concentrations from port-related emissions
 - Estimate exposure of the Puget Sound population to each port-related air pollution source
- The results will help prioritize emission reduction measures in the Northwest Ports Clean Air Strategy based on the pollution exposure attributed to each source.
 - Better understand the effects of spatial distribution of emission source types
 - Make air quality programs more effective and efficient by targeting source categories that really impact the public



Value Added Beyond the Scope of Puget Sound Maritime Air Emissions Inventory

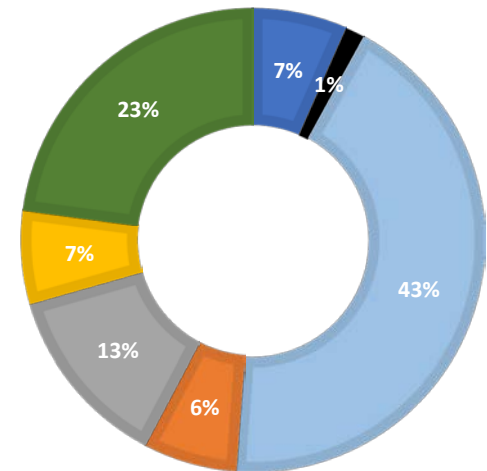
- **Assessment of the spatial distribution of emissions for each port-related source.**
 - Refining the spatial allocation of emissions allows the location of emissions relative to population centers to be considered.
- **Quantify public health risk associated with port-related air pollution.**
 - Use location of emissions, dispersion of pollutants, and spatially resolved population data to assess the public health risk from port-related air pollution.
 - Contextualize the port-related air pollution risk with other sources.
- **Understand the relative public health impacts of each source.**
 - Allows emission reduction programs to be prioritized for sources that pose the largest public health risk.



Motivation

- **In the PSEI, emissions are quantified for the entire airshed for the entire year.**
 - Real world emissions are distributed spatially and have temporal profile
- **Dispersion modeling and exposure analysis will allow us to determine if the distribution of health impacts matches the emissions distribution.**
 - Quantify the actual exposure associated with each source.
 - Are ships really the main contributor to air pollution exposure?

NWSA DPM EMISSIONS



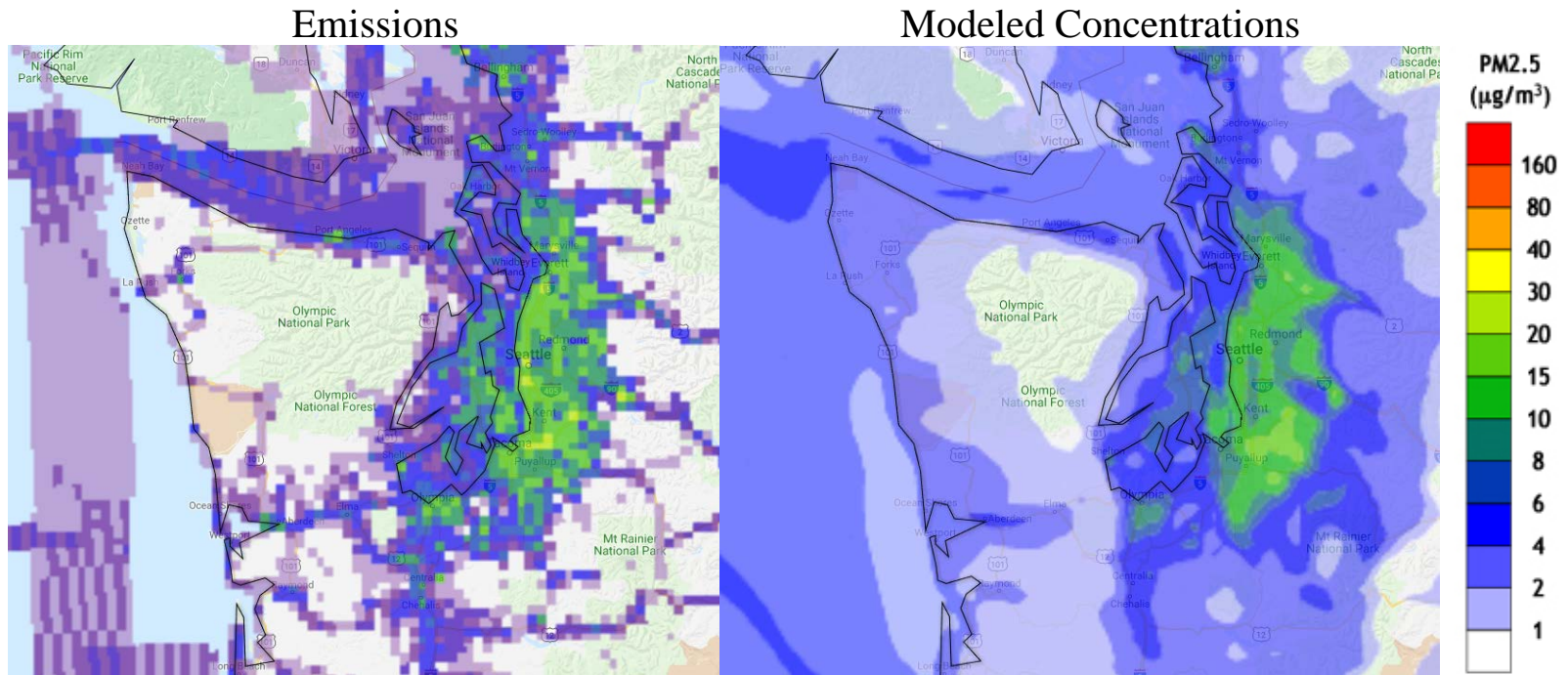
■ OGVs, Hotelling
■ Harbor Vessels
■ Heavy-Duty Trucks

■ OGVs, Maneuvering
■ Locomotives

■ OGVs, Transiting
■ Cargo-Handling Equipment

Background

- WSU currently operates an air quality forecasting model called AIRPACT 5, which estimates pollutant concentrations daily for Washington, Oregon, and Idaho.
 - This model will be adapted to operate at higher resolution over just the Puget Sound Region.



Scope

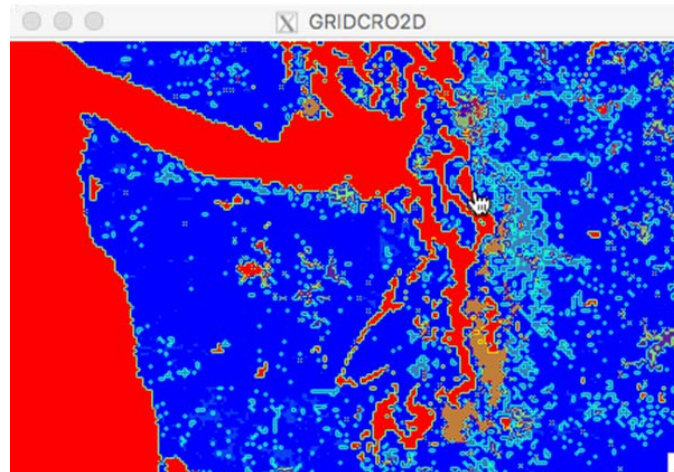
Pollutants Considered

- Diesel Particulate Matter
- Fine Particulate Matter
- Sulfur Dioxide
- Ozone
- Benzene and other air toxics

Sources Considered

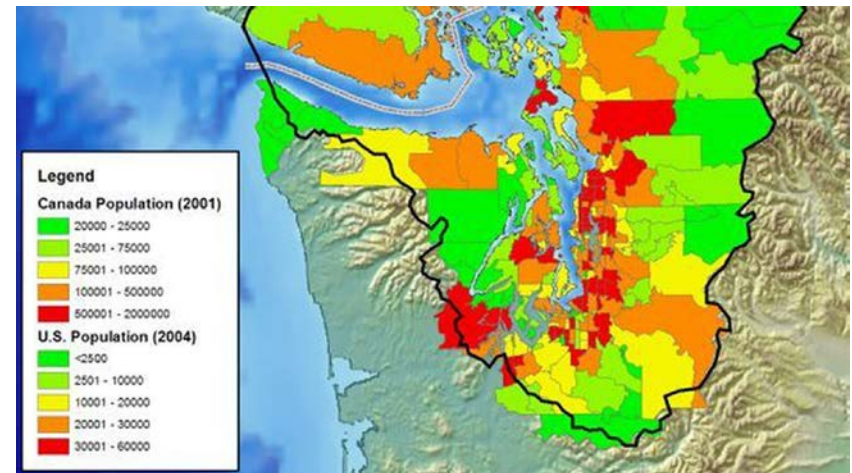
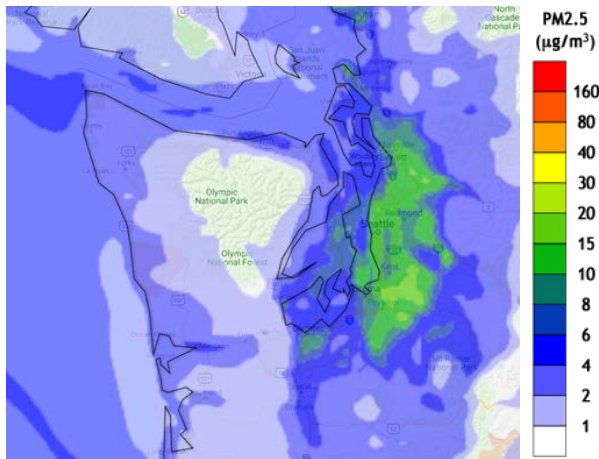
- Ocean-Going Vessels
- Harbor Tugs
- Locomotives
- Trucks
- Cargo-Handling Equipment

Model Domain



Methodology

- WSU will create finely resolved modeling domain for the Puget Sound Region (1.3 km x 1.3 km).
- The model will be run for 1 month per season to develop annual averages and maximum concentrations associated with each source type.
- Exposure will be assessed by spatially correlating population with concentrations.



Study Outcomes

- Human air pollution exposure metric for each port-related air pollutant source that quantifies its health impact and allows its contribution to air pollution related health risk to be compared with other sources.
- Map graphics showing annual average and maximum air pollutant concentrations associated with each source.
- Map graphics showing the spatial distribution of emissions for each source.
- Assessment of the ports' contributions to regional air pollution exposure.



Financial Implications

- The estimated cost to fund this study is \$130,823. This will be paid in two equal installments of \$65,412 in 2018 and 2019.
- The Capital Investment Plan (CIP) allocates \$750,000 in 2018, \$590,000 in 2019 for the NWPCAS (MID No. 201007.01), including \$80,000 budgeted for this project in each calendar year.



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