

# PORT OF NEW YORK & NEW JERSEY Progress to Cleaner Air

## OCEAN-GOING VESSELS

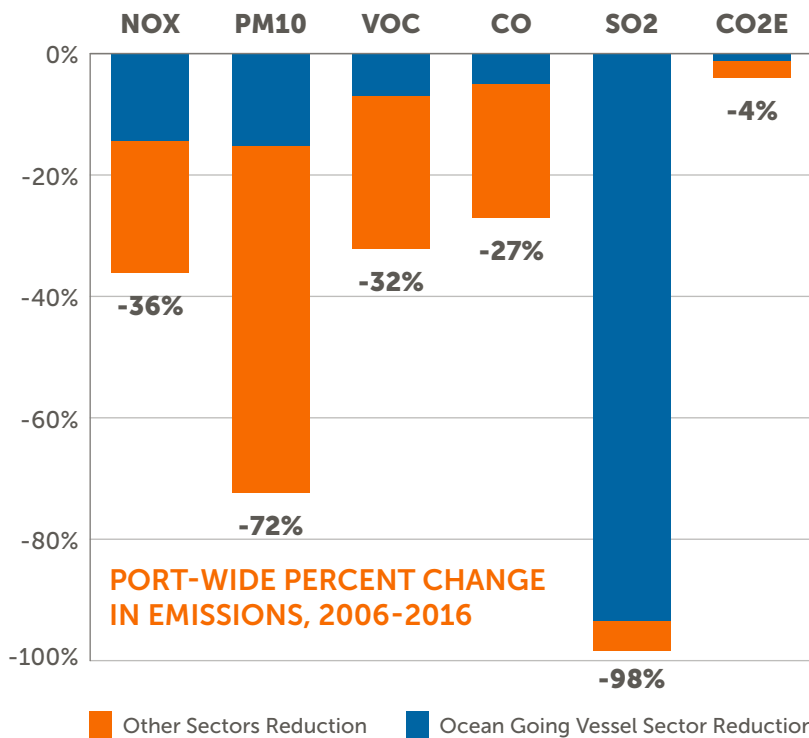
CONTAINER SHIPS • BULK CARRIERS • AUTO CARRIERS • PASSENGER CRUISE SHIPS • TANKERS • ROLL ON-ROLL OFF VESSELS

### PROGRESS

#### North American Emissions Control Area

- Covers 200 nautical miles out from the coastline of U.S. and Canada
- Limits fuel sulfur content to 0.1% (1,000 ppm) as of January 1, 2015
- Requires vessels constructed after January 1, 2016 to have Tier III NOx controls (80% reduction)

**Cargo throughput increased 23% since 2006**



#### Clean Vessel Incentive Program

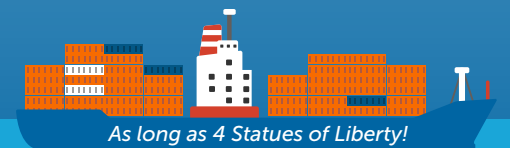
- Financial incentives to ships that reduce emissions below International Maritime Organization (IMO) standards
- 2013-2015 program awarded \$3.9 million in incentives to over 2,000 qualifying vessels

#### Shore Power at the Brooklyn Cruise Terminal

- Operational since September 2016
- Each vessel that plugs into the system can save \$9.3 million per year for adjacent communities in healthcare costs avoided

### OPPORTUNITIES

- Emission control technologies** to meet Tier III standards for NOx (80% reduction)
- Efficiency improvements**, such as fuel efficient hull and propeller designs, hull coatings, and exhaust heat recovery
- Alternative fuels**, including liquefied natural gas (LNG) fuel to replace ultra-low sulfur diesel fuel
- Shore-side technologies**, including barge-based capture and control and shore power, eliminate local emissions when the vessel is at berth



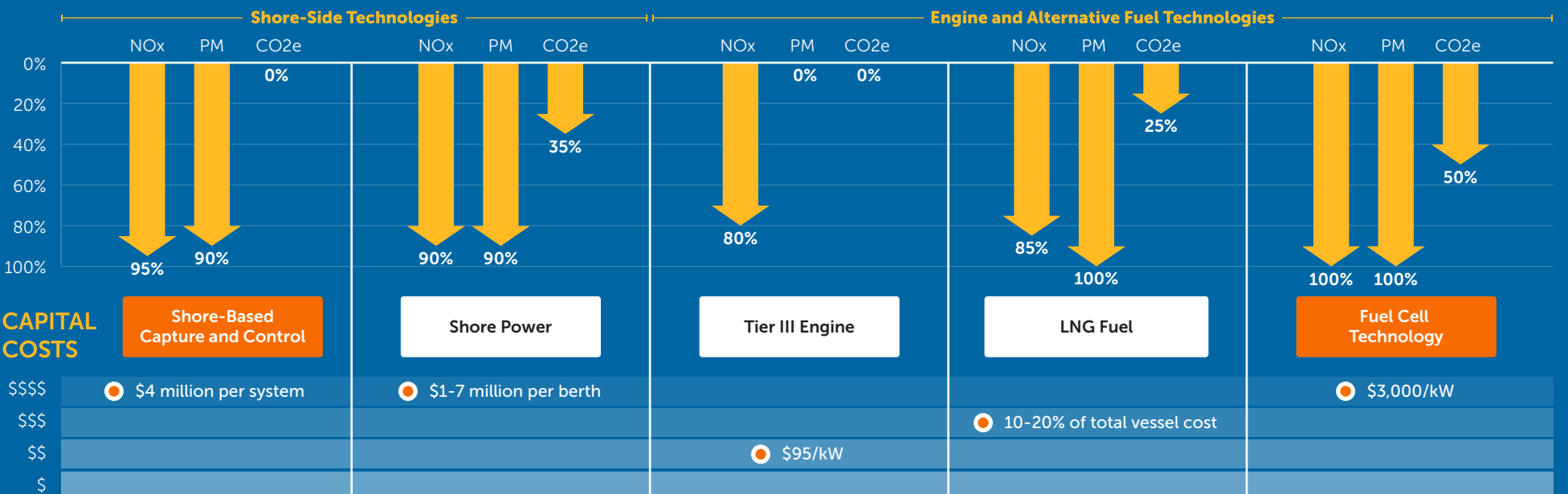
#### ON THE HORIZON

- Bigger, more efficient ships (up to 18,000 TEUs\*)
- 0.5% fuel sulfur content limit in effect globally by 2020
- By 2025, the IMO will require all new ships to be 30% more efficient than ships built in 2014
- Testing underway for fuel cell power packs, electric ships, and autonomous vessels

\*TEU: Twenty-foot equivalent unit, a measure of cargo capacity

#### EMISSIONS REDUCTION POTENTIAL FROM TIER 1 BASELINE

Technology Status: Available (white box) Emerging (orange box)



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SOURCES