Green Ports: Challenges and Opportunities in the Maritime Sector

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THE PORT OF VIRGINIA
Building A Brighter, Cleaner, Greener Future.

MAY 2012
Center of Trade and Commerce in Virginia for Over 400 Years

Situated along World’s 3rd largest estuary and natural harbor

Preservation of the Chesapeake Bay = Success of our Port
Air & Water Quality Improvements, Habitat Creation, & Alternative Energy
ISO 14001 & 9000 Certification in June 2008

Port Culture

- Environmental Awareness and Stewardship
- Operational Efficiency
- Customer Service

Port Policy

- Pollution Prevention
- Compliance
- Continual Improvement of Business and Environmental Performance
Diesel Engine Replacement 1999 To Present

- Cargo Handling Equipment Meets Or Exceeds EPA Emissions Requirements
  - Use of “On-road” Engines / Engine HP Reduction

From 1995 through 2005 -
Cargo Traffic Increased 55%
Cargo Handling Emissions Decreased 33%
Universal Chassis Pool Since 2005

- 100% Participation from Shipping Lines
- Average Turn Times Decreased by 10%
- 1.2 M Gallons of Fuel Saved Annually
- 1,500 Tons/YR of GHG
Early Voluntary Conversion to Ultra-Low Sulfur Diesel Fuel in 2007

- All Cargo Handling Equipment
- 3 Years Ahead of EPA Requirements
- Cleaner Fuel = Lower Maintenance Costs

More Efficient Equipment Operation
36% Reduction in PM Emissions / YR
SOx Emissions Eliminated

5% Biodiesel Blend - 2010
I-64 Express Barge Service Started in 2008

- 2x Weekly service between NIT and Port of Richmond
- 24,000 trucks removed from highways and local roads

370,000 gallons of diesel fuel saved annually

$1.1M annual reduction in fuel costs

30-40% reduction in emissions compared to moves via truck
Hybrid and Ultra-Low Emission Locomotives
Green Operator “GO” Program

- 1st Voluntary Diesel Truck Retrofit/Replacement Program in U.S.

- 300 Retrofit/Replacements as of December 2011

- Emissions Reductions of 15% Expected (GHG)
“GO” Vessels

• Fuel Switching

• Alternative Fuel/Power Technology Demonstration

• Inaugural Launch Partners
  • Maersk
  • Port of Virginia
  • VDEQ
Emission Inventory Update

1999-2008: 45% Reduction
2008-2015: 26% Reduction
Water Quality Improvement Programs

Under wharf
Storm water
Detention Basin

Over 12 Acres of Valuable Container Storage Space
Saved at NIT and PMT = 42,000 TEUs Annually
Habitat Management and Creation

Oyster Reef – 6,000 m²
Habitat Management and Creation

- $63M Project
- 411 ac River Restoration

- 57 ac - Wetlands
- 67 - Sediment Remediation
- 15 - Oyster Restoration
• Facility Improvements
  • Geothermal HVAC
  • Natural, photocell, & occupancy lighting, LED

• Active Energy Management
  • Real-time energy management & monitoring technology
  • Designed to address peak load consumption

• Supplemental Power options
Alternative/Supplemental Power Generation

- Wind / Solar/ Biofuel
- Power for terminal operations
- Peak Power supplements
- Power generation to grid
- Provide logistics support for regional development
HYBRID TUG & TOW TECHNOLOGY

• Foss Maritime Company - Southern California - 2009
• New Build or Retrofit
• $8 Million vs 45 million conventional
• 44% reduction NOx and PM