

# ***AAPA Marine Terminal Management Training Program***

## **Sustainable Port Development and Operations**

**October 9, 2014  
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# Port of New York and New Jersey



# *Port of New York and New Jersey*

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Third largest Port in US - 5.4 million TEU in 2013

Economic engine:

- 296,060 jobs
- \$18.3B in wages
- \$6.1B in taxes

Definition of Success = Sustainable Port =

- Regional Prosperity +
- Financial Return +
- Environment & Security

## *Port of NY & NJ Air Quality Challenge*

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- How to accommodate cargo growth –**
- with all the economic benefits that it brings**
- while protecting and improving the environment, specifically air quality**

## *Response: Implement Organizational Change*

- Established an Environmental Unit
  - Address impact of port operations and development
  - Develop and implement new programs and processes
- Implemented an Environmental Management System (EMS)
  - Achieved ISO 14001 Certification – April 2009

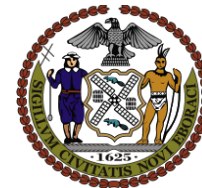


## ***Response: Sustainable Port Development***

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- Rail Expansion Program
- Roadway Enhancement Program
- Harbor Deepening Air Offset and Wetland Restoration
- Hybrid Yard Tractors (Hydraulic, Electric)
- Marine Tenant Actions:
  - Installed Electric Cranes
  - Installed Electronic Gates, Extended gate hours
  - Modernized Cargo Handling Equipment: Over 30% Reduction all pollutants
  - Ultra Low Sulfur Fuel for Non-road Equipment
  - Use of Compressed Natural Gas, Propane and Electrical Forklifts

# Response: Develop A Clean Air Strategy for the Port of New York and New Jersey



City of New York



# *Response: Develop A Clean Air Strategy for the Port of New York and New Jersey*

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Identify Emission Reduction Actions - All port sources

Incorporate feedback from:

- Port stakeholders
- Environment and Community Groups

Track Progress:

- Measurement, Verification and Reporting



# *Clean Air Strategy Purpose and Goals*

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## Purpose:

- Reduce air pollutant impacts on human health and environment
- Reduce greenhouse gas emissions in advance of regulation
- Help bring region into attainment of air quality standards

## Goals:

- Overall decrease in emissions despite any Port Growth
  - Annual 3 percent net decrease in criteria air pollutants
  - Annual 5 percent net decrease in greenhouse
    - Agency wide goal to reduce 2006 GHG emissions level by 80% by 2050

# *Highlights from the 2013 Clean Air Strategy Implementation Report*

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CAS implementation (Oct 2009 – Nov 2013):

- Eighty percent (27 of 34) of near-term/committed actions completed or underway
- 12 actions led by Port Authority with 4 Strategy Group partners and one community partner leading the remainder

Based on the latest Emissions Inventory at the time (2010):

- Average 17% decrease across criteria air pollutants associated with port operations, despite a 4.6% increase in cargo volume
- All maritime-related criteria air pollutants decreased at a rate greater than or equal to the 3% annual average reduction goal
- Annual 5% net decrease goal for GHGs was not met

# Highlights of Major Actions Implemented To-Date in Each Sector

## Ocean-Going Vessels (OGV)

- LSD Fuel Incentive Program
  - Provided incentives to 701 qualifying vessels (2010-2012)
- Clean Vessel Incentive Program
  - In 2013: Provided \$1.16M to 597 qualifying vessels
- Installing Shore Power at Brooklyn Cruise Terminal



## • Trucks (HHDV)

- Truck Replacement Programs
  - Two programs: \$28M & \$7.2M; 429 old trucks replaced
  - Annual emissions reductions: 70% for NOx, 64% for PM
- Truck Phase Out Program
  - January 1, 2011 access denied to trucks with 1993 or older engines
  - January 1, 2017 must have 2007 or newer engine to gain access
- Truck Loan and Retrofit Program
  - Retrofitted 31 trucks with DPF and refinanced at 0% interest



# Highlights of Major Actions Implemented To-Date in Each Sector

- **Cargo Handling Equipment (CHE)**
  - Fleet modernization
    - Replaced 46 pieces CHE with new units meeting latest engine standards
- **Rail**
  - Engine retrofits
    - 4 switching locomotives retrofitted to GenSet configuration
    - 3 included additional retrofits achieving reductions >99% for PM and >88% for NOx compared to pre-retrofit engines
- **Harbor Craft (HC)**
  - Engine retrofits and upgrades
    - 10 engines on BillyBey, Waterway, and Seastreak/Wall Street ferries and 16 engines on 6 private harbor craft upgraded from Tier 0 to Tier 2
    - Diesel oxidation catalysts (DOCs) installed on over 31 boats



# 2012 Emissions Inventory

## Key Findings – Across All Sectors

### Percent change from 2006 to 2012 – tons/year

	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-22%	-34%	-33%	-7%	-13%	-56%	-11%

### Percent change from 2006 to 2012 – tons/million TEU

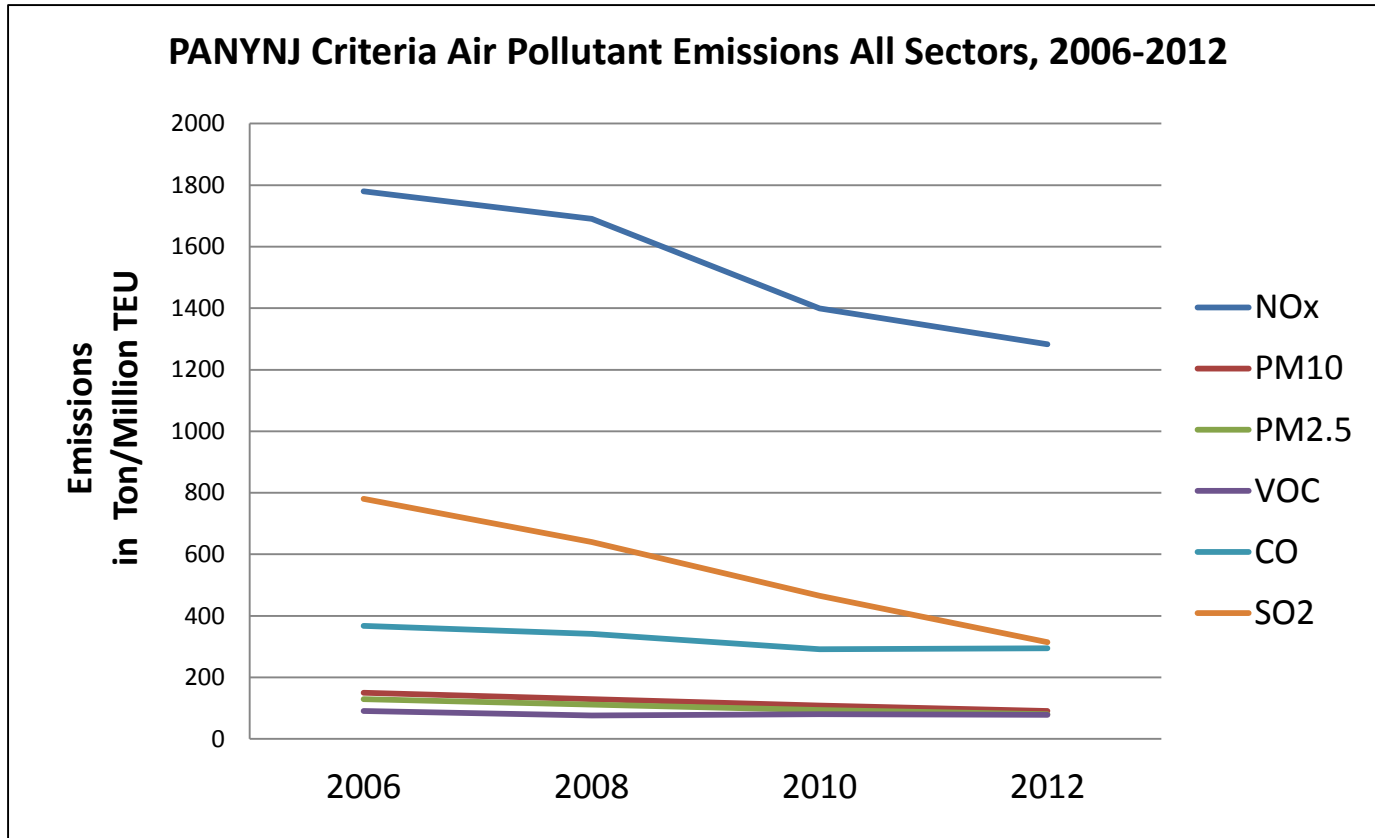
	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-28%	-39%	-38%	-14%	-20%	-60%	-18%

### Average annual rate of decrease from 2006 to 2012 – tons/year

	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-3.7%	-5.7%	-5.5%	-1.2%	-2.2%	-9.3%	-1.8%

# 2012 Emissions Inventory

## Key Findings – Across All Sectors



# Key Findings – Ocean-Going Vessels (OGV)

## Vessel Calls:

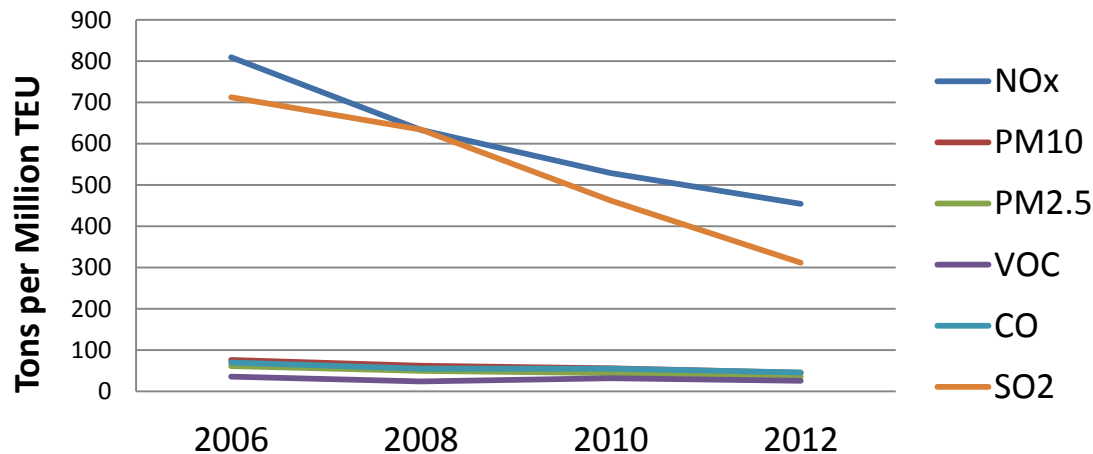
- 2012 Container Ships: 2,033; 2010 Container Ships: 1,986



## Percent change from 2006 to 2012 – tons/million TEU

	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-44%	-41%	-41%	-28%	-34%	-56%	-40%

Ocean-Going Vessel Criteria Air Pollutant Emissions, 2006-2012



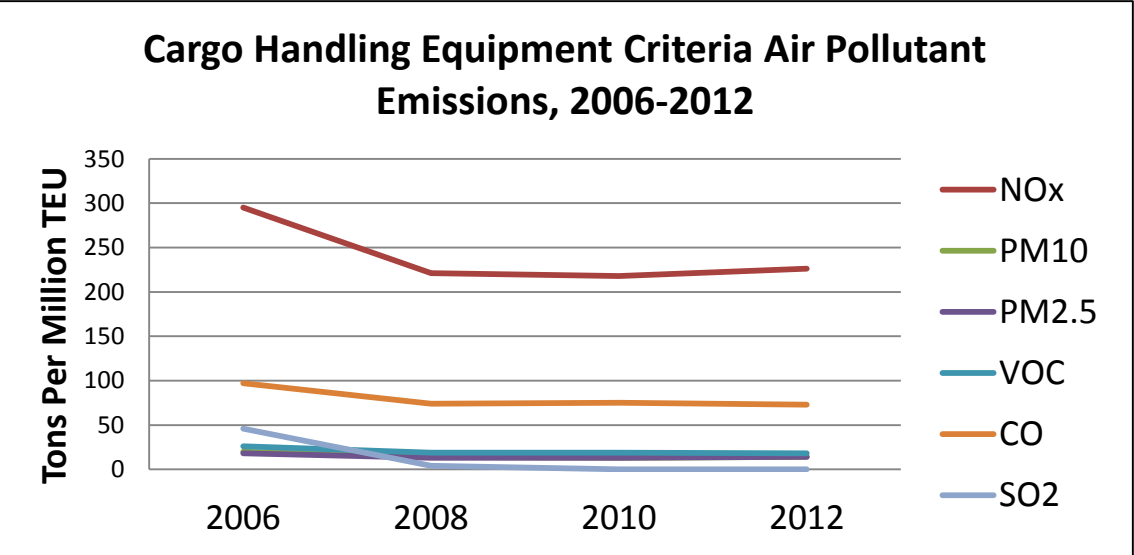
# Key Findings – Cargo Handling Equipment (CHE)

## Total Units:

- 2012:1 ,189; 2010: 1,052
- Terminal Tractors and Straddle Carriers: 63% of CHE and 69% of Emissions

## Percent change from 2006 to 2012 - tons/million TEU

	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-23%	-30%	-22%	-31%	-25%	-100%	-20%





# Key Findings- Trucks (HDDV)

## Vehicle Miles Traveled (VMT) and Idling Hours

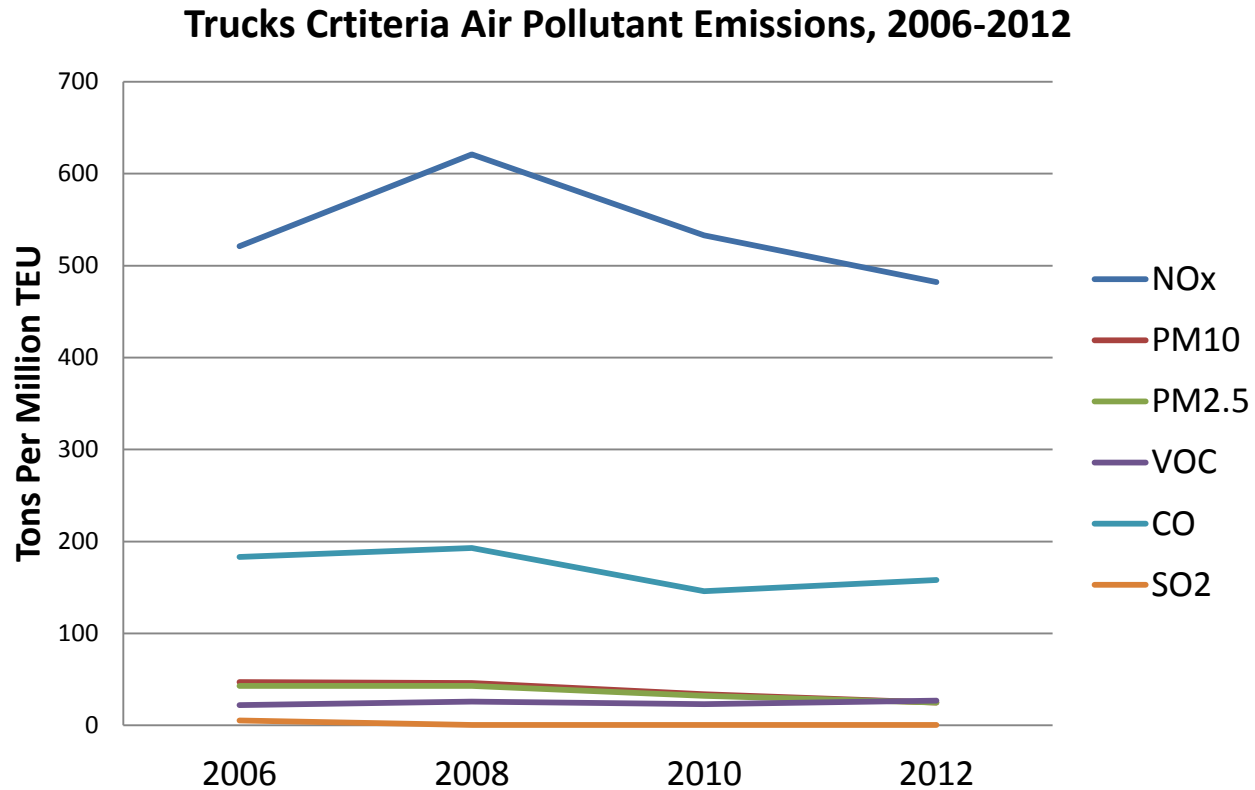
		VMT	Idling Hrs
On Terminal	2012	4,696,337	1,970,936
	2010	4,025,715	3,483,603
		VMT	
On Road VMT	2012	124,718,000	
	2010	115,005,411	



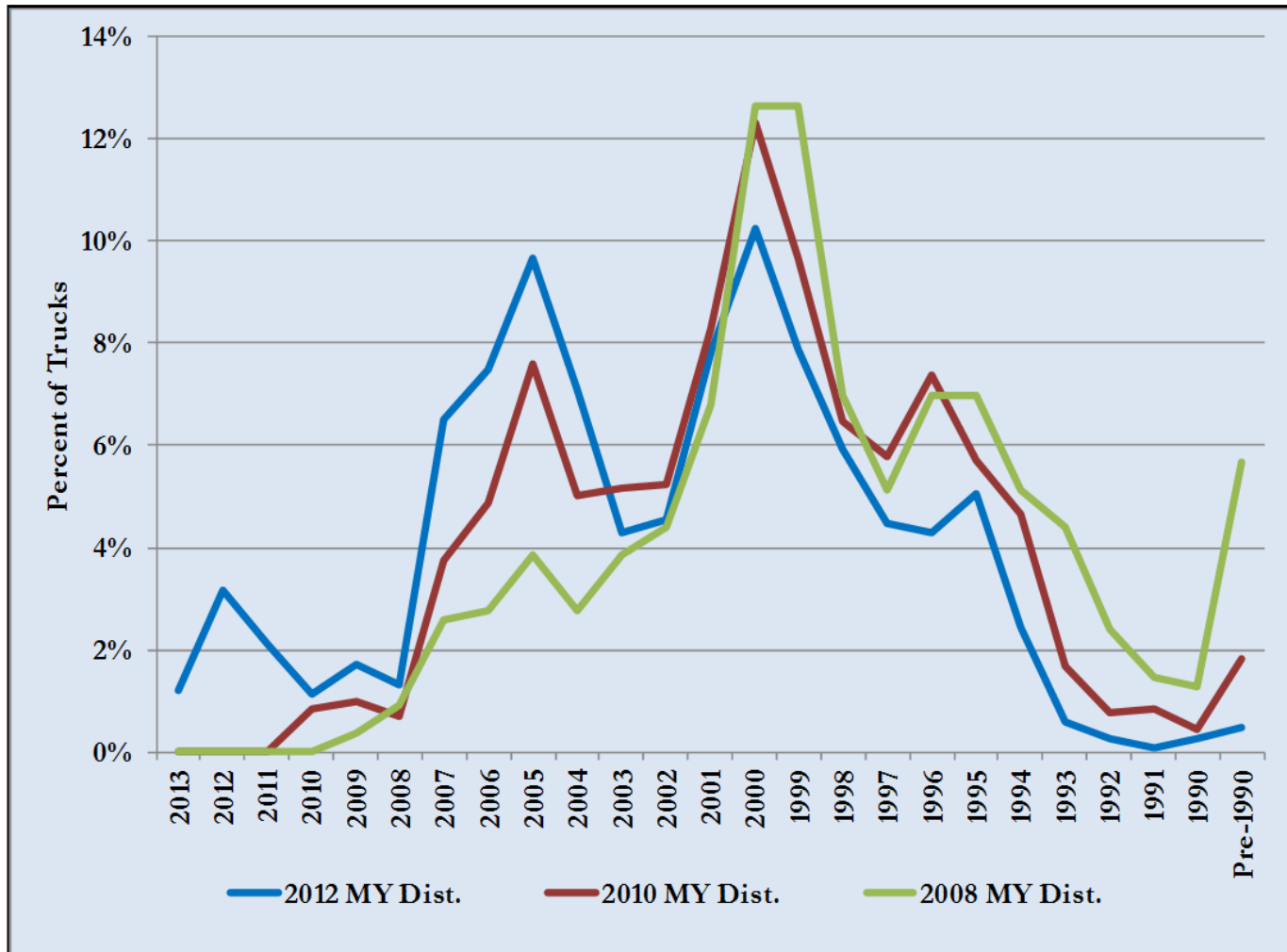
## Percent change from 2006 to 2012 - tons/million TEU

	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-7%	-47%	-42%	23%	-14%	-92%	-3%

# Key Findings- Trucks (HDDV)



# Key Findings – Trucks (HDDV)



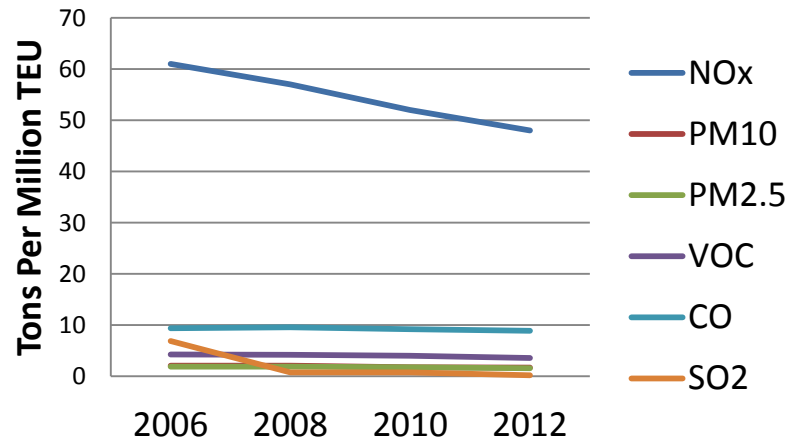
# Key Findings – Rail

## Containers Moved By Rail

- **2012:** 433,000 ; **2010:** 377,000

	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-21%	-19%	-16%	-16%	-5%	-97%	6%

**Rail Criteria Air Pollutant Emissions, 2006-2012**



# Key Findings – Harbor Craft (HC)

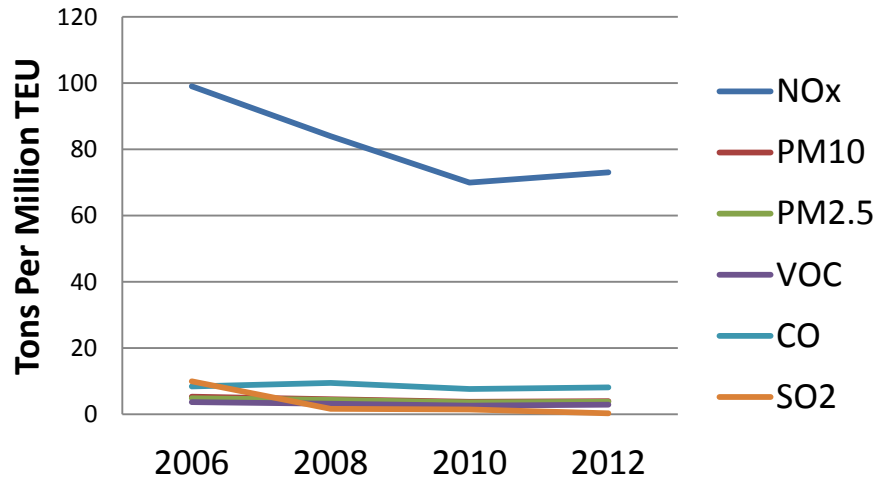
## Tug Assists

- 2012: Total 11,448; 2010: Total 10,498



	NOx	PM10	PM2.5	VOC	CO	SO2	CO2 Eq
2006-12	-26%	-25%	-22%	-22%	-4%	-97%	-24%

Harbor Craft Criteria Air Pollutant Emissions, 2006-2012



# 2014 Update Process

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Round of stakeholder meetings in December 2012 to provide input on status and feasibility of outstanding committed and future 2009 CAS Actions

Strategy Group kicked-off 2014 Update process in April

- Have met twice to determine objectives, goals, scope, and process; review 2009 outstanding actions and stakeholder input; review draft 2012 Emissions Inventory findings; develop initial draft list of sector-based actions
- Round of stakeholder meetings August/September to discuss initial draft action list and gather input for additional actions
- Third Strategy Group meeting held Sep 25 to discuss stakeholder input and develop final draft list of actions
- Public meeting in early December to discuss final draft Strategy
  - Followed by fourth Strategy Group meeting to finalize Strategy based on input received
- Final 2014 Clean Air Strategy released in December 2014

## *In summary*

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### Changed organization

- Established Environmental Unit to focus on sustainable operations and development

### Developed sustainable design policy and guidelines

### Implemented an EMS

- Achieved ISO 14001 Cert

### Conducted comprehensive Air Emission Inventories

- All port related sources

### Developed a Clean Air Strategy

- Implemented actions, tracked progress