

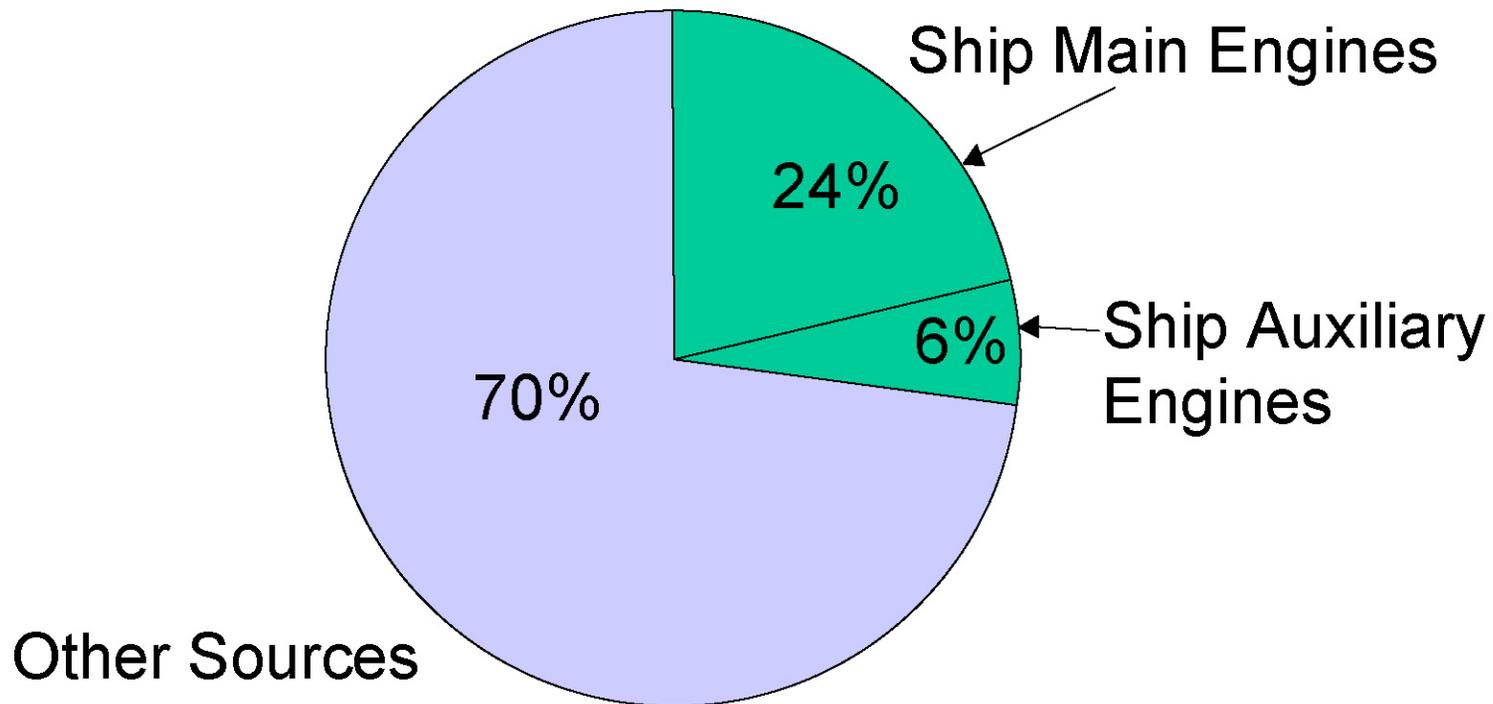
**AAPA**  
**Cruise Seminar**  
**February 9, 2006**

**California Green Port: Implications for  
the Cruise Industry**

presented by  
**Donald Rice**  
**CH2M HILL**

- Voluntary Programs
- California State Legislation
- California Regulatory Agency Action
- Port of Los Angeles and Port of Long Beach Programs

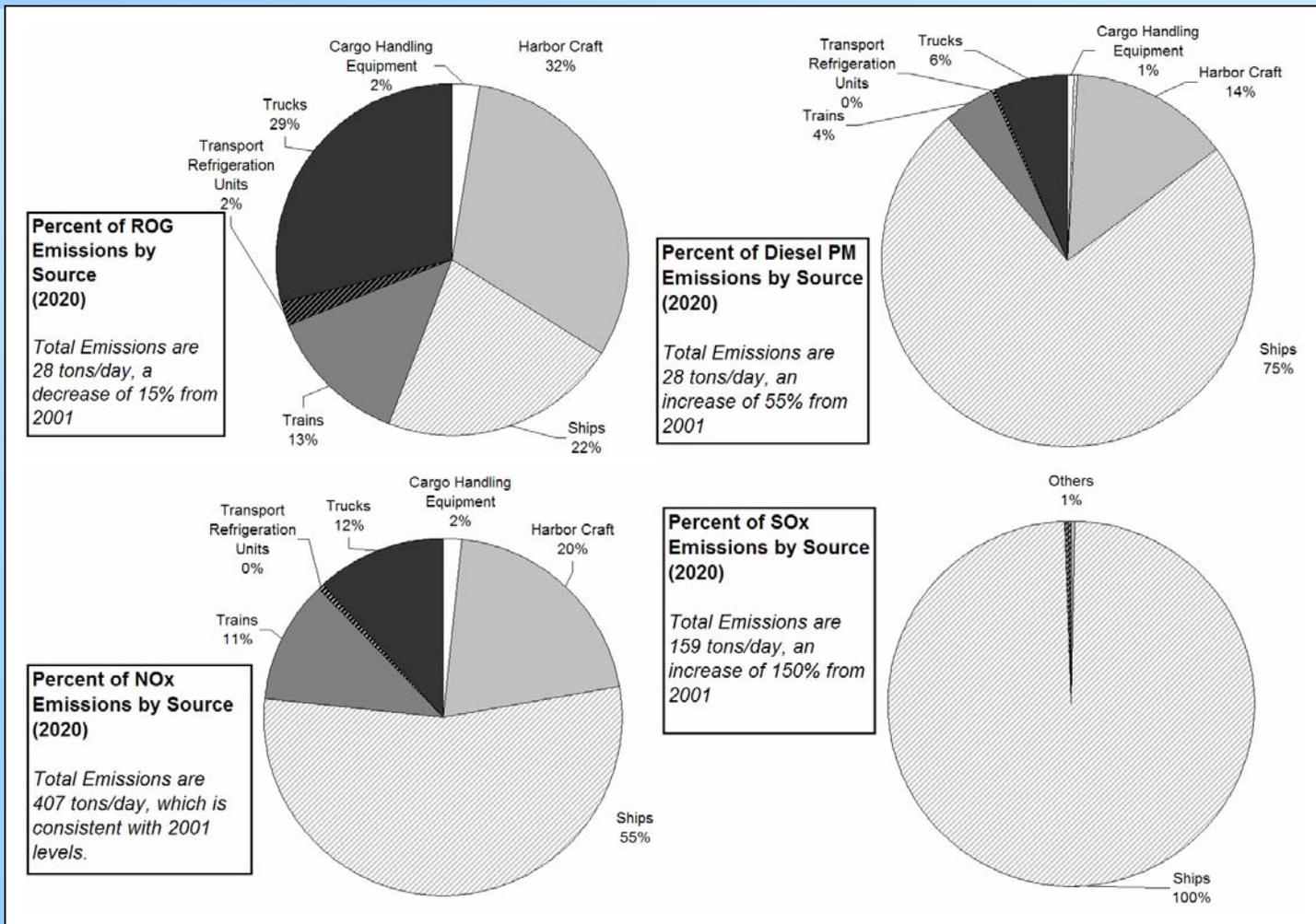
# Ocean-Going Vessels are a Large Source of Statewide Diesel PM Emissions\*



\* Sources: 2003 ARB Emissions Inventory and 2005 Ship ISOR

Source: ARB

# 2020 Statewide Ports and International Goods Movement Emissions



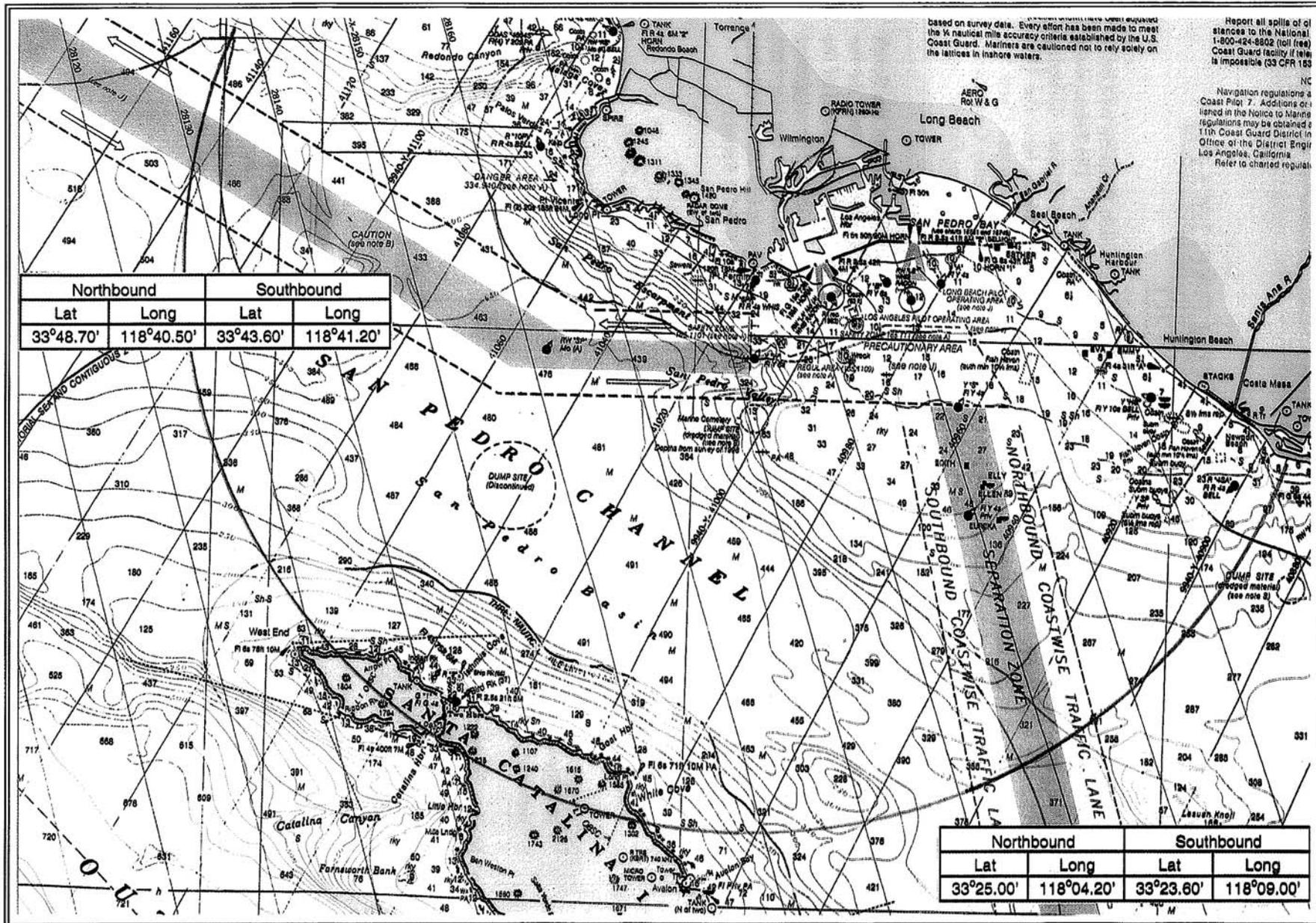
Source: ARB

# 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 (NO<sub>x</sub>) eliminated in 2005
- Compliance 32% in January 2004, increased to 48% in June 2004

# Air Quality Compliance Zone

## 12 Knots at 20 Nautical Miles From Point Fermin



based on survey data. Every effort has been made to meet the 1/4 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.

Report all spills of oil or hazardous materials to the National Response Center at 1-800-424-8802 (toll free). Coast Guard facility if tele-communication is impossible (33 CFR 153.103).

Navigation regulations are contained in the Notice to Mariners. Regulations may be obtained at the 11th Coast Guard District in the Office of the District Engineer, Los Angeles, California. Refer to charted regulations.

# California Clean Coast Act (SB 771)

- Took effect January 1, 2006
- Incinerators: prohibits operation within 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

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- 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

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## 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



# Need for Emission Reductions from Ocean-Going Vessels

- ◆ Large and growing source of PM, NO<sub>x</sub>, and SO<sub>x</sub> 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

# Regulation Applies to Auxiliary Engines on Ocean-going Vessels

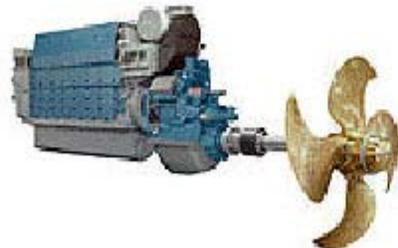
## Motor-Ship



## Diesel-Electric



**Main Engine  
for Propulsion  
(not covered)**



**Auxiliary  
Engines for  
Electricity  
(covered)**



**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



# Emission Limit Based on Use of Cleaner Distillate Marine Fuels

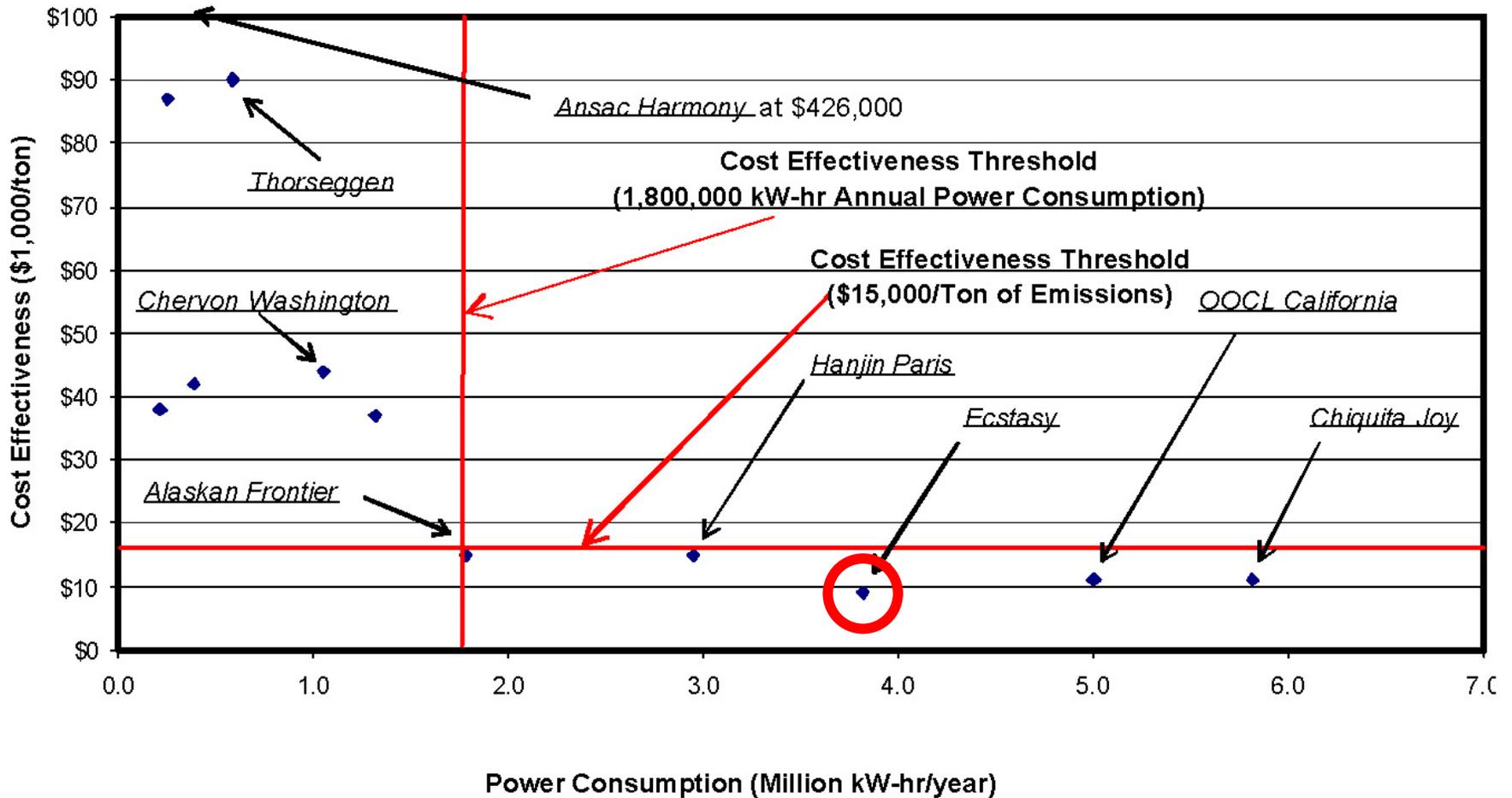
- ◆ January 1, 2007 Emission Limit
  - Use marine gas oil
  - Use marine diesel oil with a 0.5% sulfur limit
  - Use equally effective emission control strategies
  
- ◆ January 1, 2010 Emission Limit
  - Use marine gas oil with a 0.1% sulfur limit
  - Use equally effective emission control strategies
  - Fuel supply review in 2008

# 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**



# Cost Effectiveness vs. Power Consumption



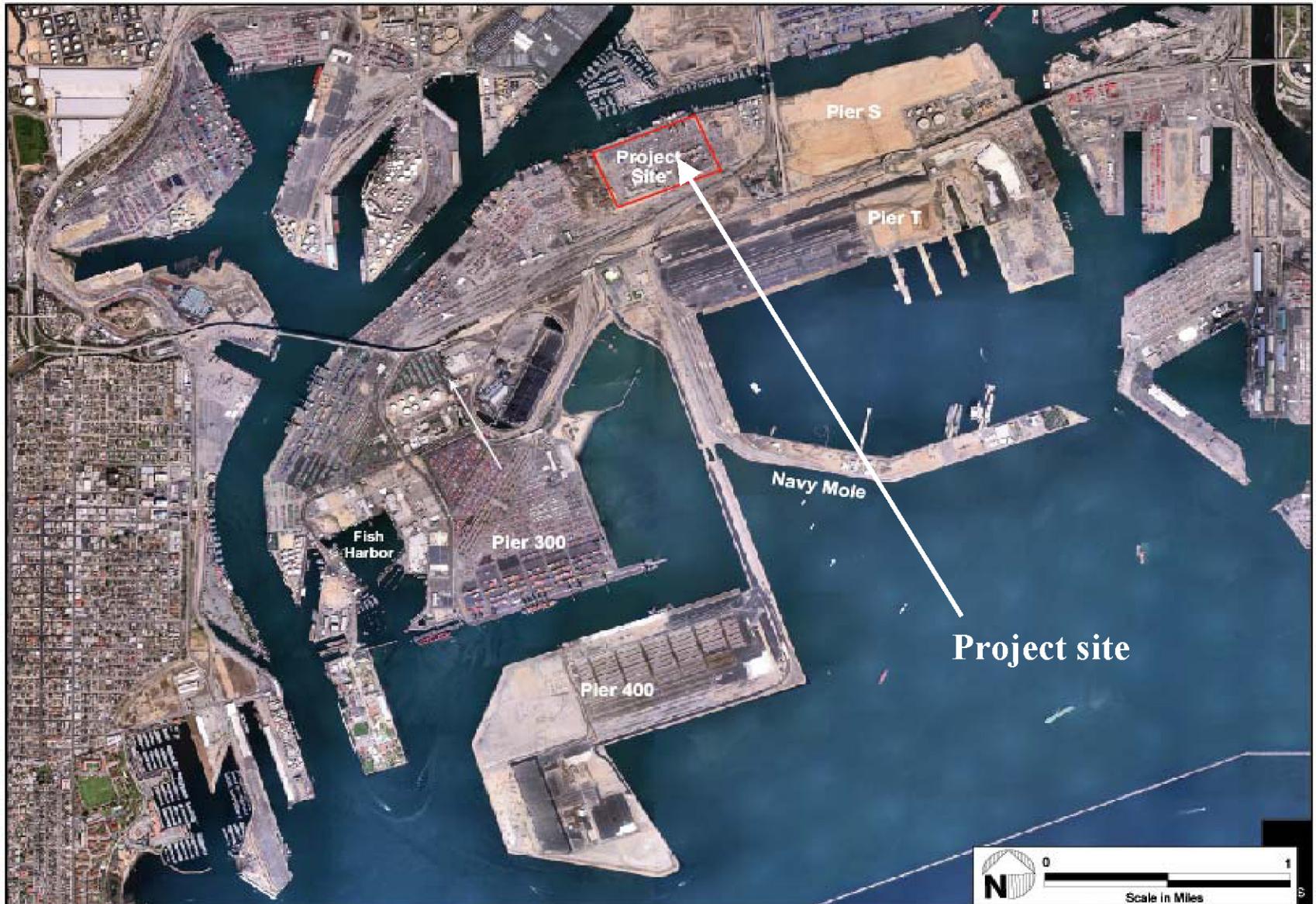
Source: POLB

# “Green” Terminal Design

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



# Proposed Project



# Green Measures

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- **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.

# 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

