AAPA Marine Terminal Management Training Program

Sustainable Port Development and Operations

October 9, 2014
William A. Nurthen
Port of New York and New Jersey

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

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

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

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

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

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

<table>
<thead>
<tr>
<th></th>
<th>NOx</th>
<th>PM10</th>
<th>PM2.5</th>
<th>VOC</th>
<th>CO</th>
<th>SO2</th>
<th>CO2 Eq</th>
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</thead>
<tbody>
<tr>
<td>2006-12</td>
<td>-22%</td>
<td>-34%</td>
<td>-33%</td>
<td>-7%</td>
<td>-13%</td>
<td>-56%</td>
<td>-11%</td>
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Percent change from 2006 to 2012 – tons/million TEU

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<tr>
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</thead>
<tbody>
<tr>
<td>2006-12</td>
<td>-28%</td>
<td>-39%</td>
<td>-38%</td>
<td>-14%</td>
<td>-20%</td>
<td>-60%</td>
<td>-18%</td>
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Average annual rate of decrease from 2006 to 2012 – tons/year

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<tbody>
<tr>
<td>2006-12</td>
<td>-3.7%</td>
<td>-5.7%</td>
<td>-5.5%</td>
<td>-1.2%</td>
<td>-2.2%</td>
<td>-9.3%</td>
<td>-1.8%</td>
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2012 Emissions Inventory
Key Findings – Across All Sectors

PANYNJ Criteria Air Pollutant Emissions All Sectors, 2006-2012

Emissions in Ton/Million TEU

- NOx
- PM10
- PM2.5
- PM2.5
- VOC
- CO
- SO2

2006 2008 2010 2012
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

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<tr>
<th>Year</th>
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<tbody>
<tr>
<td>2006-12</td>
<td>-44%</td>
<td>-41%</td>
<td>-41%</td>
<td>-28%</td>
<td>-34%</td>
<td>-56%</td>
<td>-40%</td>
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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

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<td>-23%</td>
<td>-30%</td>
<td>-22%</td>
<td>-31%</td>
<td>-25%</td>
<td>-100%</td>
<td>-20%</td>
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Cargo Handling Equipment Criteria Air Pollutant Emissions, 2006-2012
Key Findings - Trucks (HDDV)

Vehicle Miles Traveled (VMT) and Idling Hours

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<tr>
<th></th>
<th>VMT</th>
<th>Idling Hrs</th>
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<tbody>
<tr>
<td><strong>On Terminal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>4,696,337</td>
<td>1,970,936</td>
</tr>
<tr>
<td>2010</td>
<td>4,025,715</td>
<td>3,483,603</td>
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<td><strong>On Road VMT</strong></td>
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<td></td>
</tr>
<tr>
<td>2012</td>
<td>124,718,000</td>
<td></td>
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<tr>
<td>2010</td>
<td>115,005,411</td>
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<td>-7%</td>
<td>-47%</td>
<td>-42%</td>
<td>23%</td>
<td>-14%</td>
<td>-92%</td>
<td>-3%</td>
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Key Findings - Trucks (HDDV)

Trucks Criteria Air Pollutant Emissions, 2006-2012

- NOx
- PM10
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Key Findings – Trucks (HDDV)
**Key Findings – Rail**

**Containers Moved By Rail**
- **2012**: 433,000; **2010**: 377,000

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<tr>
<td>2006-12</td>
<td>-21%</td>
<td>-19%</td>
<td>-16%</td>
<td>-16%</td>
<td>-5%</td>
<td>-97%</td>
<td>6%</td>
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**Rail Criteria Air Pollutant Emissions, 2006-2012**

![Graph showing decreases in pollutants from 2006 to 2012](image)
Key Findings – Harbor Craft (HC)

Tug Assists

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

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<tbody>
<tr>
<td>2006-12</td>
<td>-26%</td>
<td>-25%</td>
<td>-22%</td>
<td>-22%</td>
<td>-4%</td>
<td>-97%</td>
<td>-24%</td>
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Harbor Craft Criteria Air Pollutant Emissions, 2006-2012
2014 Update Process

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

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