



Port of Seattle: Where a Sustainable World is Headed

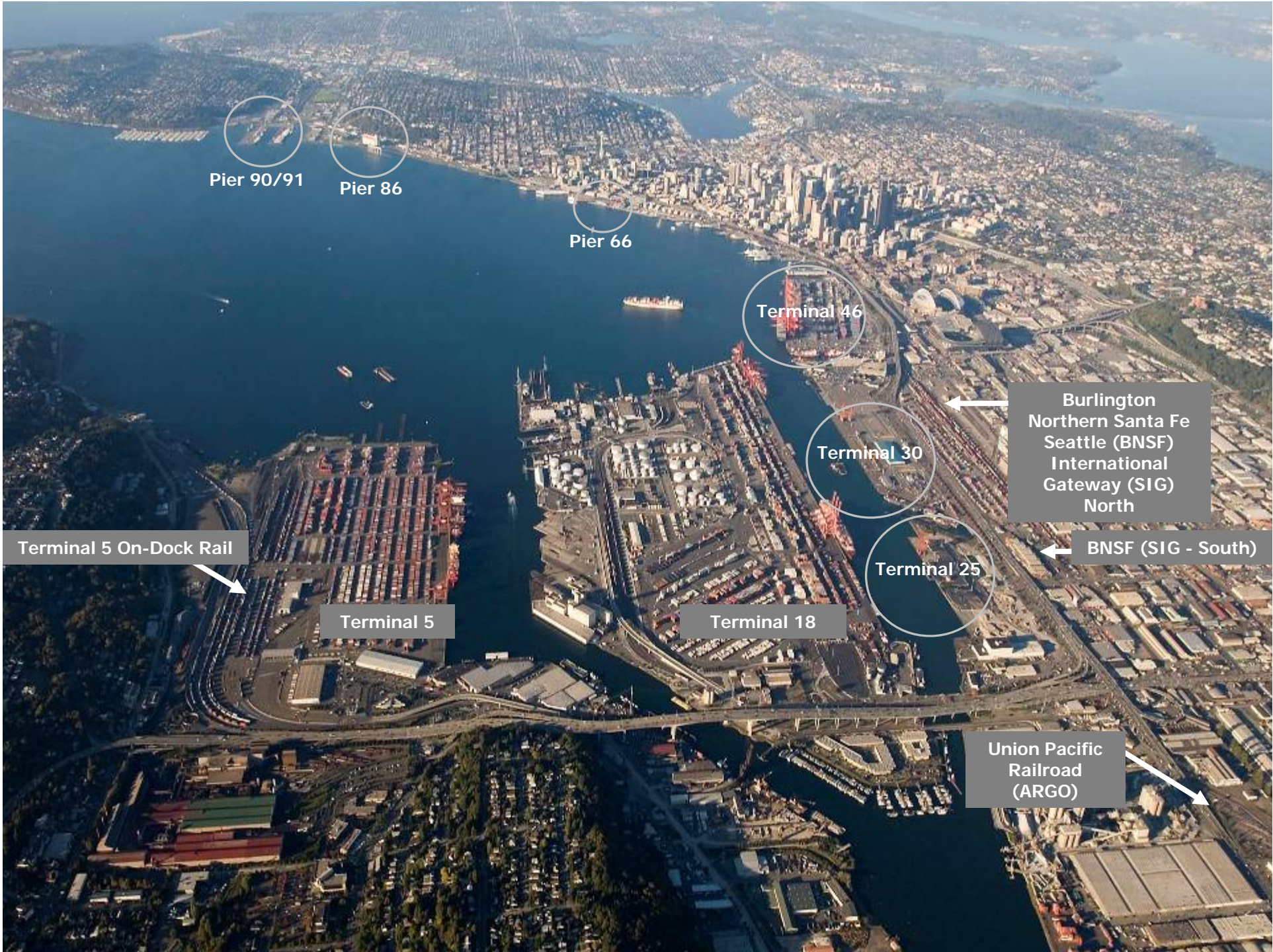
Sarah Flagg
Seaport Air Quality
Program Manager
Port of Seattle

North East Diesel Collaborative
June 24, 2009

Port Overview

- Independent municipal corporation created in 1911
- 5 Commissioners elected at large
- Diverse operations
 - Cargo (container & breakbulk)
 - Alaska Cruise Homeport
 - Recreational Marinas
 - Commercial Moorage
 - Seattle-Tacoma International Airport
 - Commercial Real Estate
- Broad Economic Impact
 - Supported nearly 200,000 jobs
 - Over \$12 billion in business revenue
 - \$625 million in state and local taxes





Pier 90/91

Pier 86

Pier 66

Terminal 46

Terminal 30

Terminal 25

Terminal 5 On-Dock Rail

Terminal 5

Terminal 18

Burlington
Northern Santa Fe
Seattle (BNSF)
International
Gateway (SIG)
North

BNSF (SIG - South)

Union Pacific
Railroad
(ARGO)

Seaport Air Quality Program

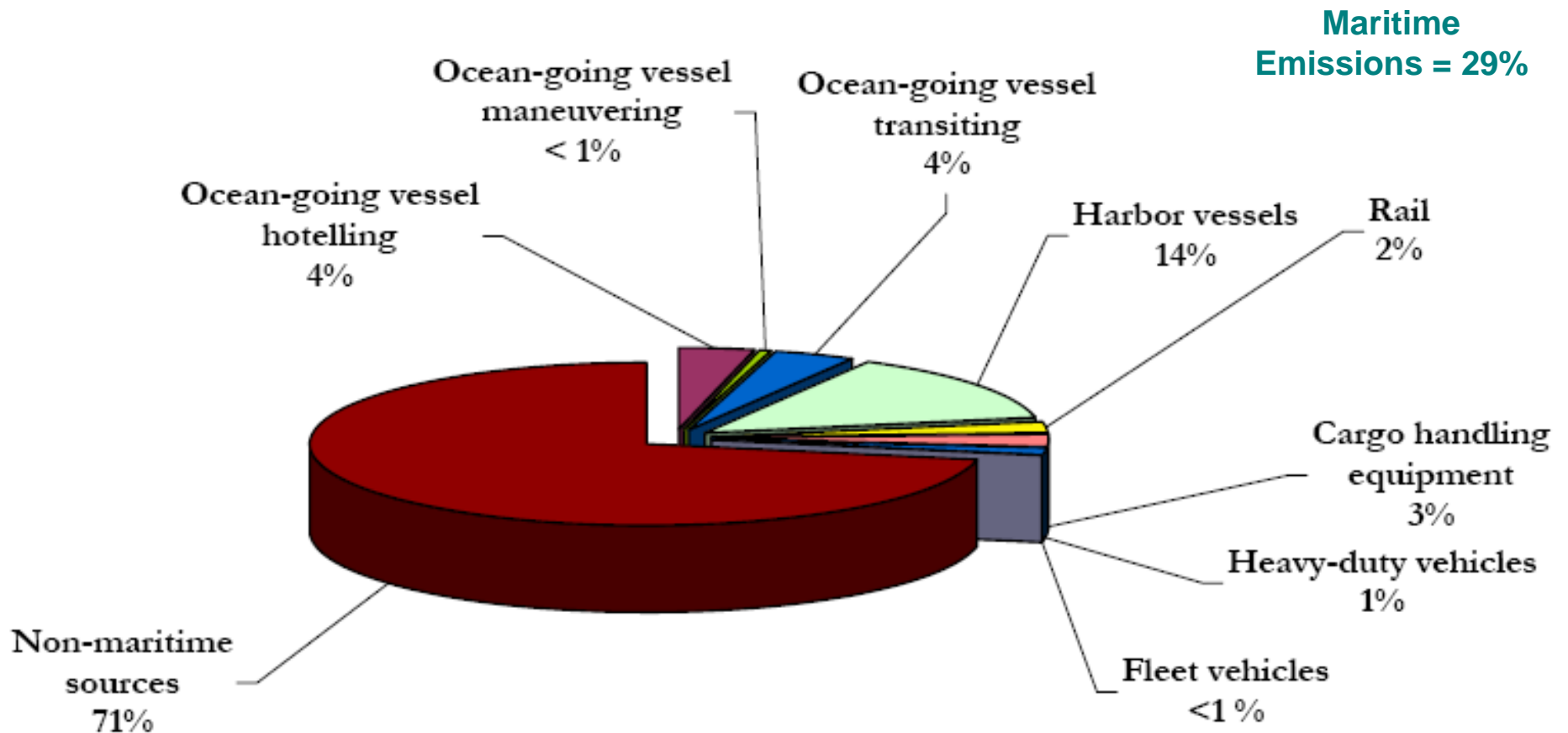
- Collaborative, voluntary approach
- Pollutants of concern:
 - Diesel particulate matter
 - Greenhouse gases
- Reduce impacts on public health and the environment while maintaining a vibrant seaport
- Fact-based
- Looking for both emission reductions and goods movement efficiencies

Puget Sound Maritime Air Emissions Inventory

- 2005 activity based inventory
- Spans ~140 miles south-to-north; 160 miles west-to-east
- Close coordination Canada
- First to include greenhouse gases

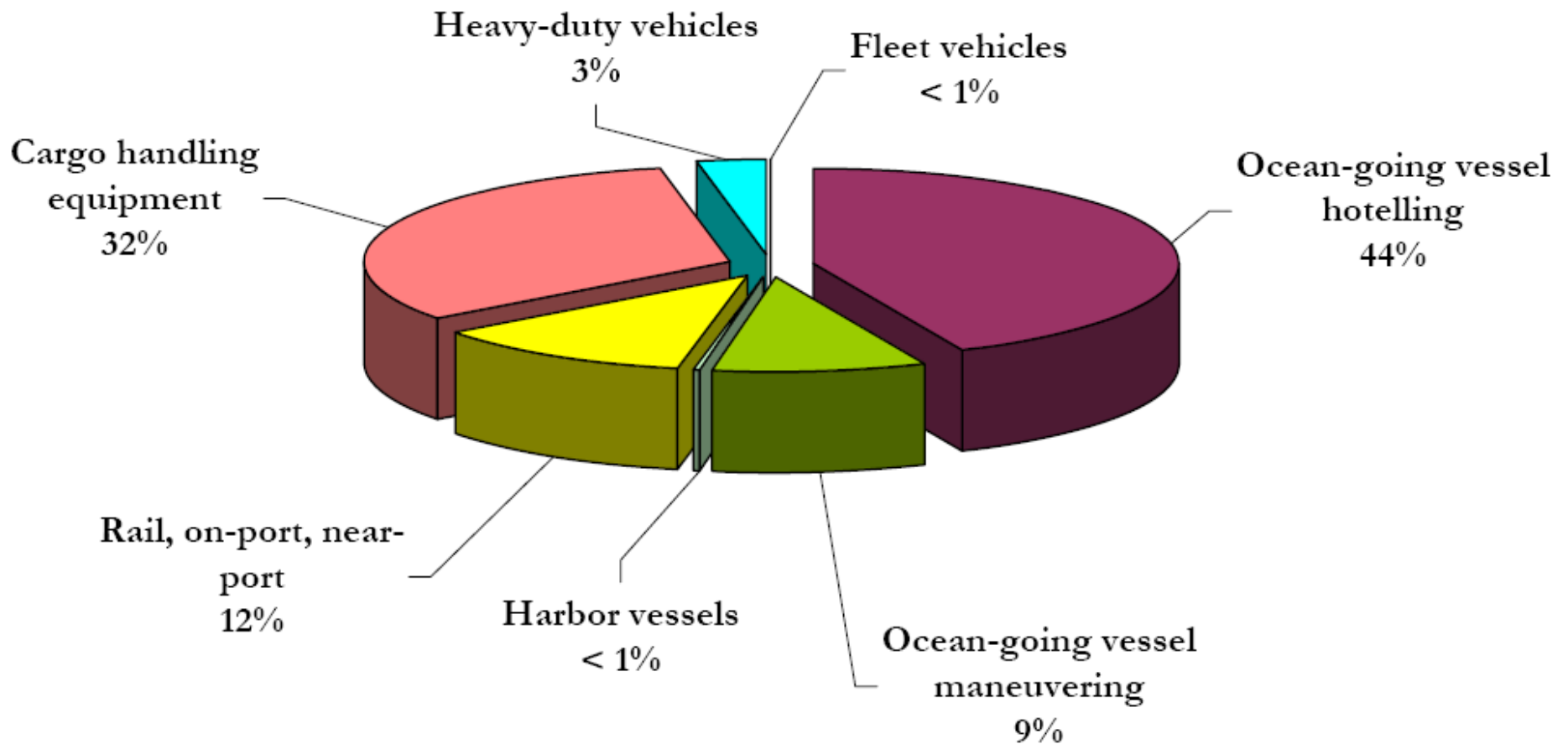


Diesel Particulate Matter Puget Sound Clean Air Agency Region



6
Source: 2005 Puget Sound Maritime Air Emissions Inventory

Diesel Particulate Matter Port of Seattle Seaport



7
Source: 2005 Puget Sound Maritime Air Emissions Inventory



Northwest Ports Clean Air Strategy

Port of Seattle
Port of Tacoma
Vancouver Port Authority

December 2007



PORT METRO
vancouver



Environment
Canada

Environnement
Canada

Strategy Approach

- Focused on diesel particulate matter and greenhouse gases
- Clear, measurable performance measures
 - Ocean-going vessels (OGV)
 - Cargo handling equipment (CHE)
 - Trucks
 - Rail
 - Harbor vessels
- Encourage ongoing innovation instead of mandated solutions
- Short Term (2010) and Long Term (2015) targets

Strategy Performance Measures

	2010	2015
Ocean-Going Vessels	Use 0.5% fuels in auxiliary engines while at berth	Meet IMO standards, goal of establishing an N.A. ECA
Cargo-Handling Equipment	Use of ULSD, meet Tier 2 or 3 PM standards	Best available emission control devices
Rail	Expedite U.S. EPA SmartWay standards	Comply with U.S. EPA 2007 locomotive rules
Trucks	All trucks must meet 1994 U.S. EPA PM emission standards	80% of trucks must meet 2007 U.S. EPA PM emission standards, 100% by 2017
Harbor Vessels	Low-sulfur fuels, new technologies	Advanced technology pilot projects

Implementation Status

Ocean-Going Vessels

- Shore power for Princess Cruises and Holland America Line vessels
 - First port in N.A. where 2 ships can plug in simultaneously
- Application to U.S. DOE Transportation Electrification
 - Collaboration with Ports of Tacoma, Oakland, San Francisco, L.A., Long Beach, and City of Long Beach
 - Propose to install shore power at 8 berths along the West Coast
 - Nearly \$86 million in projects
- Continue to support EPA proposal to IMO for a Sulfur Emission Control Area (ECA)



Implementation Status

Ocean-Going Vessels

- At-Berth Clean Fuels Vessel Incentive Program
 - Pilot program with Puget Sound Clean Air Agency
 - \$1,500 incentive for use of 0.5% sulfur fuel in auxiliary engines while at a Port of Seattle berth
 - Eligible lines must call 5 or more times/year
 - 7 Participating Lines:
 - Hapag-Lloyd
 - Matson
 - APL
 - CMA-CGM
 - Maersk
 - Norwegian Cruise Line
 - COSCO
 - Current participants represent 24% of all calls made in 2008

Implementation Status

Cargo-Handling Equipment

- **Cleaner Fuels**
 - All terminals use ultra-low sulfur diesel fuel
 - 2 terminals use a 20% biodiesel blend
- **Reducing Fuel Consumption**
 - Hybrid RTGs
 - Terminal efficiencies
- **Equipment Retrofits**
 - 50% of CHE have made progress toward the 2010 Strategy goal
 - Recent Federal and State grants to further progress
- **Equipment Replacement**
 - Terminals specifying on-road engines for new equipment

Implementation Status

Rail

- BNSF North SIG Yard Electrification
 - First in North America to install wide-span, electric rail mounted gantry cranes
- SmartWay participation at rail yards
- Support U.S. EPA Locomotive and Marine Diesel Engine Rule
- Encourage railroads to retrofit switcher locomotives and to use ultra-low sulfur diesel



Implementation Status

Harbor Vessels

- Led by Puget Sound Clean Air Agency
- Focusing on harbor tug operations
- Cleaner fuels
 - Foss Maritime and Crowley voluntarily switched to lower sulfur fuels in tug operations
- Cleaner engines
 - Foss Maritime has developed a hybrid tug engine

Implementation Status

Clean Trucks Program

- Fleet Characterization completed 8/2007, updated 7/2008
 - 76% of trucks are MY 1994 or newer
- Proposed negotiation of lease amendments with MTOs to enforce standards
- Fee Free
- PSCAA buy-back and scrap program
 - \$5,000 or blue book value for pre-1994 trucks
 - Will need to prove truck has worked at Port of Seattle
- Developing a Small Business Assistance program

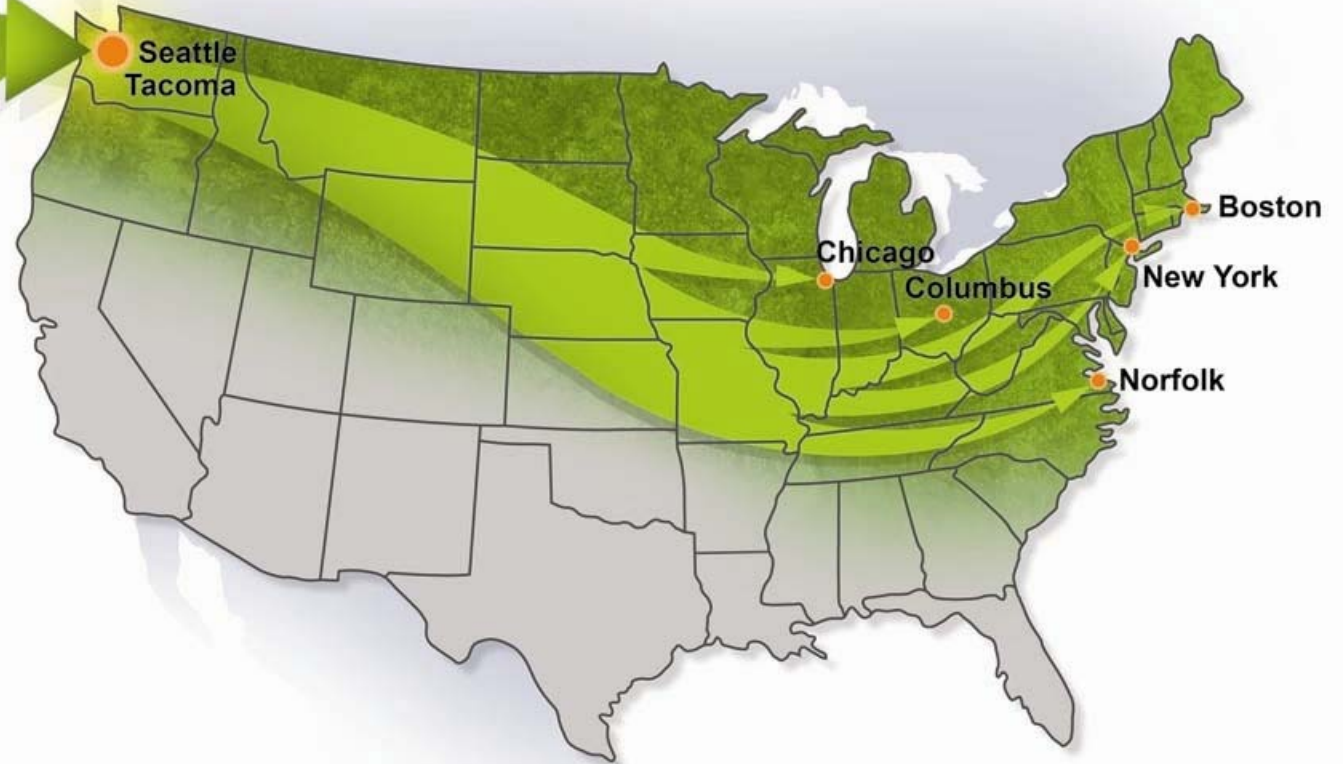
Truck Parking

- South Harbor Truck Parking Work Group
 - Purpose: To provide input on south harbor neighborhood parking and routing issues.
 - Partners include City, SDOT, community, industry, labor, and environmental groups.
 - Recommendations presented to Commission and City Council in May 2009
- Selection of a temporary site at Terminal 25 South
 - 3 acres
 - Available July 2009
 - No fees

THE GREEN GATEWAY

Puget Sound

Asia



The Green Gateway

Overview

- “Carbon Footprint Study for the Asia to North America Intermodal Trade”
 - Conducted by Herbert Engineering for Port of Seattle
- First assessment to evaluate the carbon impacts of the transportation supply chain from origin to destination
- Analysis determined tons carbon dioxide equivalent (CO₂e) per TEU from Asia to points in U.S. mainland

The Green Gateway

Methodology

- Vessel sizes: 4,500 to 12,500 TEU
- Asian Origin Ports:
 - Shanghai, Hong Kong, Singapore
- North American Ports:
 - Prince Rupert, Seattle, Los Angeles/Long Beach, Houston, Savannah, Norfolk, New York/New Jersey
- North American Destination Cities:
 - Chicago, Columbus, Memphis

The Green Gateway

Methodology

- Routings:
 - West Coast ports and intermodal trains to destination cities
 - All-water via Panama Canal to Gulf and East Coast Cities
 - All-water via Suez Canal to Gulf and East Coast Cities
- Independent review:
 - University of Washington
 - Seattle Climate Partnership
 - Industry (3PLs, shippers, carriers, railroads)

The Green Gateway

Implications

- The West Coast ports are the most energy-efficient gateways from Asia to U.S. consumers
- The Pacific Northwest ports have a slightly lower carbon footprint from Asia than any other port in North America
- Study adds data to the emerging field of carbon footprint assessments of supply chains

Looking Ahead....

- Continue implementation of the Northwest Ports Clean Air Strategy
 - Work with tenants and customers to reduce emissions and fuel consumption
- Seeking to better understand our footprint
- Engaged in regional, national, and international efforts to address emissions from goods movement



Port of Seattle

Where a Sustainable World is Headed

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