



Committed to Clean Air

New Jersey Clean Air Council Public Hearing

July 30, 2019

Measurable Environmental Success

- Through voluntary programs, efficiency improvements, fuel mandates, and stakeholder collaboration:
 - decreased particulate matter emissions by 74%,
 - decreased nitrogen oxides by 38%
 - despite 41% cargo growth (compare to 2006 baseline).
 - Equivalent to removing 373,000 cars off the road annually
- Since 2009, awarded \$34M in federal funding and provided \$48M in support of air quality improvement efforts
- ISO 14001 certified since 2009



2018 Air Emissions Inventory

Nitrogen Oxide

Down

38%*

Equivalent to 373,000 cars off the road**

250,270 vehicles registered in Manhattan***

Particulate Matter₁₀

Down

74%*

Sulfur Dioxide

Down

98%*

Greenhouse Gas

Down

0.2%*

Up 41%*

Cargo

*Compared to 2006 Levels

**Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks Emission Facts, 2008, EPA

***<https://dmv.ny.gov/statistic/2018reginforce-web.pdf>

2018 Local Emissions

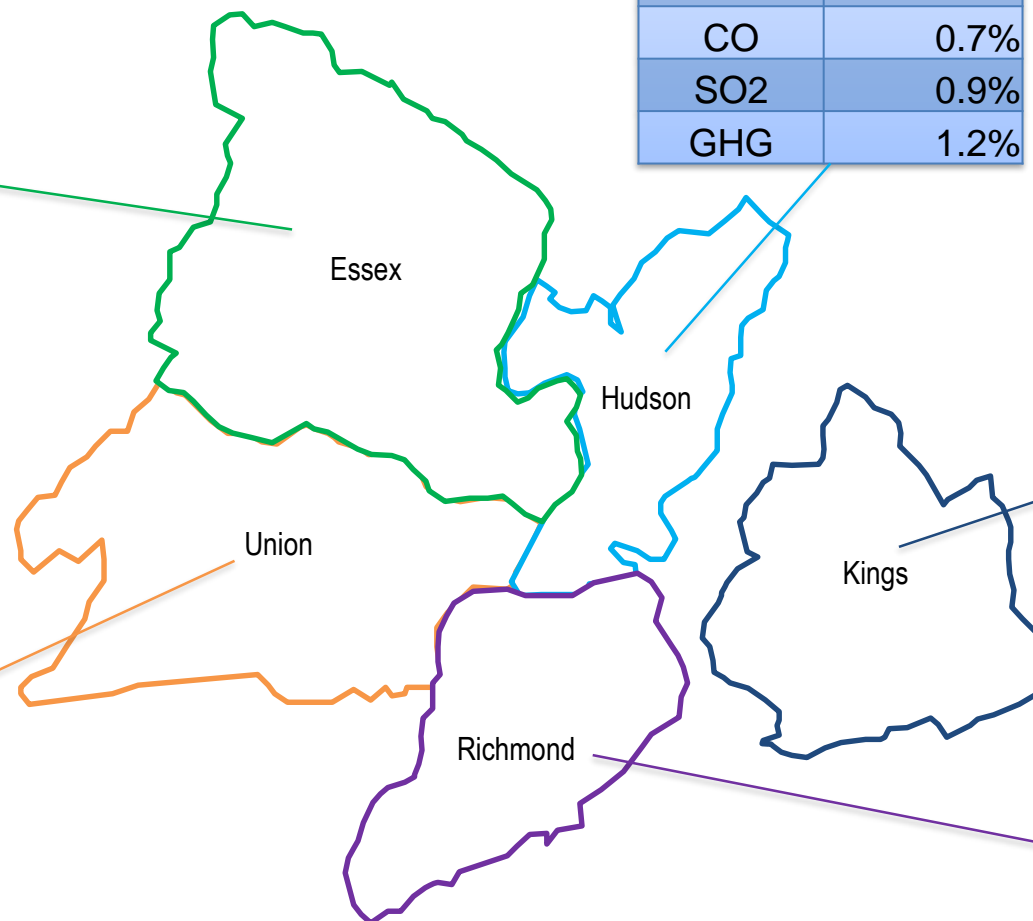
Essex (Newark)	
NOx	9.5%
PM2.5	3.1%
VOC	0.6%
CO	0.5%
SO2	2.6%
GHG	3.2%

Hudson (Bayonne)	
NOx	7.1%
PM2.5	2.6%
VOC	0.5%
CO	0.7%
SO2	0.9%
GHG	1.2%

Kings (Brooklyn)	
NOx	1.9%
PM2.5	0.3%
VOC	0.1%
CO	0.1%
SO2	1.1%
GHG	0.3%

Union (Elizabeth)	
NOx	14.5%
PM2.5	5.1%
VOC	1.1%
CO	0.9%
SO2	5.6%
GHG	1.9%

Richmond (Staten Island)	
NOx	8.9%
PM2.5	1.6%
VOC	0.4%
CO	0.3%
SO2	4.8%
GHG	1.2%

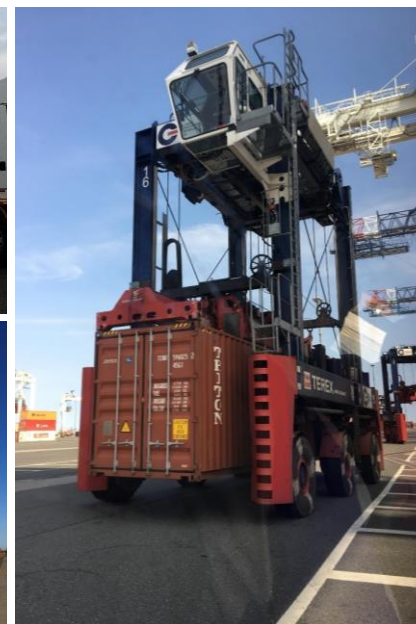
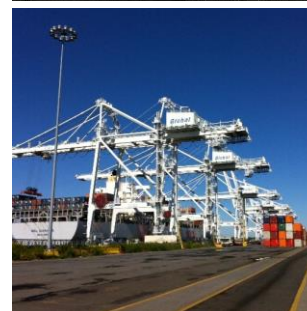
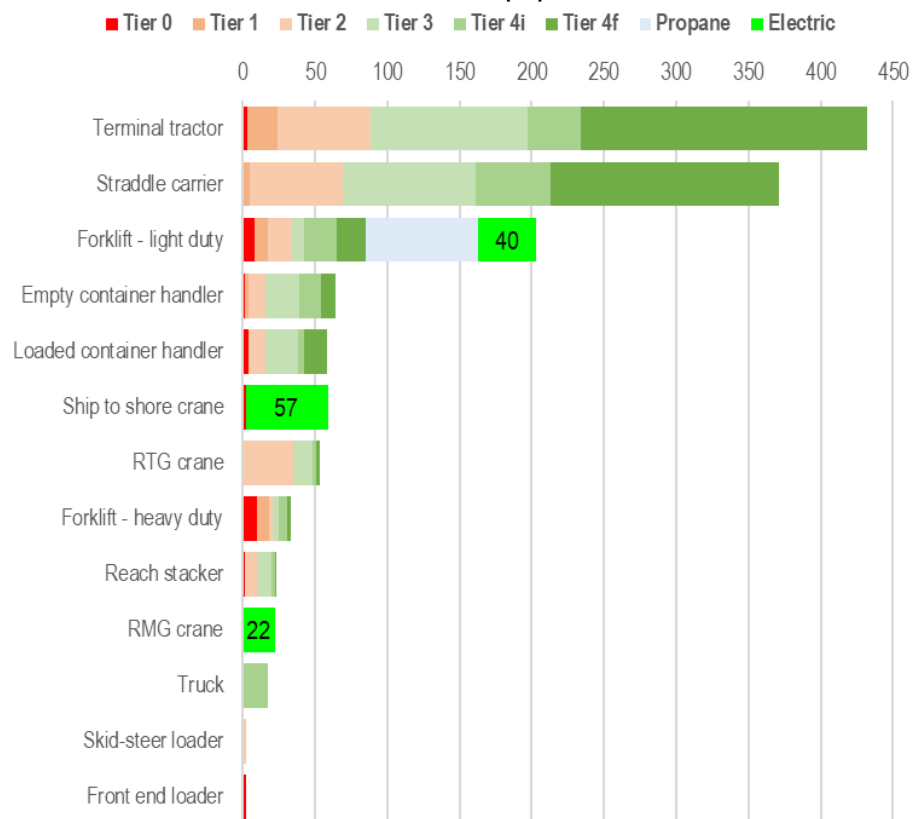


Heavy Duty Diesel Vehciles

- Tariff requirements to phase out older trucks serving the port
- Truck Replacement Program
 - \$25,000 grants to scrap old truck
- 2018 FHWA data: 37,000 registered in State of New Jersey / 6,000 (16%) associated with the Port.
- Other measures
 - Idle Enforcement
 - New more efficient gates
 - Truck Appointment Systems
 - “Street Turn” Portal
 - Increasing Modal Split

Cargo Handling Equipment

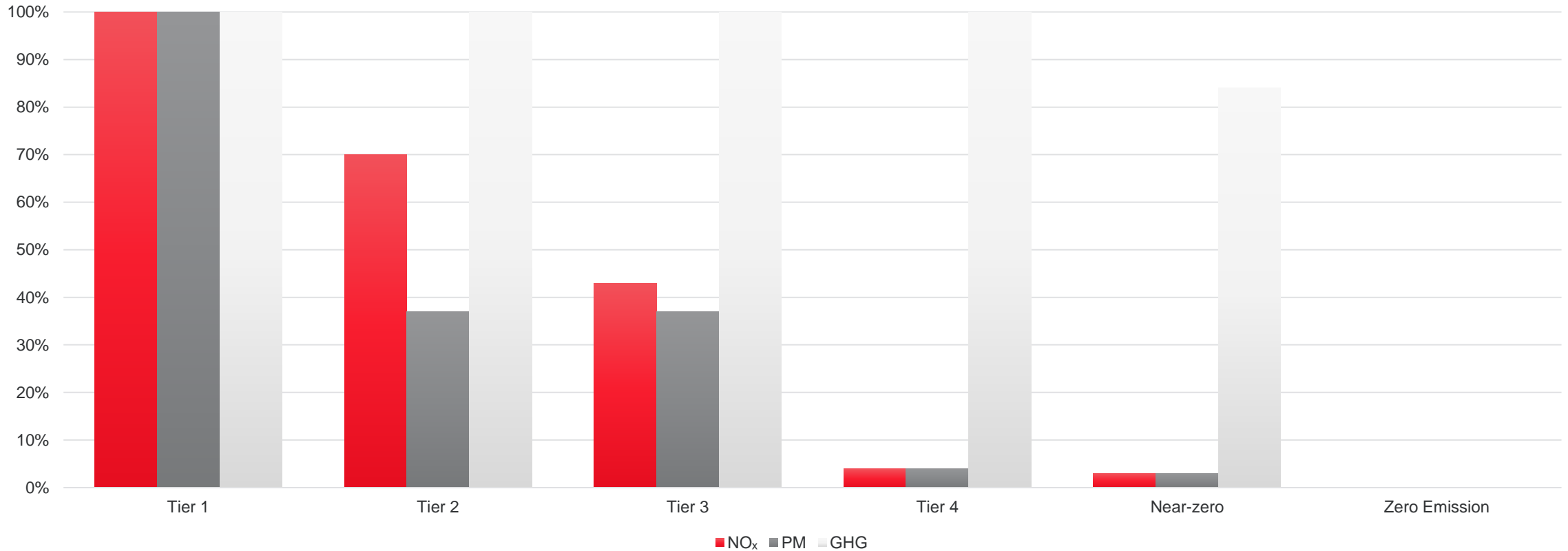
- 57% equipment meets or exceeds Tier 4 standards
- All active ship to shore cranes are electric
- 9% equipment are electric



EPA Emission Standards

Using Tier 1 as Baseline

Tailpipe Emission Comparison Between Reduction Strategy



State of the Industry

✓	Commercially available
✗	Not available
⚙️	Demo in progress



Ship-to-shore Crane

Load and unload containerships. Fixed to rail tracks. Usually powered by electricity from the grid.

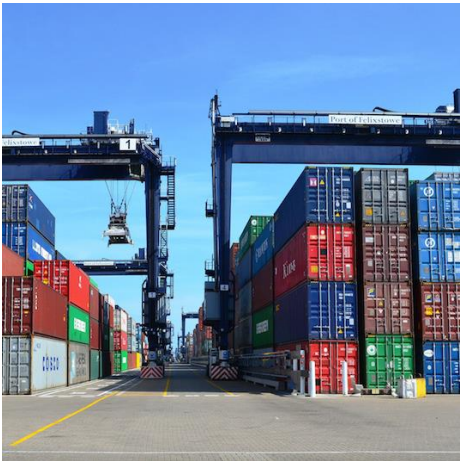
- ✓ Clean Diesel
- ✗ Near-zero
- ✓ Zero

State of the Industry

✓	Commercially available
✗	Not available
⚙️	Demo in progress

Rail-mounted Gantry Crane

Fixed to rail tracks. Usually powered by electricity from the grid.



- Clean Diesel ✗
- Near-zero ✗
- Zero ✓



Rubber-tired Gantry Crane

Lift container from top. Slow moving.

- ✓ Clean Diesel
- ✓ Near-zero
- ⚙️ Zero

Straddle Carrier

Can go over stacks up to 3 in height.



- ✓ Clean Diesel
- ✗ Near-zero
- ⚙️ Zero*






Terminal Tractor

Semi-tractor intended to move within cargo yard, warehouse, or intermodal facility

- ✓ Clean Diesel
- ⚙️ Near-zero
- ⚙️ Zero





*Zero emission straddle carrier is operationally different from conventional

State of the Industry

	Commercially available
	Not available
	Demo in progress

Loaded Container Handler
Lift container from top. Can reach stacks up to 3 in height





Clean Diesel			Clean Diesel
Near-zero			Near-zero
Zero			Zero



Empty Container Handler
Front loader can reach up to 7 empty container

Reach Stacker
Flexible side loaders, Can reach stacks up to 3 full or 5 empty containers.

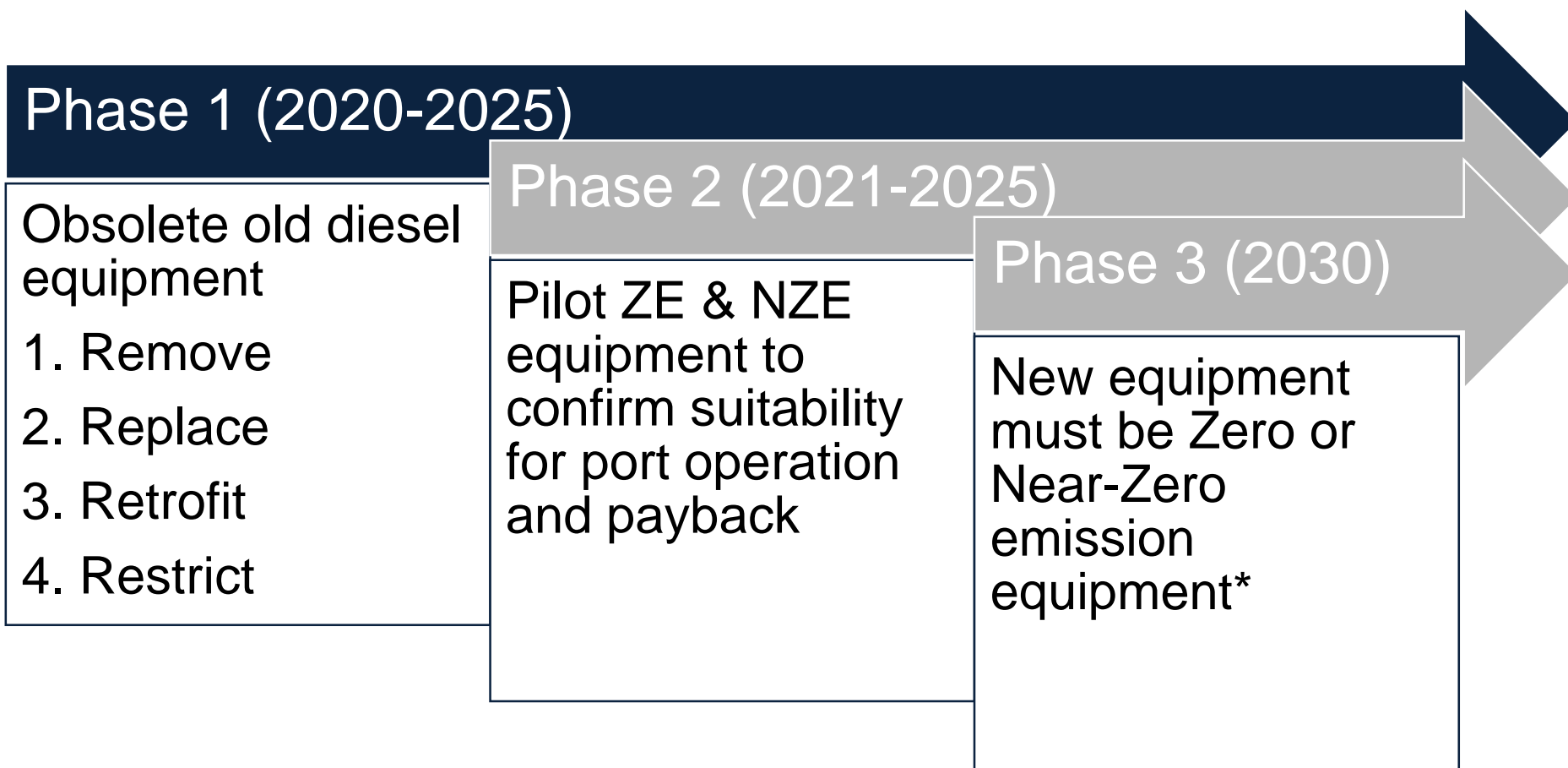


Clean Diesel			Clean Diesel
Near-zero			Near-zero
Zero			Zero



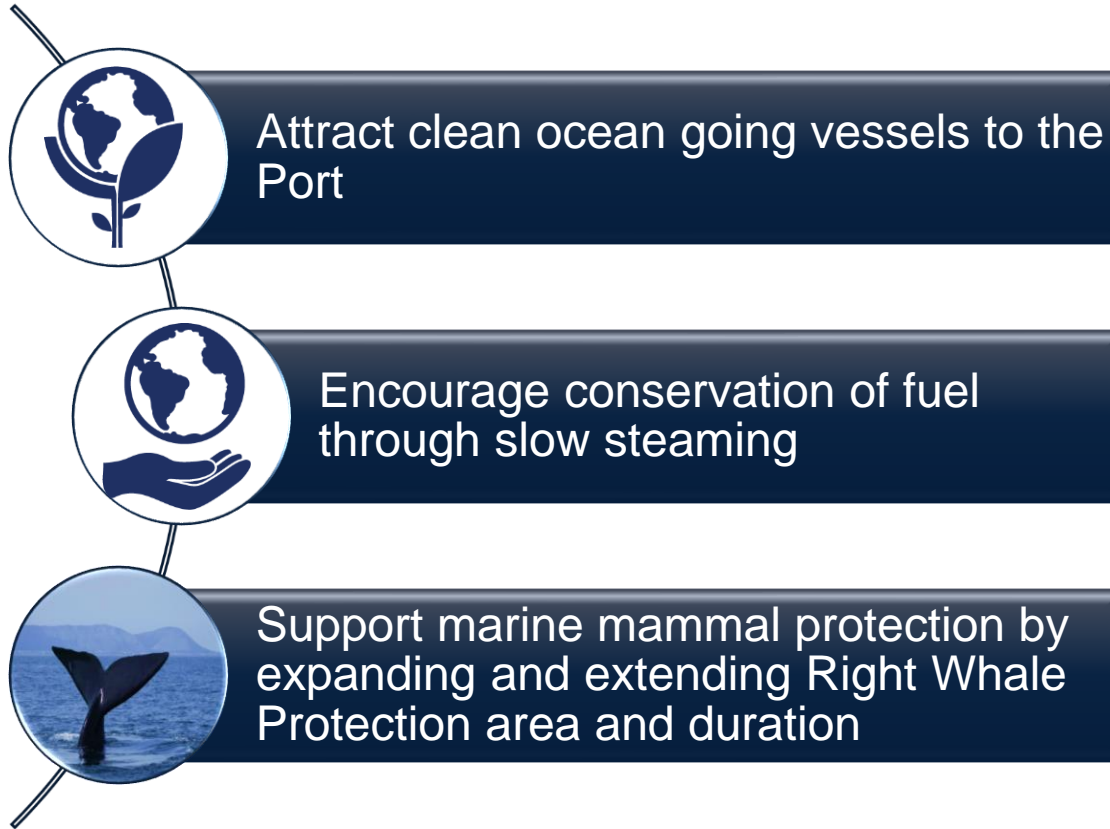
Heavy Duty Forklift
9 ton and above lifting capacity

Cargo Handling Equipment – Path Forward



Clean Vessel Incentive Program*

Eliminate 342 tons NO_x, 3 tons particulate matter, 8,425 tons CO₂ annually



What Next?

