Sustainable Good Movement:
Global Practices and Opportunities

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2012 US-Taiwan Sustainability Symposium

Overview

- Spreading Best Practices
  - Most powerful when more Ports Align:
  - More efficient resource (fuel) use should be a competitive advantage
  - Shippers beginning to look at Supply chain Carbon impacts
  - Forum to share information
- Collaboration has helped Puget Sound Ports implement best practices


Seattle
Busan
Tokyo
Shanghai
Taipei
Hong Kong
Honolulu
Manila
Singapore
Sydney


15. Germany $390 Million
3. S. Korea $2.5 Billion
2. Japan $6.6 Billion
10. Canada $662 Million
1. China $20 Billion
12. India $662 Million
13. Hong Kong $496 Million
4. Taiwan $1.9 Billion
5. Vietnam $1.2 Billion
14. Philippines $392 Million
6. Indonesia $1 Billion
8. Thailand $866 Million
11. Malaysia $580 Million
7. Singapore $1 Billion
9. Australia $705 Million


Pier 90/91
Pier 86
Pier 66
Terminal 46
BNSF (SIG - North)
T-18 On-Dock Rail
T- 5 On-Dock Rail
Terminal 18
Terminal 30
BNSF (SIG - South)
Terminal 5
UPRR (ARGO)

Managing impacts of global goods movement

- Two approaches needed:
  - Holistic look at supply chain
  - Improved sustainability at each point on the supply chain, such as Ports
- Best practices go viral when:
  - Community expectations are met
  - Stakeholders are involved
  - Business is improved

Carbon Footprint Study Asia to North America: West Coast Advantage

* Herbert Engineering Corporation, 2011

Study Overview

Port of Seattle

Vessel Design Speed

Slow Steaming
17- 24 Knots

Vessel Utilization
60%, 70%, 80%, 90%

Vessel Sizes

- 4,500 TEU
- 6,500 TEU
- 8,500 TEU
- 12,500 TEU

Origin Ports

- Shanghai
- Hong Kong
- Singapore
- Ho Chi Minh
- Busan
- Tokyo

Destination Ports

- Seattle
- Oakland
- Los Angeles
- Prince Rupert
- Savannah
- New York
- Norfolk
- Houston

Routings

West Coast IPI

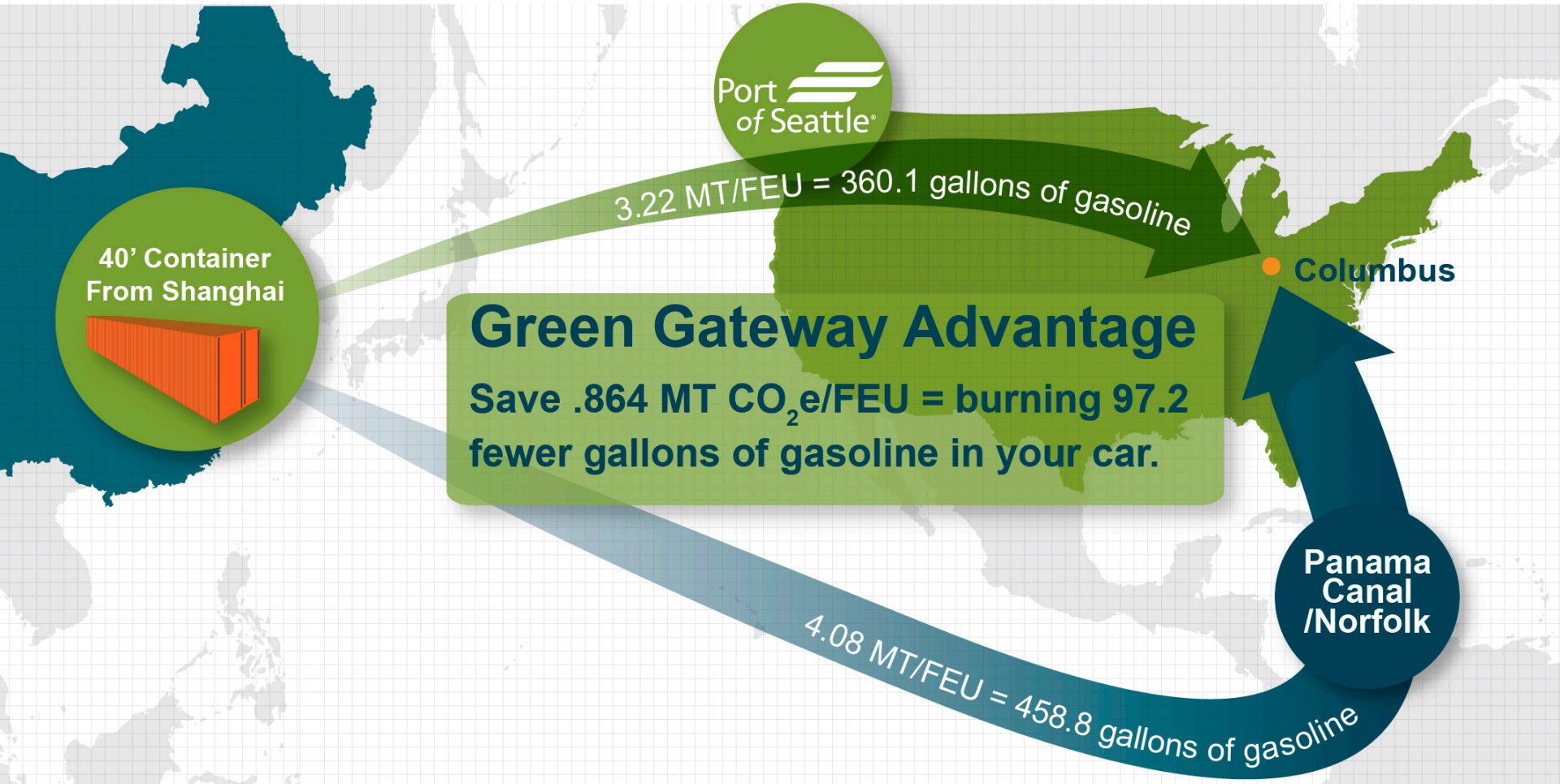
vs.

Panama Canal & Suez Canal

Destination Cities

- Chicago
- Columbus
- Memphis
- New York
- Atlanta
- Norfolk

1 MT CO_2e = burning 112.46 gallons of gasoline

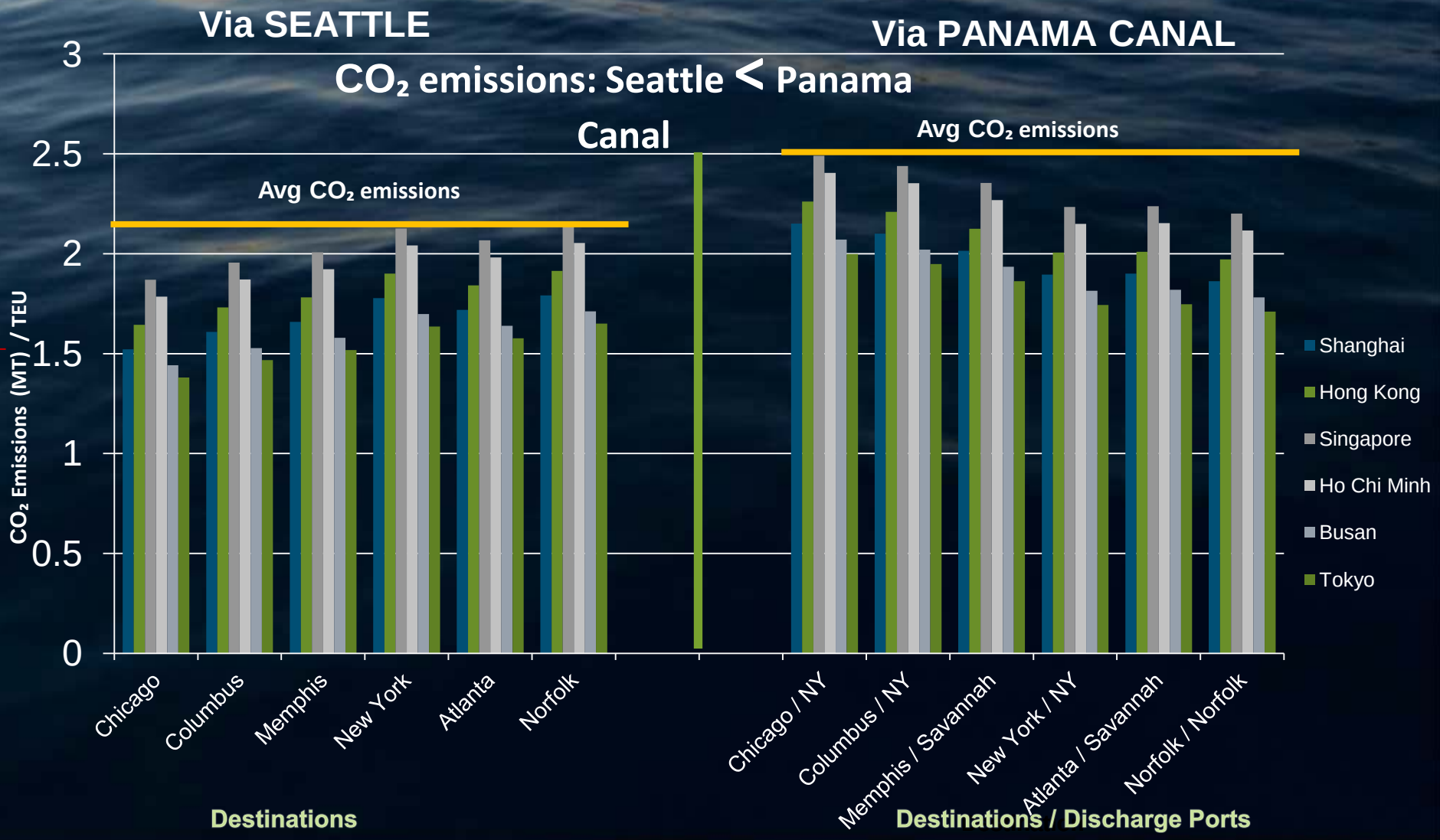


*Example based on 8,500 TEU Vessel at Design Speed

THE GREEN GATEWAY

Seattle and Panama Canal Performance
8,500 TEU Container Ship

Port of Seattle



Green Gateway Carbon Calculator

Port of Seattle

http://www.portseattle.org/seaport/cargo/CarbonCalc.shtml

Carbon Calculator

Carbon Calculator data results are derived from the Carbon Footprint Study for the Asia to North America Intermodal Trade paper by the Herbert Engineering Corp.

Remove All Rows

A canal must be chosen for East Coast and Gulf ports.

Origin Port	Dest. Port	Canal	Final Dest	TEU	Speed (Knots)	Vessel Utilization	Ocean CO_2e (t)	Rail CO_2e (t)	Total CO_2e (t)	Total CO_2e/TEU (t)
Shanghai	Seattle	No Canal	Chicago	8500	DS	80	5944	3877	10067	1.532
Shanghai	Savannah	Panama	Chicago	8500	DS	80	11898	1903	14047	2.138
Shanghai	Norfolk	Panama	Chicago	8500	DS	80	12152	1762	14160	2.155
Shanghai	New York	Panama	Chicago	8500	DS	80	12373	1674	14293	2.175

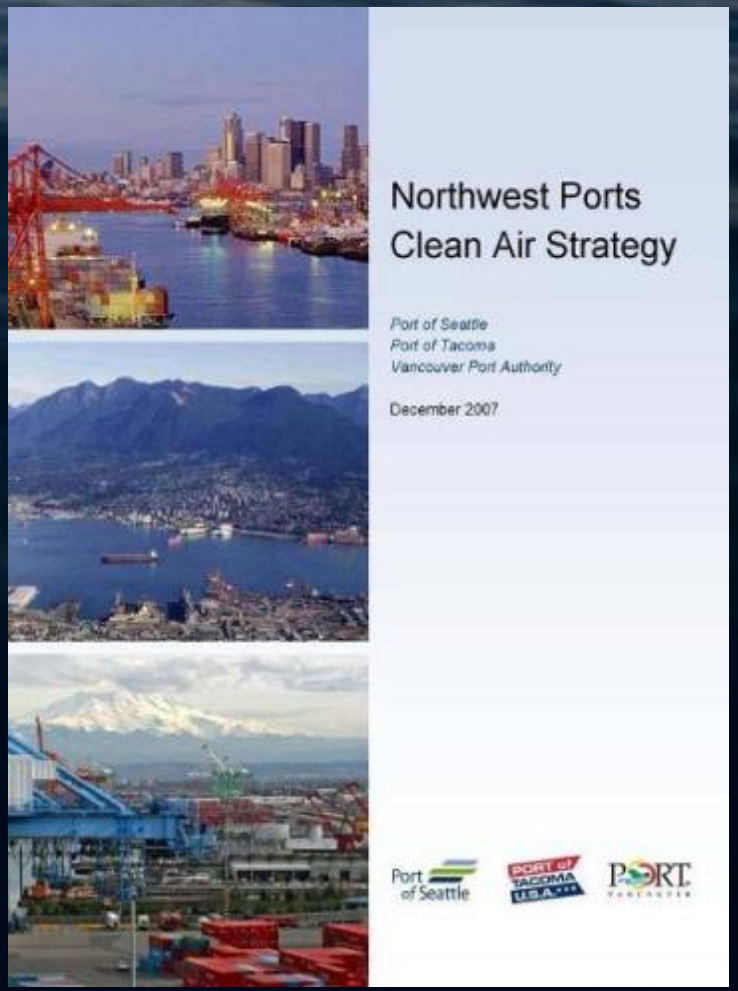
Add a Row

Port Environmental Sustainability

- North West Ports Clean Air Strategy
- Puget Sound Maritime Emissions Inventory
- The Importance of combining regulatory and non-regulatory approaches

Northwest Ports Clean Air Strategy

- First international clean air program, adopted in 2008, major update in process
- Ports of Seattle, Tacoma and Vancouver Canada with regulatory agency partners
- Voluntary program, set performance measures to reduce diesel emissions from port-related sources



Ocean Going Vessels

Shore Power at 2 Cruise Berths

At-Berth Clean (ABC) Fuels incentive Program

- $1200-$2850 incentive for use of < 0.5% sulfur fuel in auxiliary engines
- 10 Participating Lines
- 2011: 375 Vessels
- 2010: 400 Vessels
- 2009: 235 Vessels

Green Gateway Partners

Recognizes carriers for environmental vessel Improvements over and above ABC Fuels

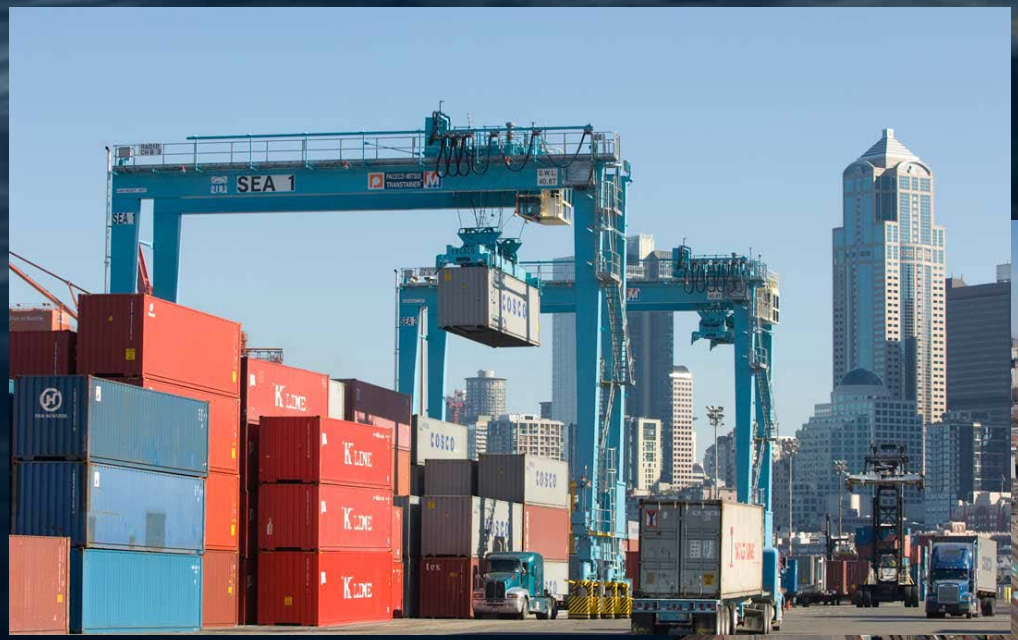
Clean Truck Program

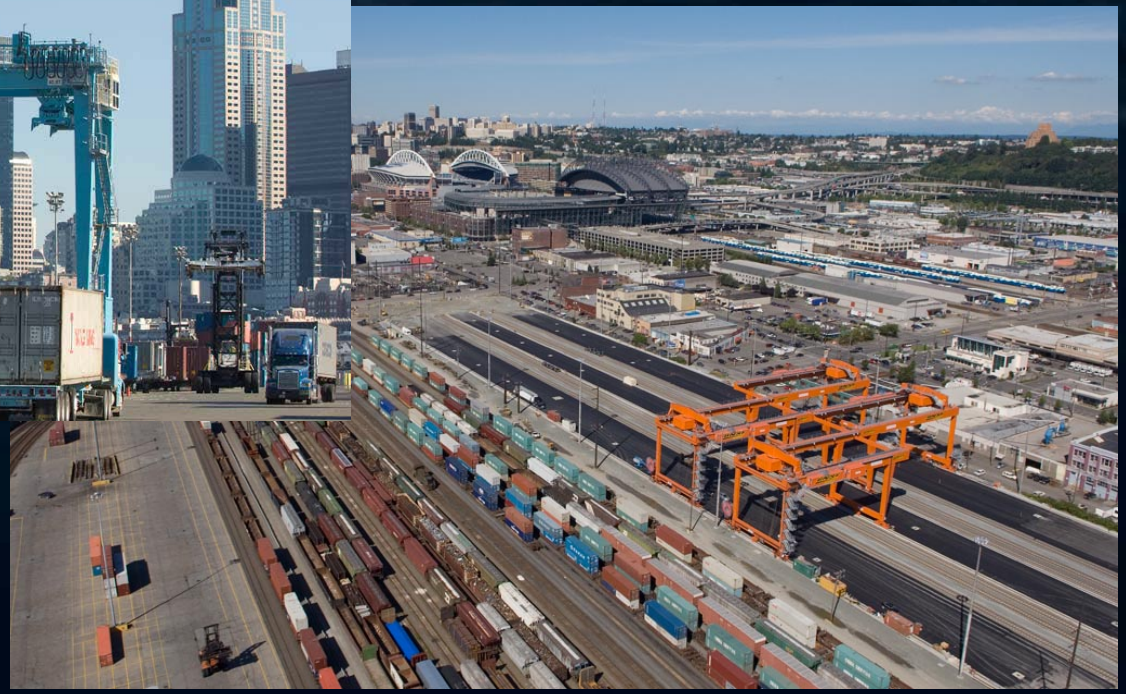
Port of Seattle

ScRAPS™

Seaport Truck Scrappage and Retrofits for Air in Puget Sound

Cargo Handling Equipment

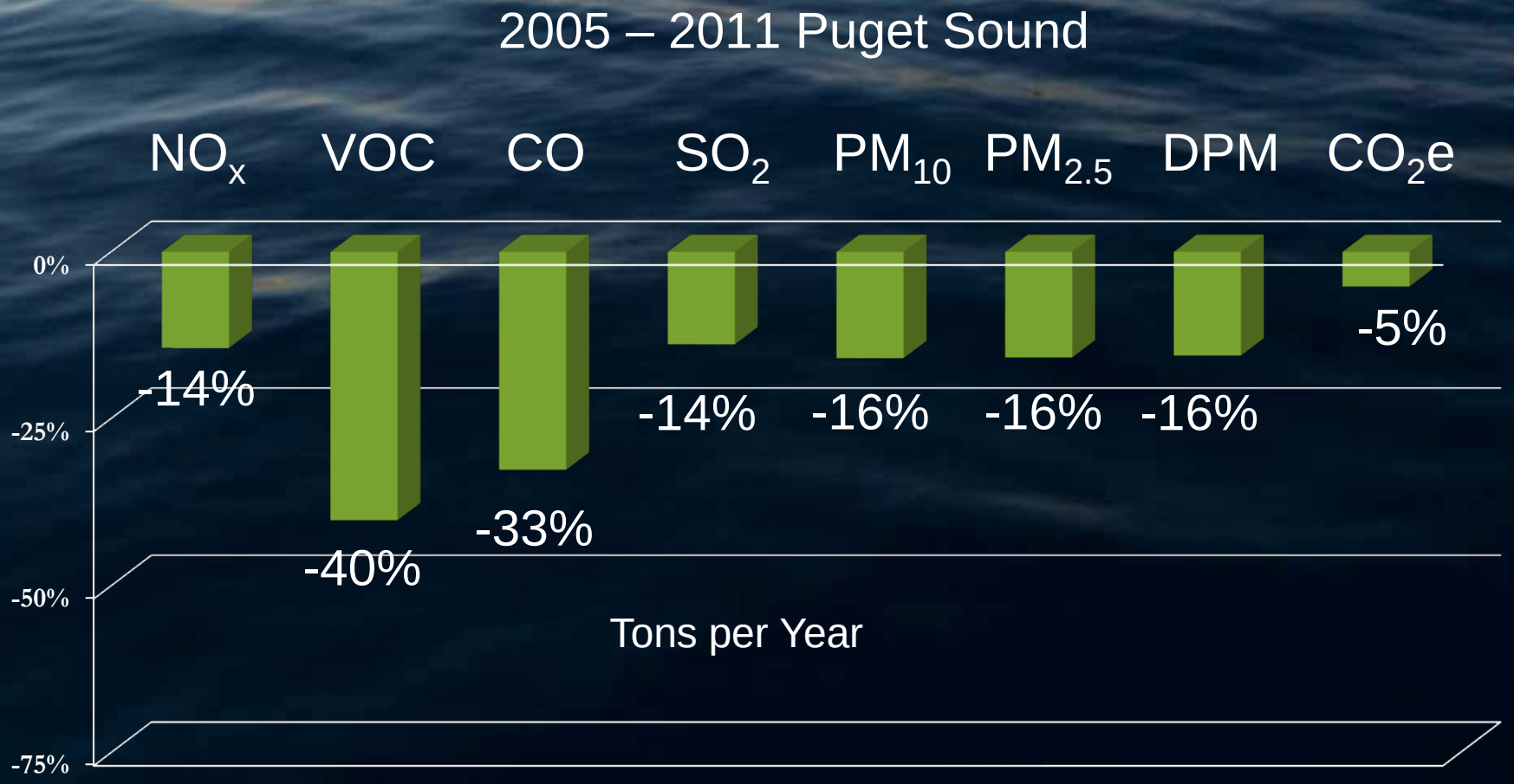




Puget Sound Maritime Air Emissions Inventory

- Inventories completed for 2005 and 2011
- Coordinated with similar effort in Canada
- Northwest Ports Clean Air Strategy built on results

Total Airshed Emission Reductions



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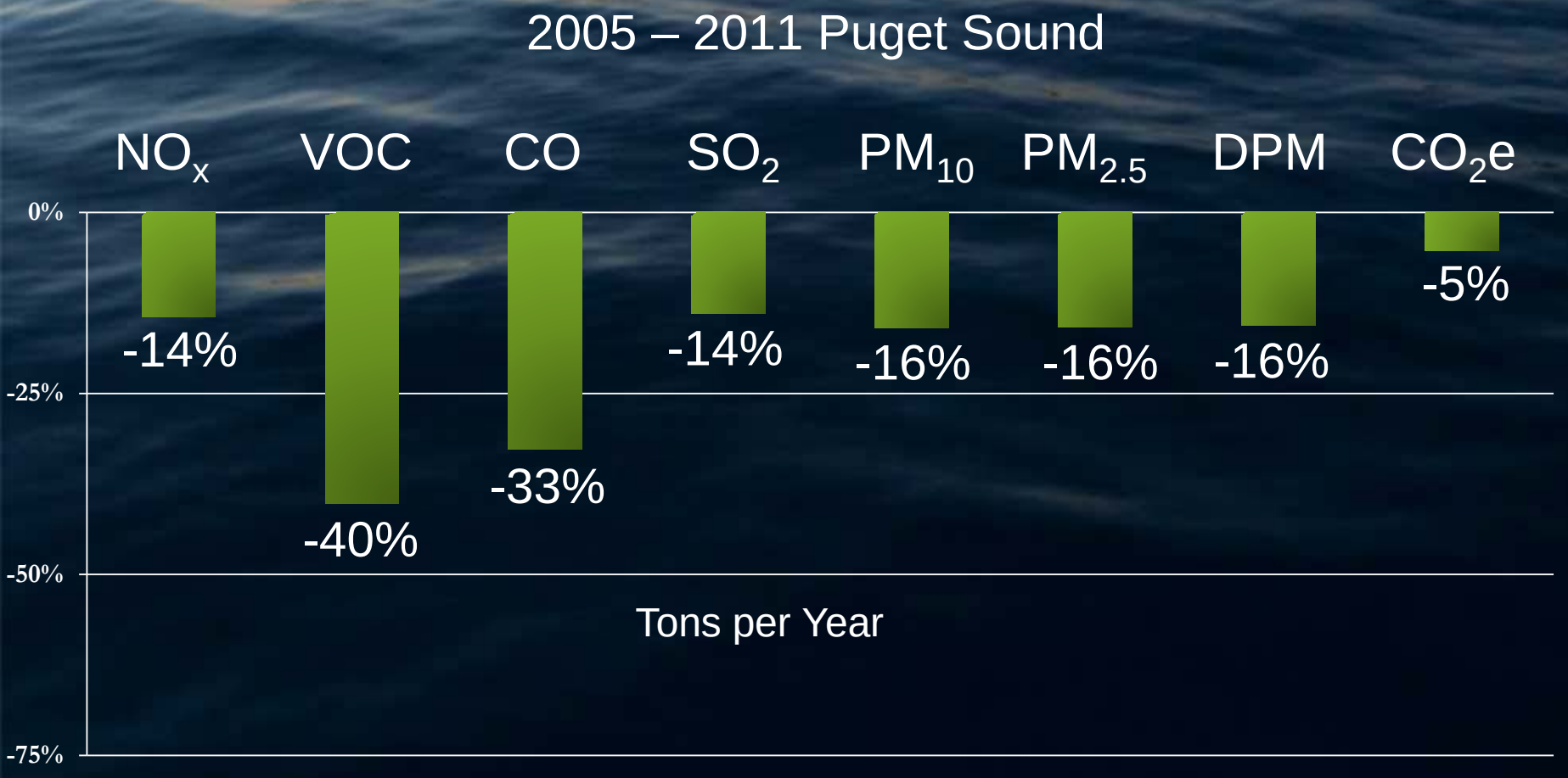
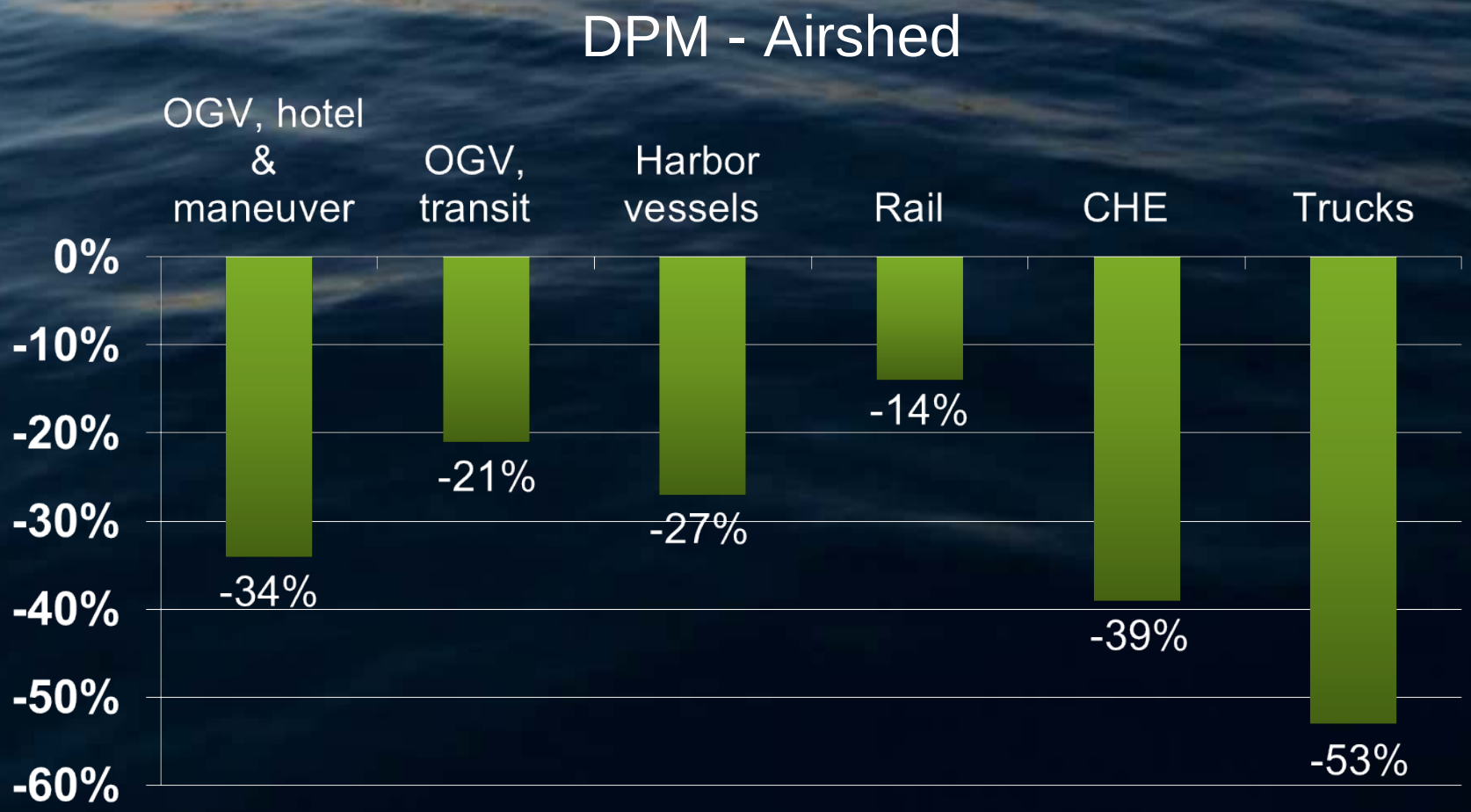
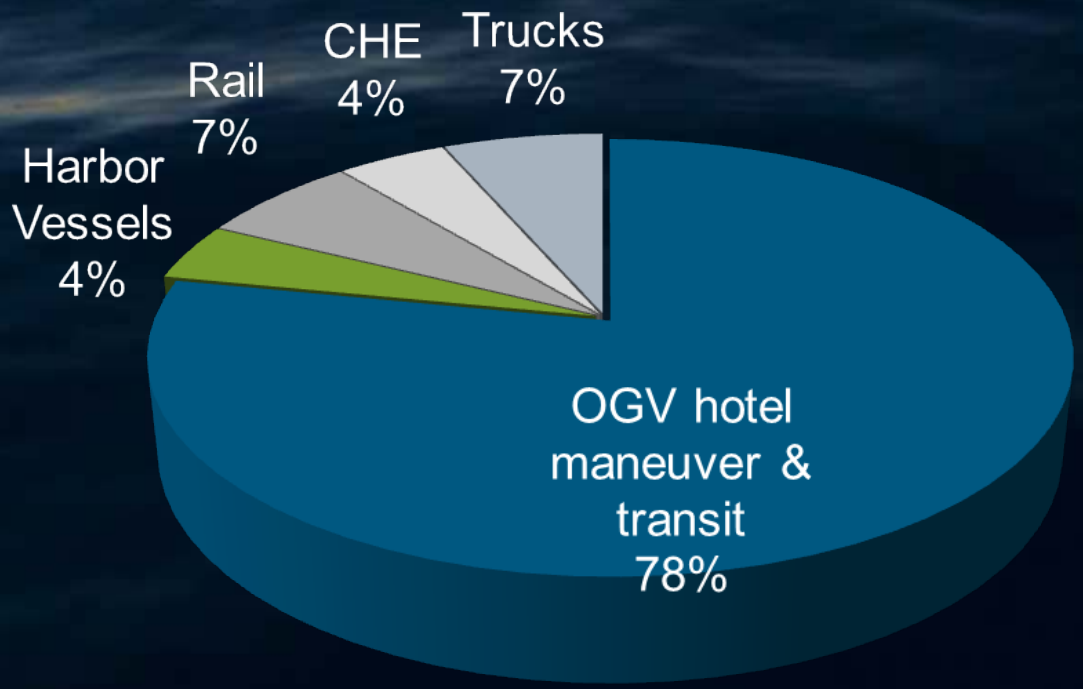


Port of Seattle Emission Reductions



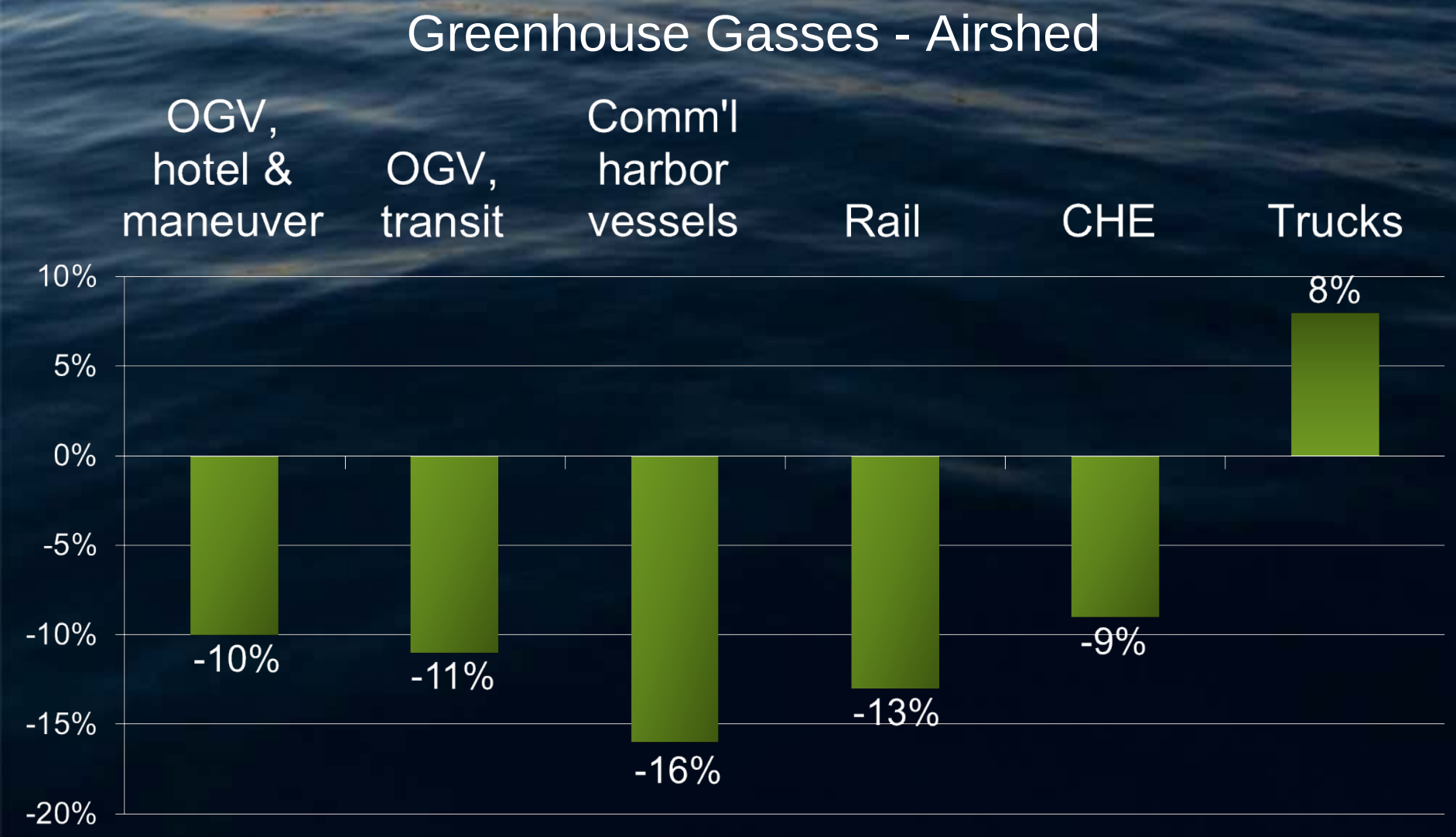
Diesel Particulate Matter

Port of Seattle – Airshed



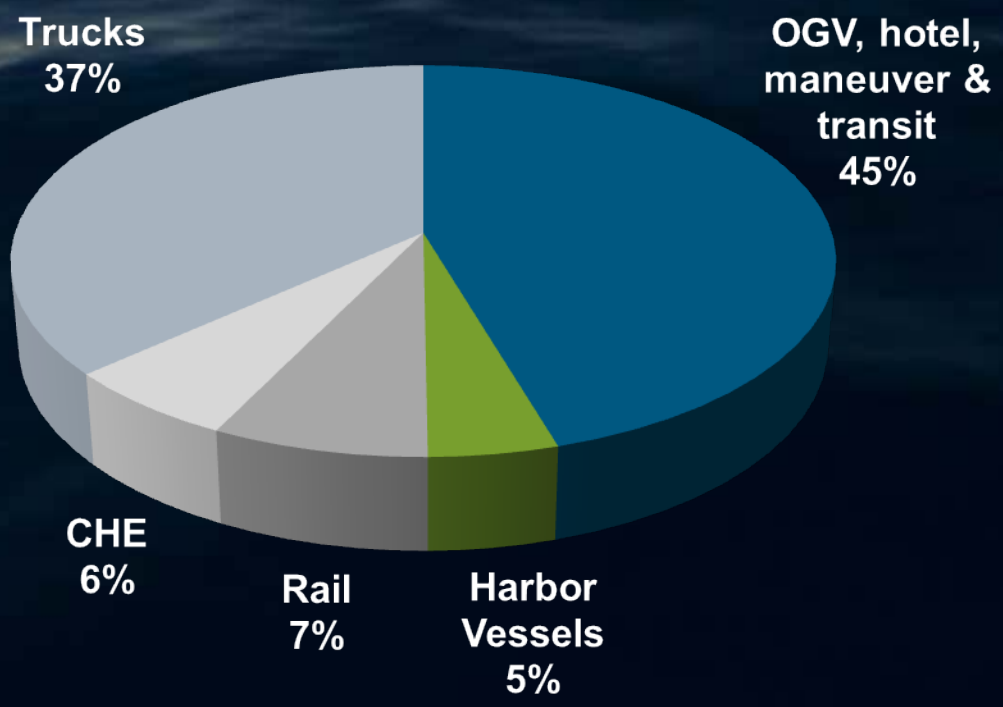
2011 Emissions Sources

Port of Seattle Emissions Reduction



Greenhouse Gases Emissions Sources

Port of Seattle – Airshed



The Economic Story

- Local Benefits of reducing Diesel:
  - On average, $1 spent on reducing DPM saves $13 in public health costs (USEPA)

- Global Benefits:
  - “Social Cost of Carbon” ranges from $5 to $65 per ton (USEPA)
  - West Coast routing can save $4.3 to $56 per FEU
  - Port of Seattle Carbon emission reductions save from $477K to $6.2 M

Spreading Best Practices

- Most powerful when more Ports Align:
  - Fuel incentive programs:
  - Common Shorepower facilities
  - Helps negate “nay-sayers”
- More efficient resource (fuel) use should be a competitive advantage
- Shippers beginning to look at Supply chain Carbon impacts
- Forum to share information

Port of Seattle

Thank You!