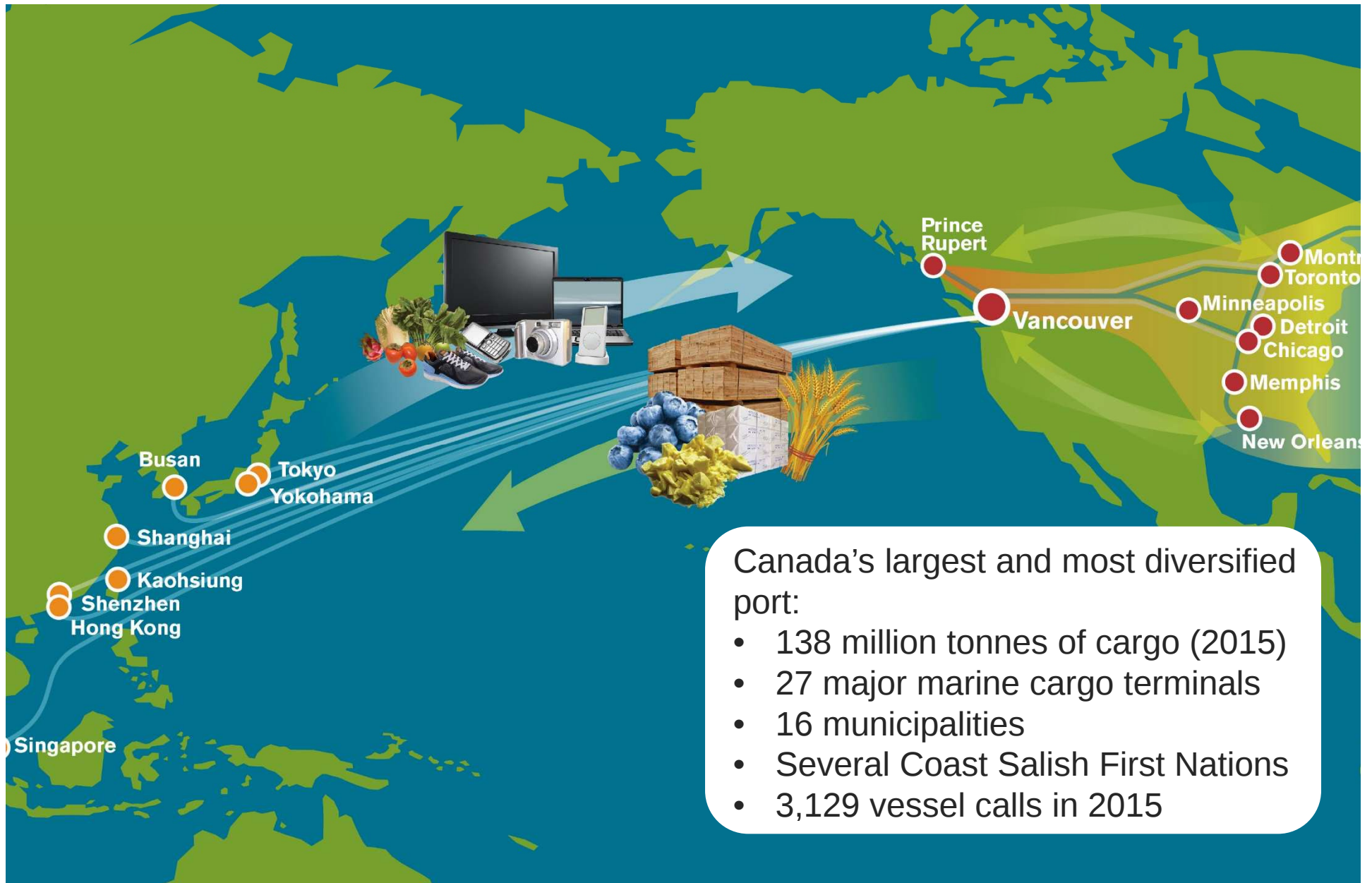


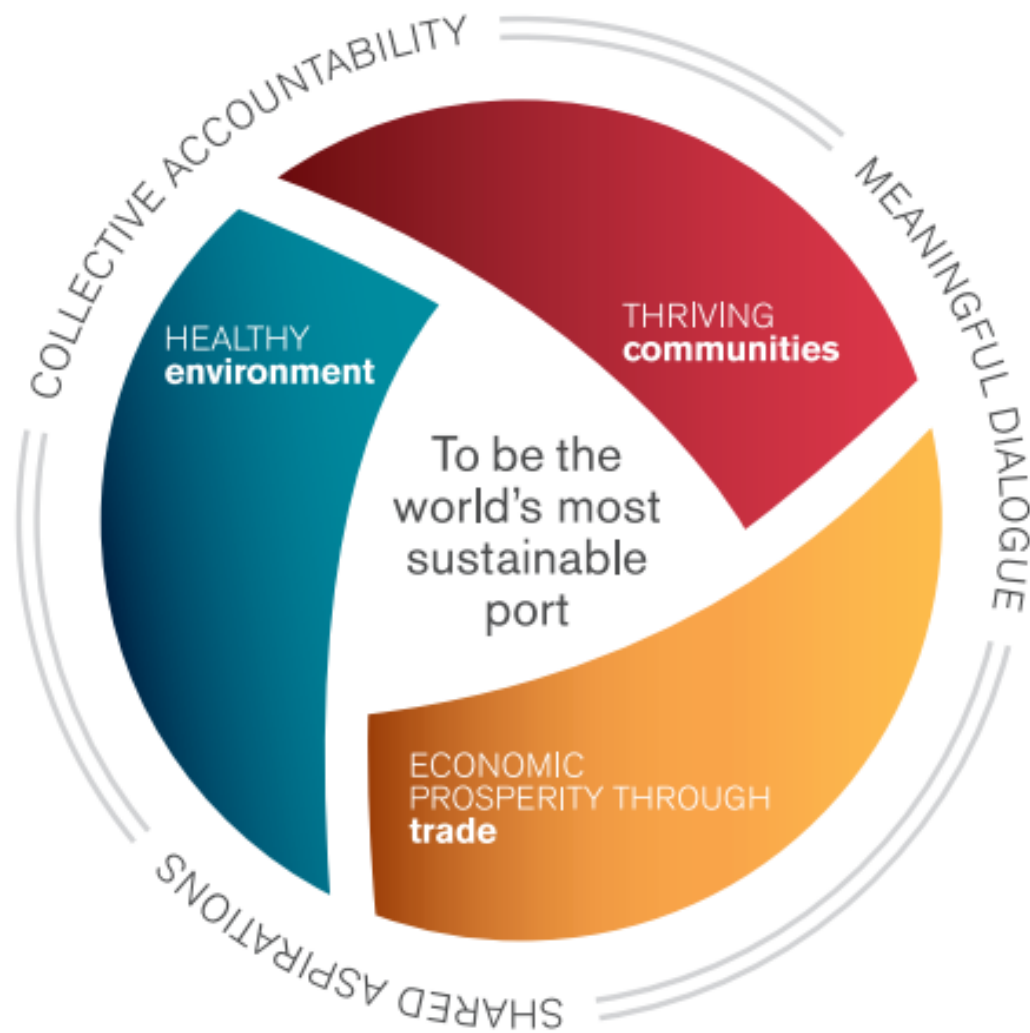
Towards a Sustainable Port

Christine Rigby
Environmental Specialist-Air Emissions

March-April, 2017



Vision



About Environmental Programs

- *Multi-disciplinary team:*
 - *Project Environmental Reviews*
 - *Habitat, fish and wildlife initiatives*
 - *Land management*
 - *Biodiversity*
 - *Storm water pollution prevention*
 - ***Air quality and climate change***
 - ***Underwater Noise***
 - *Noise*
 - *Energy Management*
 - *Social responsibility and sustainability*



Air Programs

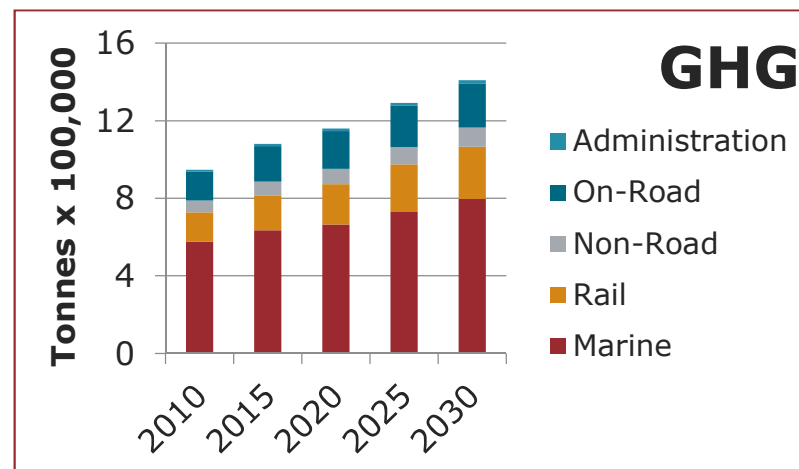
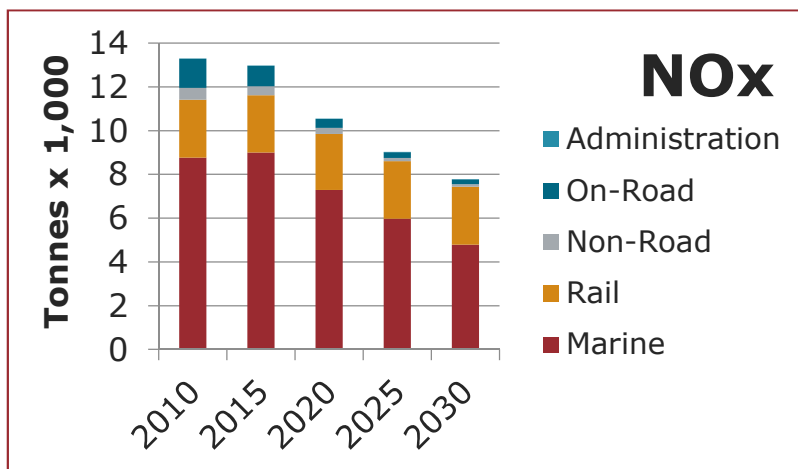
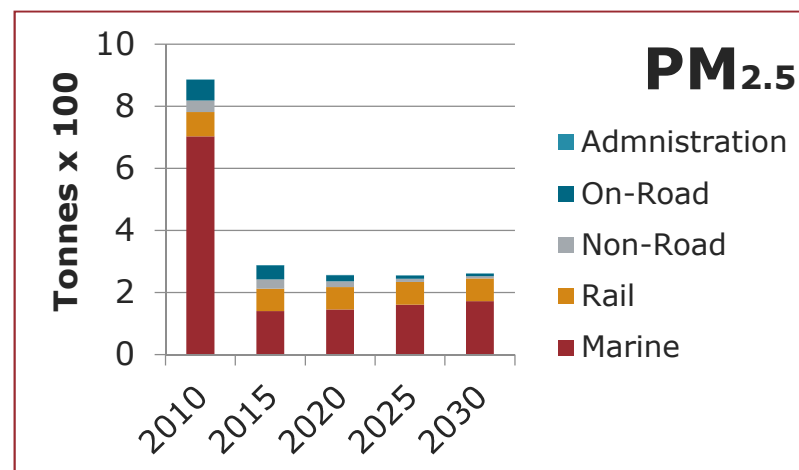
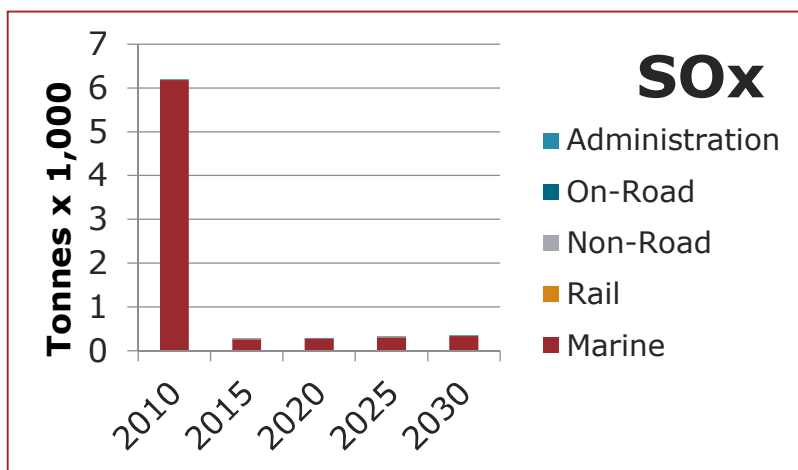
- Emission Inventories
- Northwest Ports Clean Air Strategy
- EcoAction Program
- Shore Power
- Non-Road Diesel Emissions Program
- Climate Smart
- Container Truck Licensing System



Emission Inventories

- 5 year cycle
- Ocean going vessels, tugs, dredges
- Non-road
- On-road
- Rail
- Administration
- Processes
- Fugitives
- Refrigerants
- Backcast/forecast
- Black carbon
- Real-time AIS data
- Real-time GPS data
- Detailed non-road diesel data
- Rail model
- Greenhouse gas reduction strategy analysis

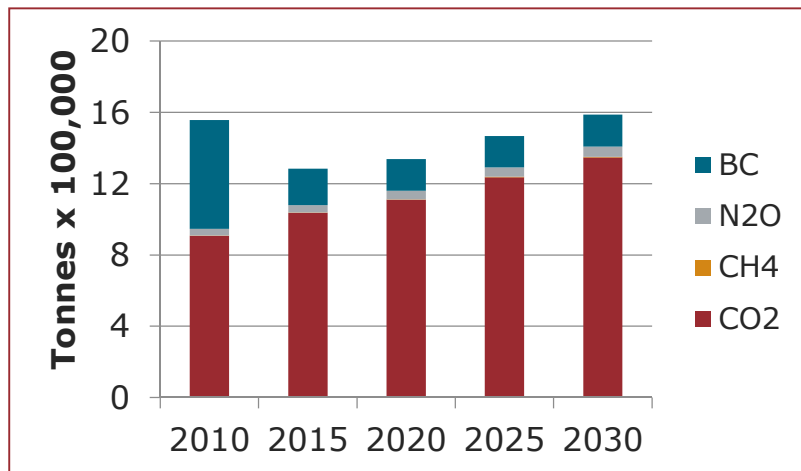
2015 Port Emission Inventory Backcast/Forecast



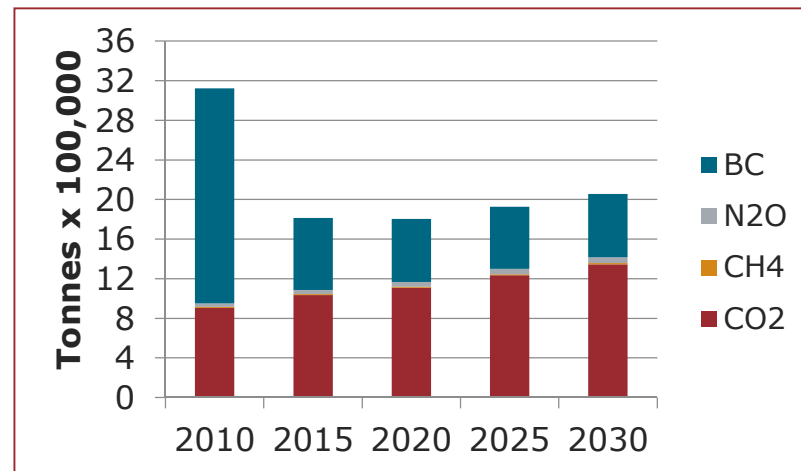
Black Carbon and Climate Change

CO₂-equivalent

100-year



20-year



Northwest Ports Clean Air Strategy (NWPCAS)



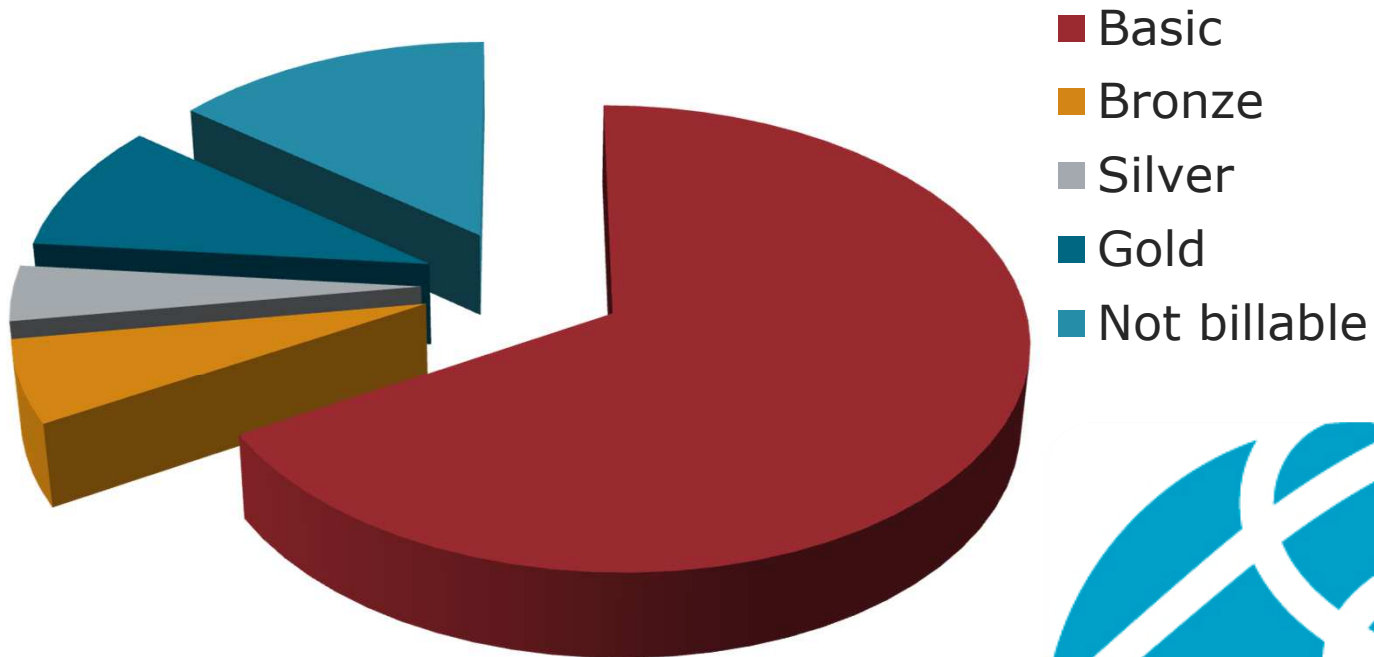
2007, updated 2013

- Vancouver Fraser Port Authority
- Port of Seattle
- Port of Tacoma
- Northwest Seaport Alliance (2015)
- Supported by
 - Environment Canada
 - U.S. Environmental Protection Agency
 - Washington State Department of Ecology
 - Puget Sound Clean Air Agency

EcoAction Program and Blue Circle Award



EcoAction Program and Blue Circle Award 2016



Participation Rate = 22%



Why is this so important?

Criteria	# calls in 2015 (VFPA)
Environmental Ship Index	892
RightShip	2719 (736 actively)
Clean Shipping Index	421
Green Award	0
Green Marine	0
Clean Cargo Working Group	No data
Betterfleet	No data

Total calls: 3149



Maximizing Potential

- Short term:
 - Ports
 - Common practices
 - Communications, outreach
 - E.g. Incentive program information sheet
 - Synergies
- Medium term:
 - One-window approach to house data used for incentive programs world-wide
 - Used by shippers, shipping lines and ports
 - E.g. similar to booking a hotel on Expedia

Shore Power

- 2009
 - Canada Place Cruise Terminal
 - 439 connections
 - 16,138 tonnes of (net) CO₂-equivalent reduced
 - 474 tonnes air quality pollutants reduced
- 2017-2019
 - Centerm Container Terminal
 - Deltaport Container Terminal



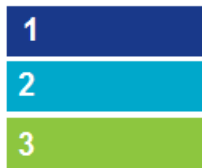
Non-Road Diesel Emissions (NRDE) Program

- January 1, 2015
- Requirements:
 - Reporting
 - Labelling
 - Fees
 - Fuel Efficiency Plan
 - Idle reduction
 - Opacity limits
 - Auditing
 - Restrictions



Climate Smart

training
program



online
software
tool



one-on-one
support



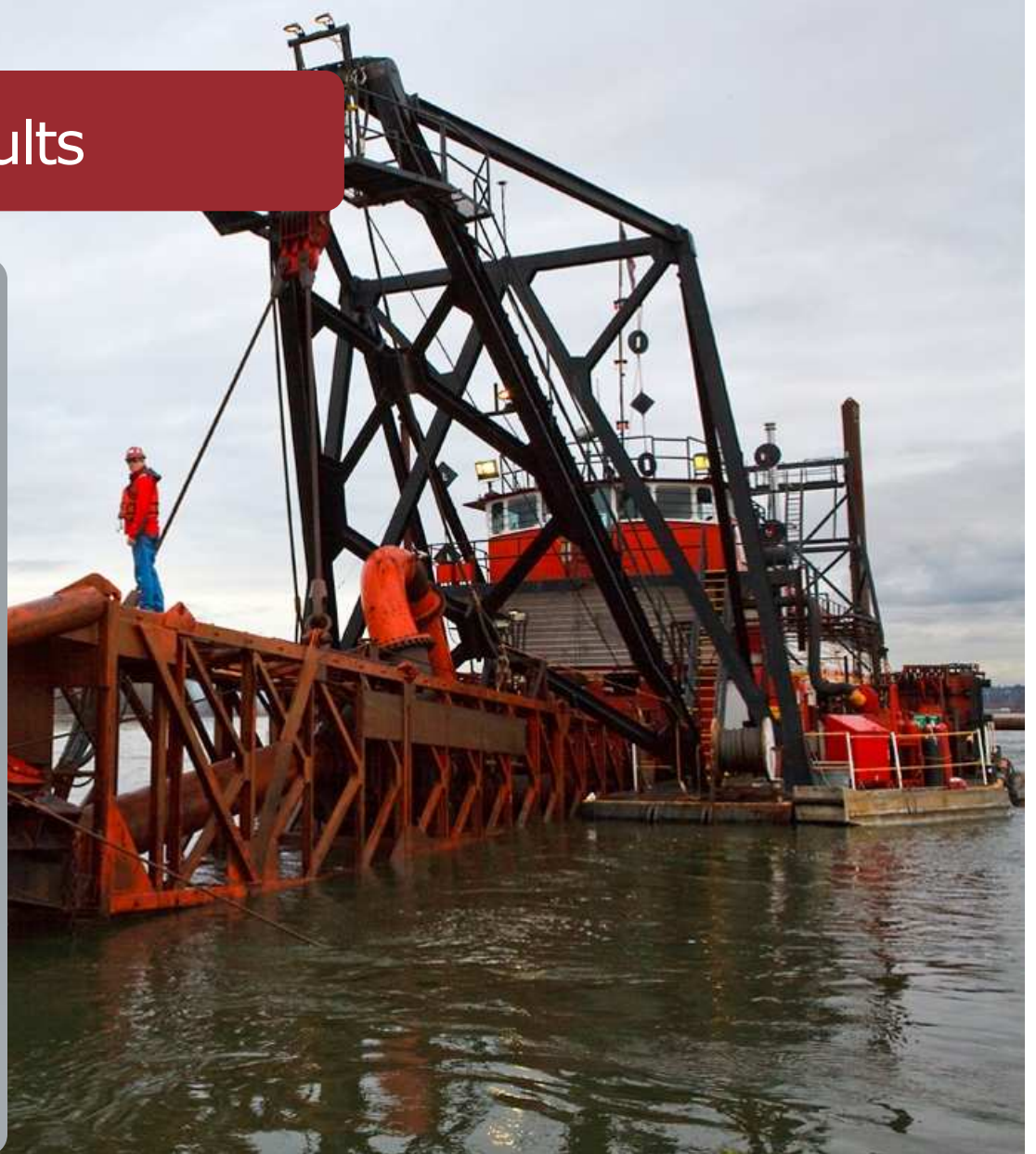
certification &
b2b network



-
- Build greenhouse gas management capacity:
 - Emission inventory
 - Emission reductions and co-benefits
 - Communication of results

2015 Climate Smart Results

- 11 port businesses
- 85,077 tonnes of GHG measured
- ↓ 2,788 tonnes of GHG
- ↓ 11% GHG emission intensity
- ↓ \$670,000/yr



Container Truck Licensing System

- Since 2008
 - Engine age and emission limits
 - 2007 or equivalent particulate matter emissions by 2017
 - Opacity limit 20%
- 10 year rolling truck age by 2022



Underwater Noise

- ECHO Program: Enhancing Cetacean Habitat and Observation

What? A collaborative research and management initiative

Why? To better understand and manage the potential threats to at-risk whale species from shipping activities in our region

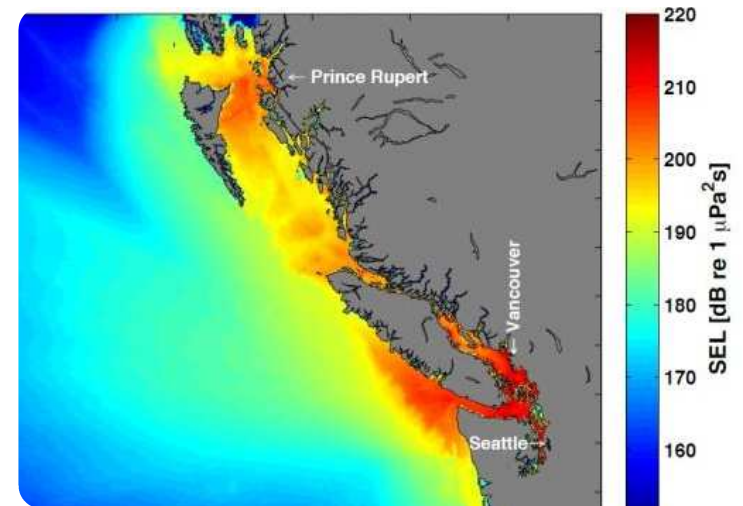


Commercial Vessel Related Activities and Whales

- Endangered killer whale presence is high
- Shipping lanes are already noisy
- Underwater noise is important to whales
- Existing threats of ship strike and environmental contamination have been identified



Killer whale distribution (2008 - 2010) and shipping traffic (August 2008).



Cumulative noise level (all vessel sizes and classes)

ECHO Program-Key Steps

Key issues and threats

- Physical disturbance
- Acoustic disturbance
- Environmental contaminants

Targeted research and monitoring initiatives

Threat mitigation and management actions

Noise



- Community complaint driven program
- Improve understanding of noise environment
 - Confirm/exclude sources
 - Long term trends
 - Multiple long term real-time monitoring sites
- Body of knowledge to facilitate informed decisions

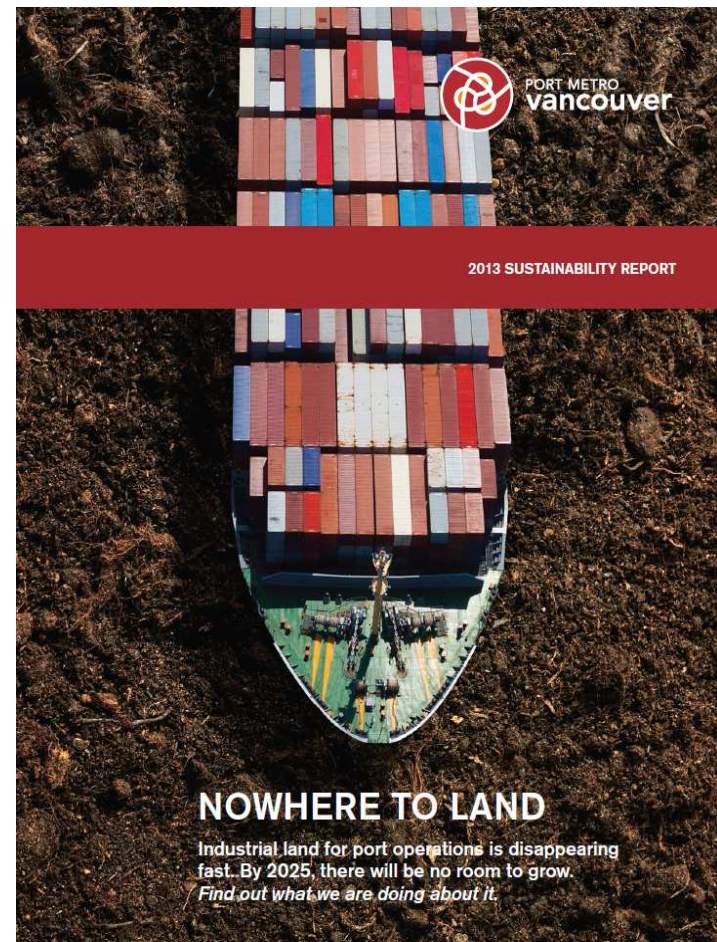
Energy Management

- Energy Action Initiative partnership with British Columbia Hydro
 - Electric conservation
 - Strategic energy plan
 - Energy assessments
 - Opportunity identification
- VFPA's role:
 - Bring tenants together to share information and learn
 - Facilitate energy studies
 - Support applications for incentives to utility provider
 - Information/resources portal



Social Responsibility and Sustainability

- Sustainability Report
 - Overview of environmental, social and economic performance
 - Global Reporting Initiative guidelines
 - Assured by an independent third-party
 - www.portvancouver.com/accountability



Project Environmental Reviews

- All projects and proposals in VFPA jurisdiction
- Each proposal receives level of assessment appropriate to determine if significant adverse effects
 - Air emissions, noise, view, proximity to residences, archaeology, contamination, water, species at risk
- Successful projects receive a permit



Habitat, Fish and Wildlife



- Fraser River Improvement Initiative
 - Resolution of trespass and derelict structure issues



Before



After

- Habitat Enhancement Program
 - Balance between healthy environment and future development

Land Management

- Established guidance document for environmental assessments
- Cooperative and iterative process for assessment and remediation
- Focus on:
 - Human health
 - Aquatic protection
- Remediate where feasible/practical
- Risk management approach option



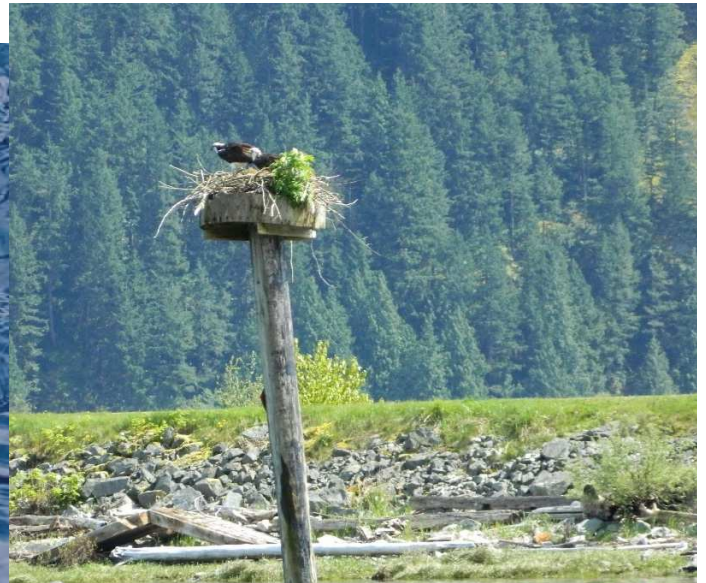
Biodiversity

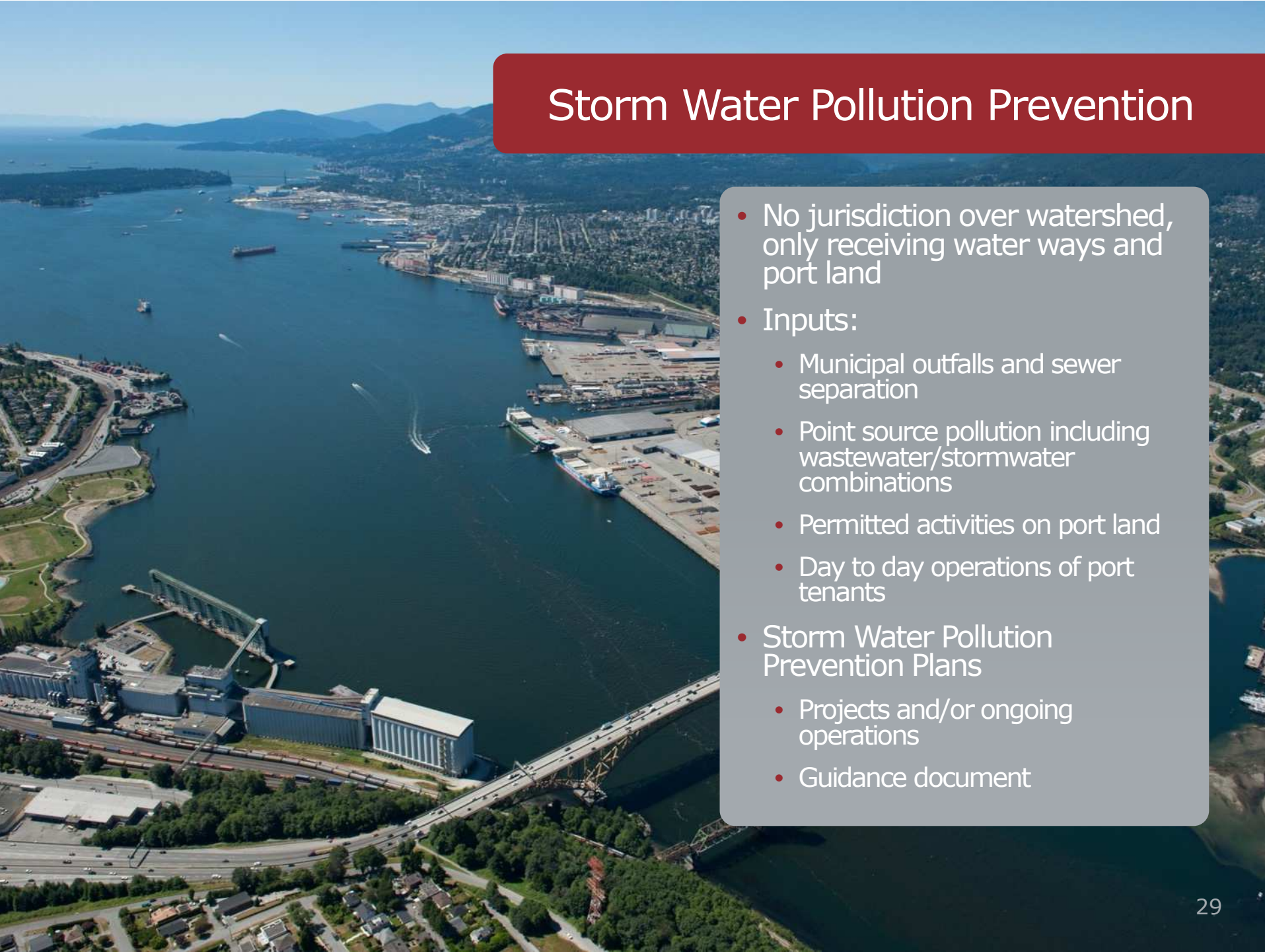
- Threats:

- Habitat destruction
- Invasive species
- Pollution
- Human interactions
- Over-harvesting

- Protection and Preservation:

- Environmental reviews
- Contaminated site assessment and clean-up
- Species at risk inventory
- Land-based invasive species inventory
- Collaboration and partnerships



An aerial photograph of a large port area, likely the Port of Vancouver. The image shows a wide river or harbor with a large bridge crossing it. On the left bank, there are industrial buildings, a dam, and a railway line. The right bank is densely packed with industrial facilities, including large warehouses and shipyards. In the background, there are mountains and a clear blue sky.

Storm Water Pollution Prevention

- No jurisdiction over watershed, only receiving water ways and port land
- Inputs:
 - Municipal outfalls and sewer separation
 - Point source pollution including wastewater/stormwater combinations
 - Permitted activities on port land
 - Day to day operations of port tenants
- Storm Water Pollution Prevention Plans
 - Projects and/or ongoing operations
 - Guidance document



PORT of
vancouver

Thank you

Christine Rigby

Environmental Specialist-Air Emissions

Christine.Rigby@portvancouver.com

604.665.9237