AAPA
Cruise Seminar
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California Green Port: Implications for the Cruise Industry

presented by
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• Voluntary Programs
• California State Legislation
• California Regulatory Agency Action
• Port of Los Angeles and Port of Long Beach Programs
Ocean-Going Vessels are a Large Source of Statewide Diesel PM Emissions*

* Sources: 2003 ARB Emissions Inventory and 2005 Ship ISOR
Source: ARB
2020 Statewide Ports and International Goods Movement Emissions

Source: ARB

Percent of ROG Emissions by Source (2020)
Total Emissions are 28 tons/day, a decrease of 15% from 2001

Percent of Diesel PM Emissions by Source (2020)
Total Emissions are 28 tons/day, an increase of 55% from 2001

Percent of NOx Emissions by Source (2020)
Total Emissions are 407 tons/day, which is consistent with 2001 levels.

Percent of SOx Emissions by Source (2020)
Total Emissions are 159 tons/day, an increase of 150% from 2001

Source: ARB
Vessel Speed Reduction

- Voluntary program initiated in 2001 by MOU
- Ports of LA, LB, shipping industry, regulatory agencies
- Extended 12-knot precautionary zone to 20 miles
- 1.5 tons per day of nitrogen oxides (NOx) eliminated in 2005
- Compliance 32% in January 2004, increased to 48% in June 2004
California Clean Coast Act (SB 771)

- Took effect January 1, 2006
- Incinerators: prohibits operation with 3 miles of California coast
- Hazardous wastes, other waste, oily bilge water: prohibits discharge into waters of the State of California or a marine sanctuary.
- Graywater and sewage: prohibits discharge into waters of the State of California or a marine sanctuary from vessels with sufficient holding tank capacity.
- Discharge reporting requirement
California Air Resources Board

- Regulation to reduce emissions from diesel particulate matter (PM) and Nitrogen Oxides (NOx)
- Adopted December 8, 2005
- Pending additional comments and fuel availability study.
Ocean-Going Vessels

Vessel Types
- Container Ships
- Tankers
- Bulk Carriers
- Auto Carriers
- General Cargo
- Passenger Cruise Ships

Vessel Statistics
- 10,000 visits annually
- 2,000 unique vessels annually
- Majority visiting the ports of LA, Long Beach, and Oakland

Source: ARB
Need for Emission Reductions from Ocean-Going Vessels

- Large and growing source of PM, NOx, and SOx emissions
- Emissions concentrated near population centers
- Significant localized and regional impacts
- Major contributor to PM mortality and cancer risk
- Major contributor to ambient levels of PM and ozone

Source: ARB
Regulation Applies to Auxiliary Engines on Ocean-going Vessels

Motor-Ship

Main Engine for Propulsion (not covered)

Auxiliary Engines for Electricity (covered)

Source: ARB

Diesel-Electric

Engines Provide Electricity for both Propulsion & Shipboard Uses (covered)
Regulation Applies Within 24 Nautical Miles of the California Coastline

- Retains the majority of health benefits
- Reduces the cost
- Utilizes international boundary

Source: ARB
Emission Limit Based on Use of Cleaner Distillate Marine Fuels

- January 1, 2007 Emission Limit
  - Use marine gas oil
  - Use marine diesel oil with a 0.5% sulfur limit
  - Use equally effective emission control strategies

- January 1, 2010 Emission Limit
  - Use marine gas oil with a 0.1% sulfur limit
  - Use equally effective emission control strategies
  - Fuel supply review in 2008

Source: ARB
GREEN PORT PROJECTS

- Green Flag (VSR)
- Sustainability
- Green Port Leases
  - Shore-side Power
  - Cleaner Equipment
- Air Monitoring
  - Standardize with POLA, AQMD, CARB
  - Real-time Information

Source: POLB
Cost Effectiveness vs. Power Consumption

Source: POLB
“Green” Terminal Design

- “green” terminals have:
  - beneficial site planning
  - lower water usage
  - greater energy efficiency
  - better materials and systems
  - improved environmental quality
Proposed Project

Source: POLA
Green Measures

- Implement a Corporate Environmental Policy and/or EMS.
- Participate in AMP Program (30% by end of 2nd year and 70% by end of 3rd)
- Observe VSRP (goal of 100%)
- For any ships that are not using AMP, low sulfur fuel (1.5%) is to be used in ship generators at berth
- Use of Alternative Fuel in all new yard tractors.
- Use emulsified fuel and diesel oxidation catalysts (DOCs) on all older yard tractors.
  - Use low sulfur fuel in any vessels calling at tenant’s berths in both main and auxiliary engines while in transit through South Coast Air Basin Boundary waters.
  - Low sulfur fuel is defined as equal or less than 1.5% sulfur.
  - The tenant will be required to use such fuel in 20% of the ships within 12 months of full terminal operation. Each year, the tenant will incrementally increase participation by 20% until the end of the lease.

Source: POLA
Comprehensive Leasing Policy at the Port of Los Angeles

- Compliance with vessel speed reduction programs;
- Use of clean Alternative Maritime Power ("AMP" or cold-ironing technology), plugging into shore-side electric power while at dock, where appropriate;
- Low sulfur fuel use in main and auxiliary engines while sailing within the boundaries of the South Coast Air Basin;
- Use of alternative fuel in all new yard tractors; and
- Clean, "low emission" truck and locomotive use within terminal facilities.
Zero Emission Vessel