

# Goods Movement Overview



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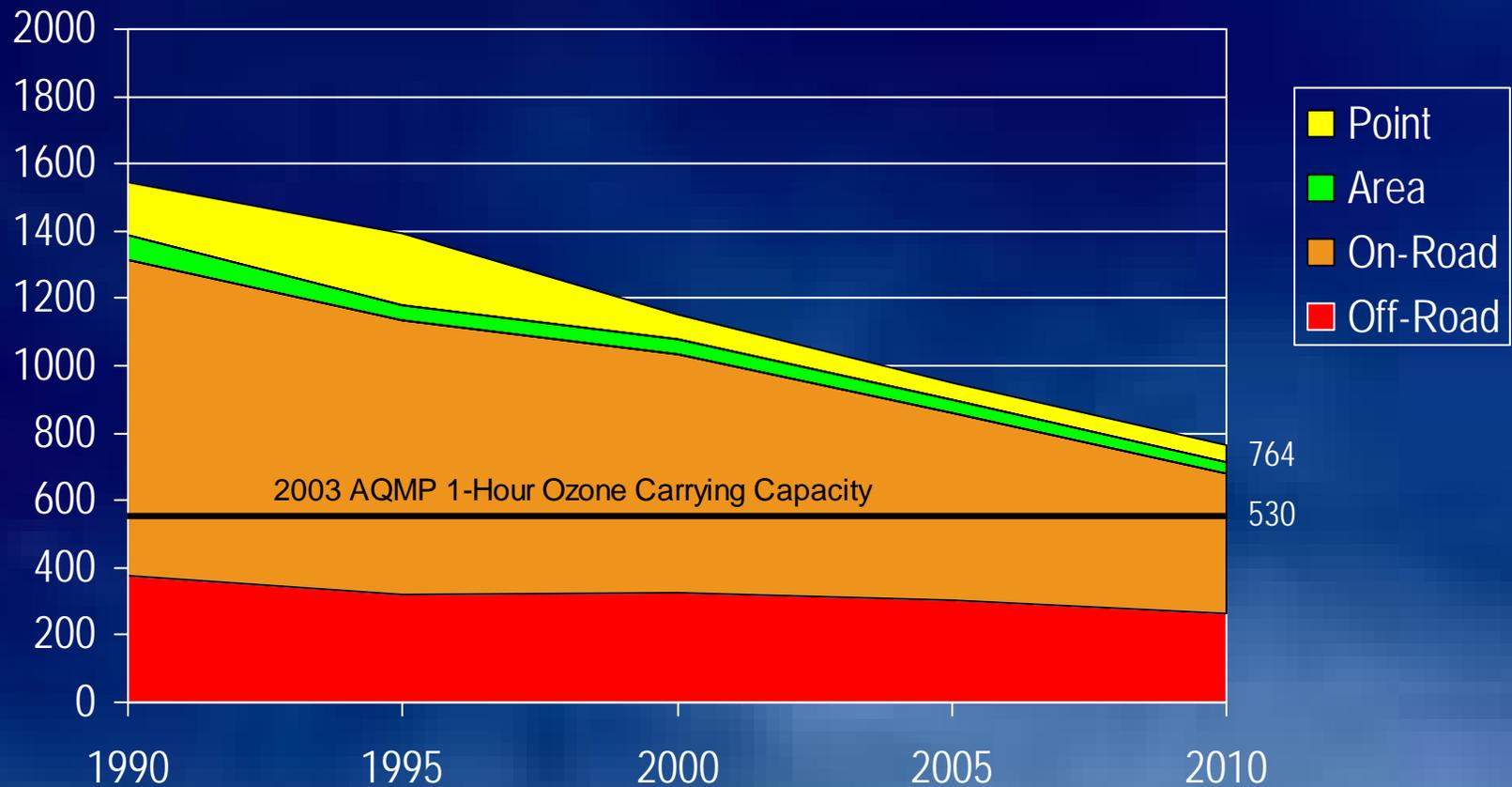




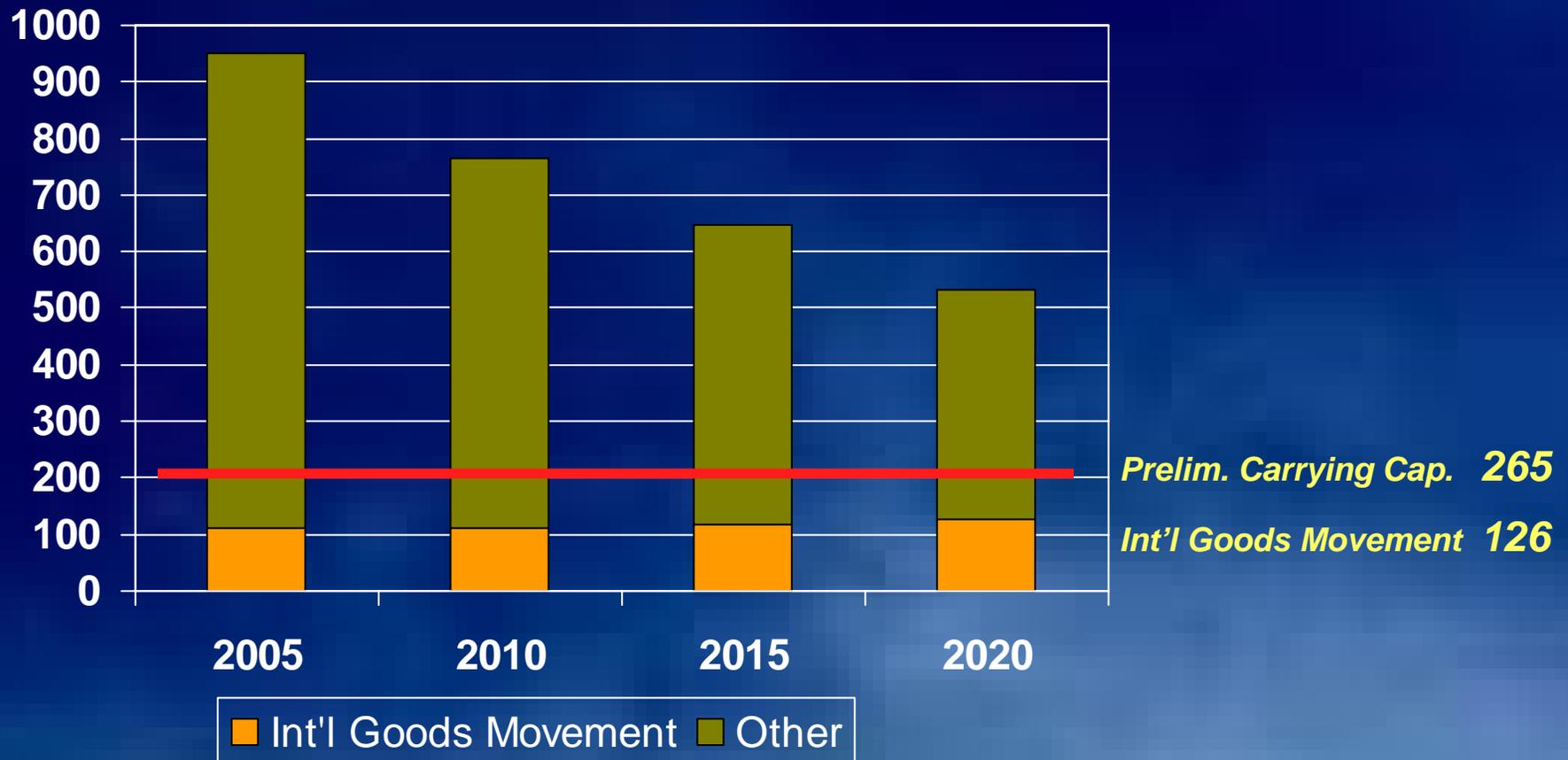
# NOx Emissions

## Projections Based on Adopted Regulations

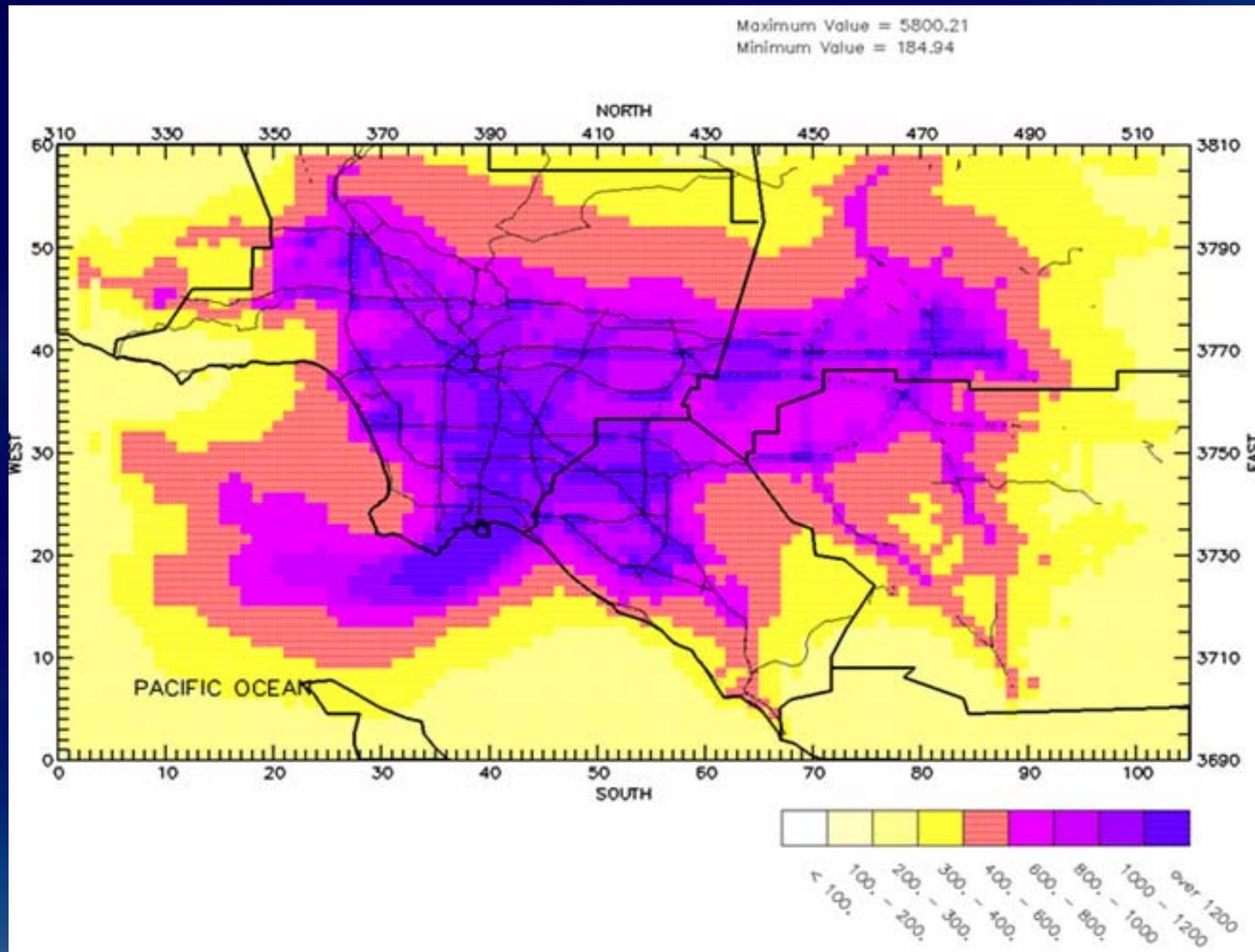
(tons per day)



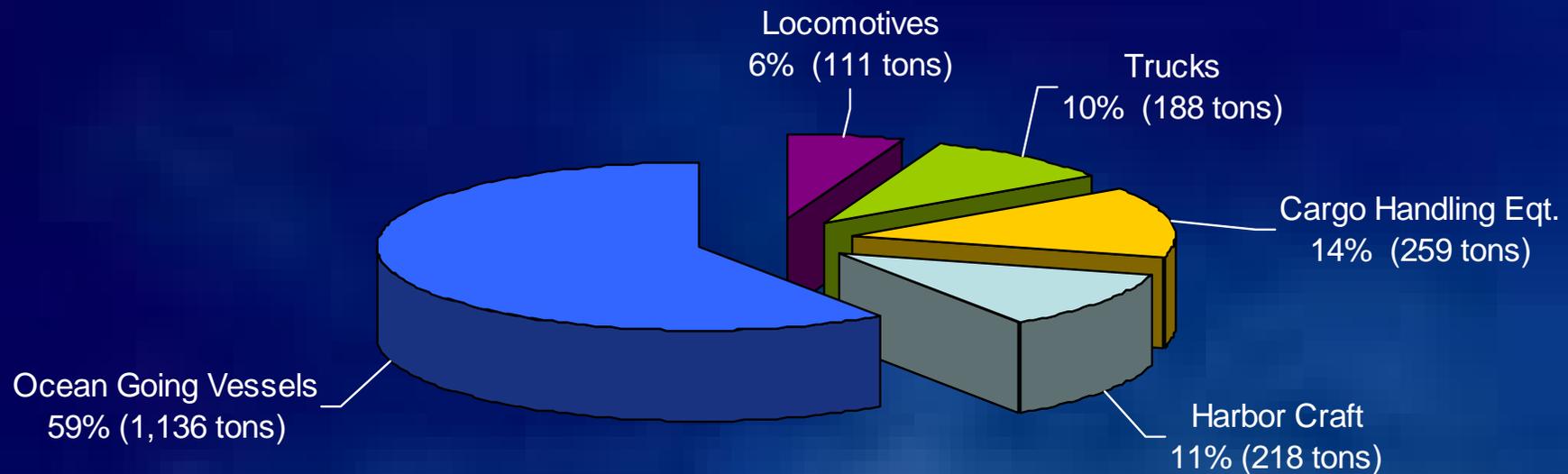
# NOx Baseline Emissions and 8-Hour Ozone *Preliminary* Carrying Capacity (tons per day)



# Modeled Cancer Risk

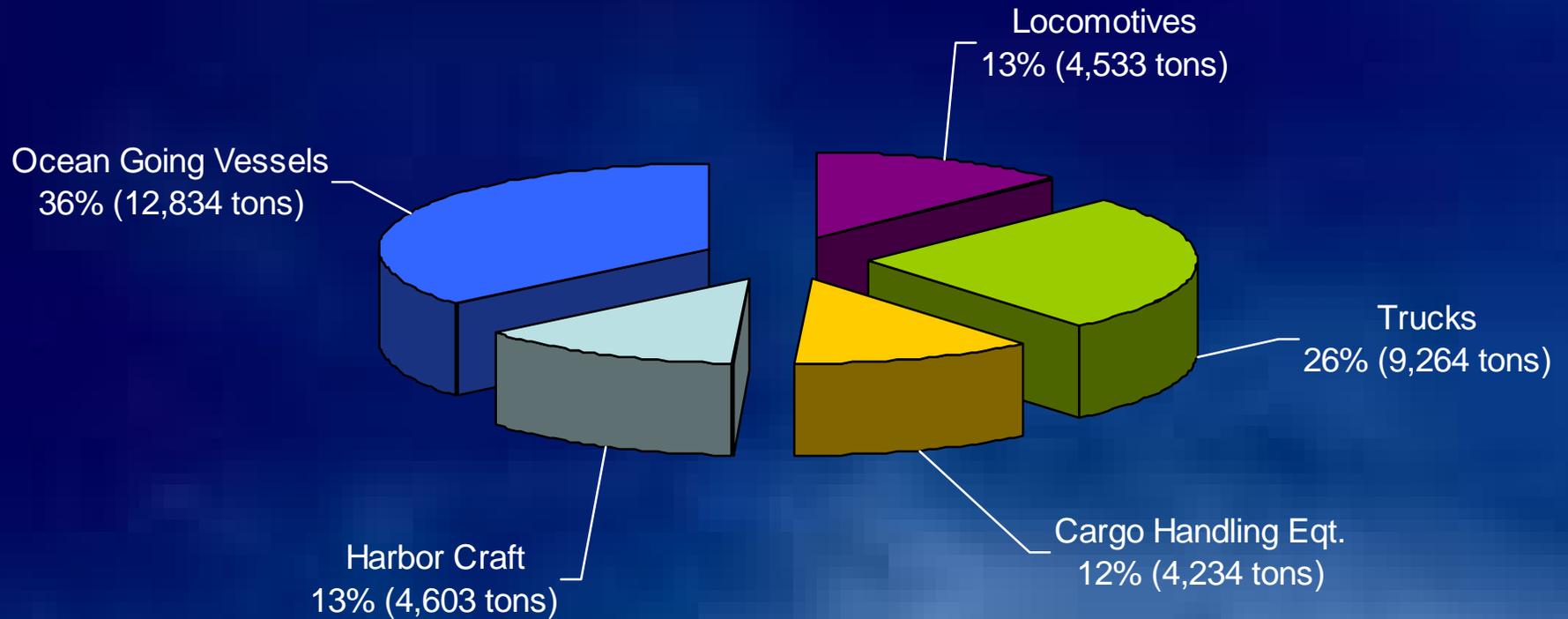


# International Goods Movement Diesel Particulate Matter Emissions



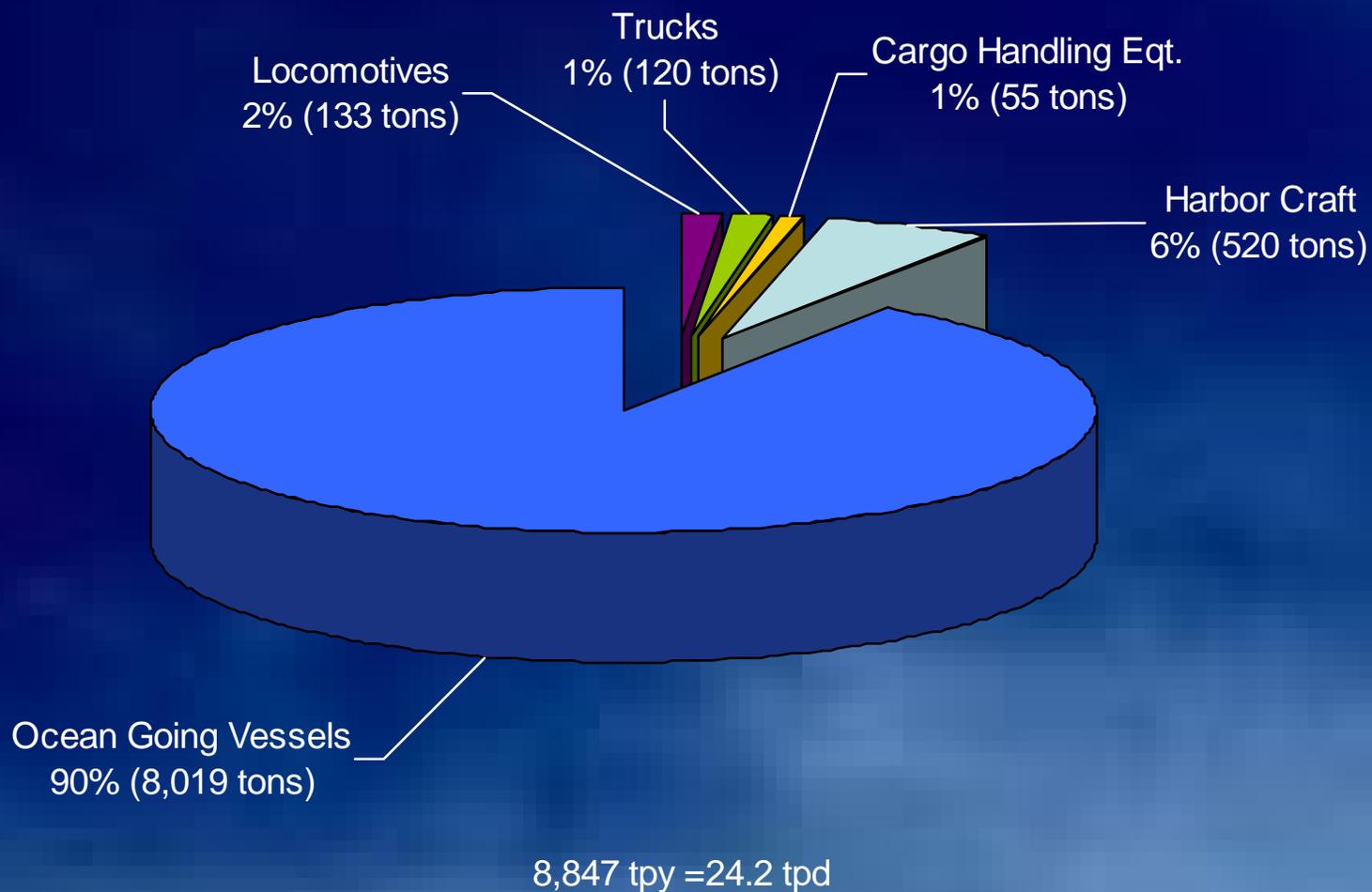
1,912 tpy = 5.2 tpd

# International Goods Movement NOx Emissions

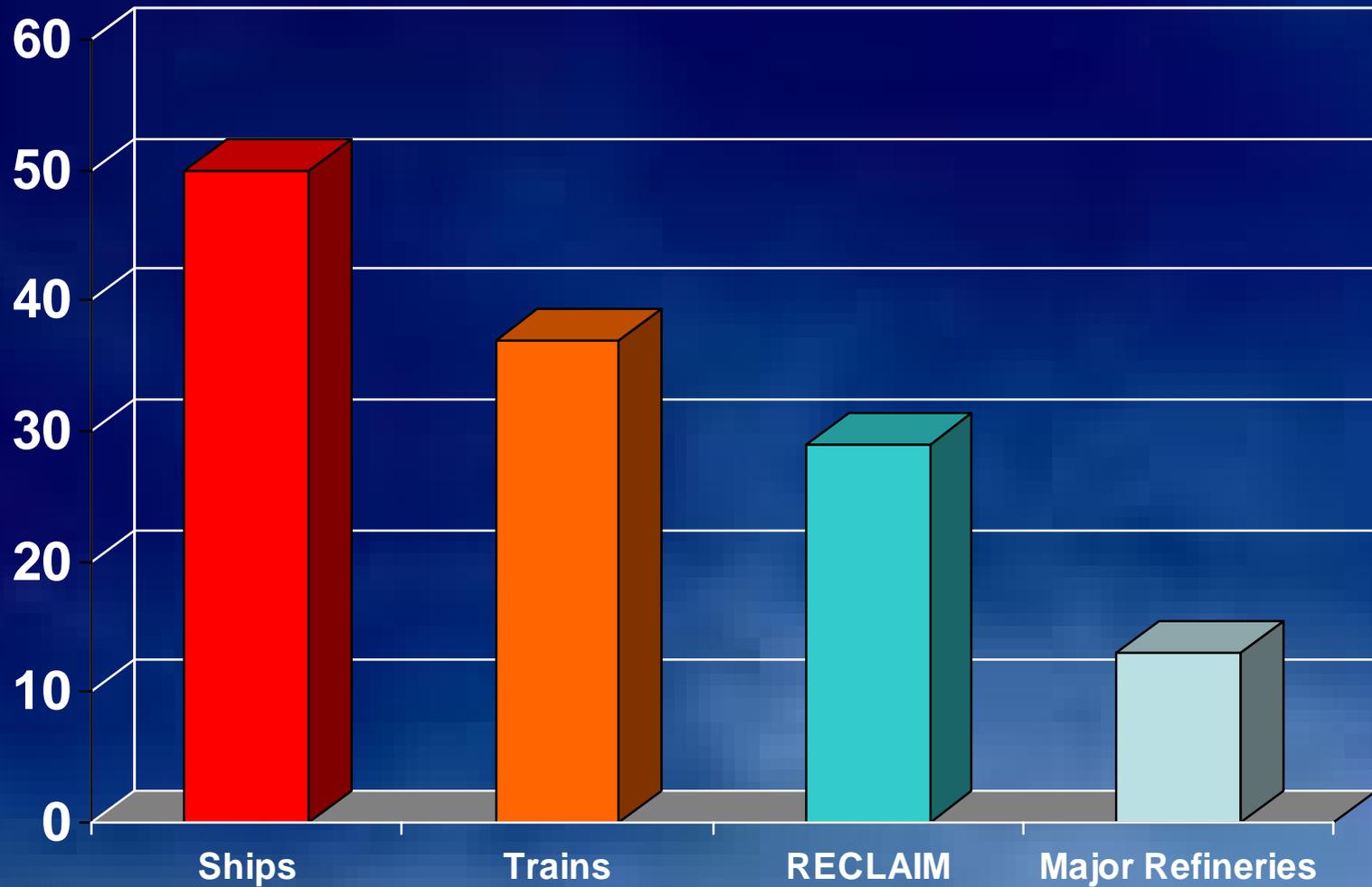


35,468 tpy = 97.2 tpd

# International Goods Movement SOx Emissions

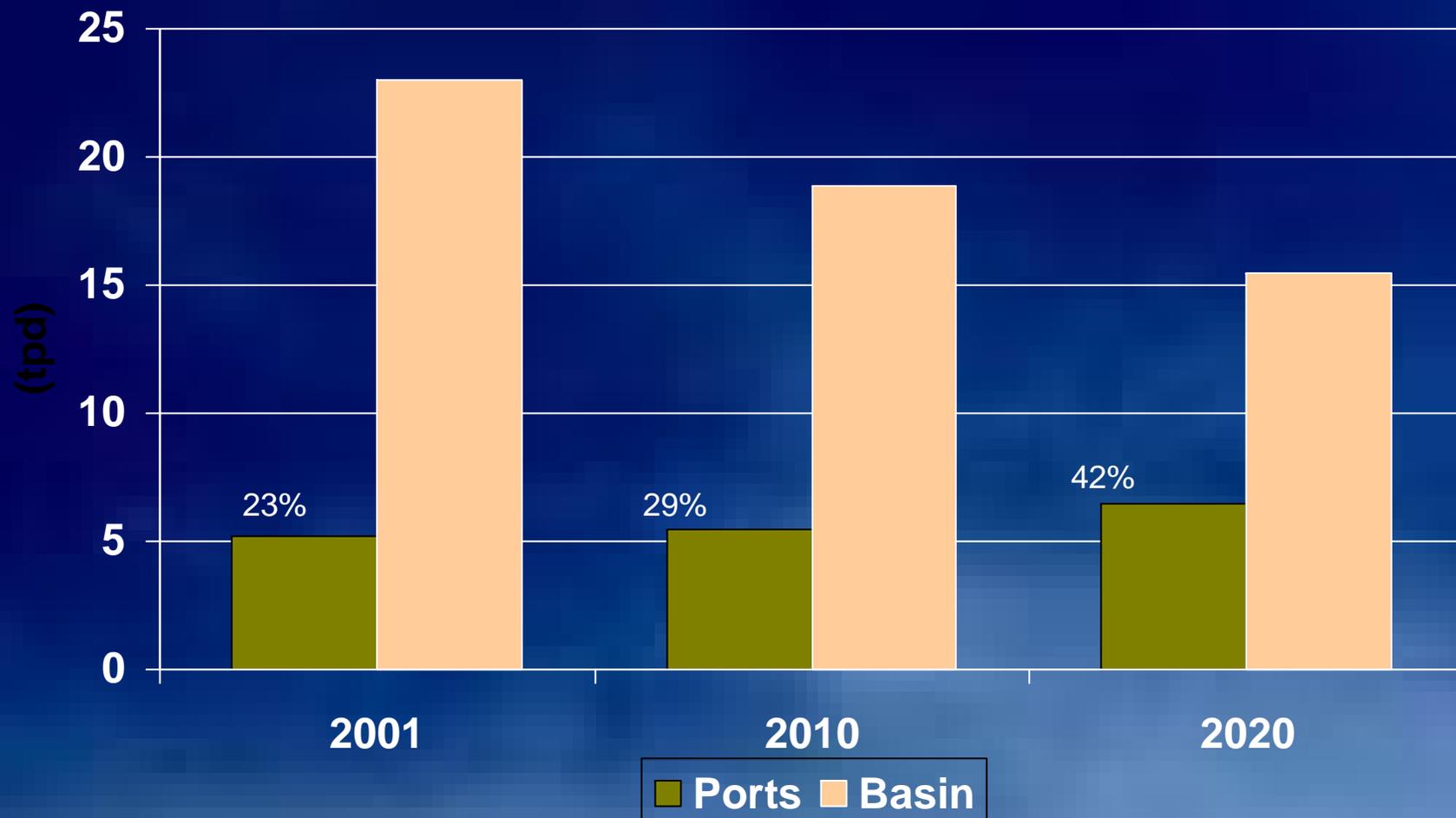


# Comparison of Key NO<sub>x</sub> Sources (tons/day)



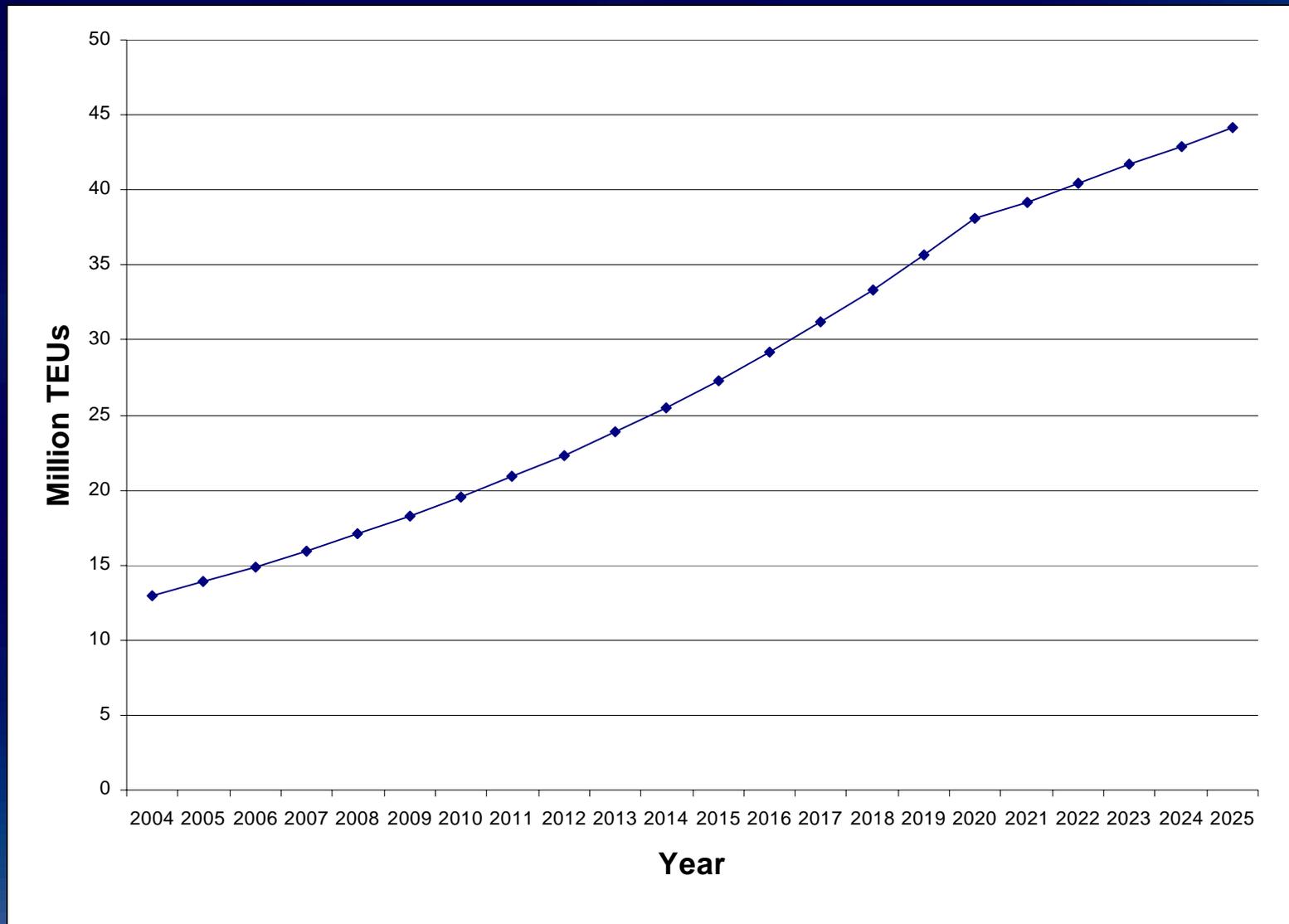
Source: 2003  
AQMP

# Contribution of Port-Related Sources to Regional Diesel PM10 \*



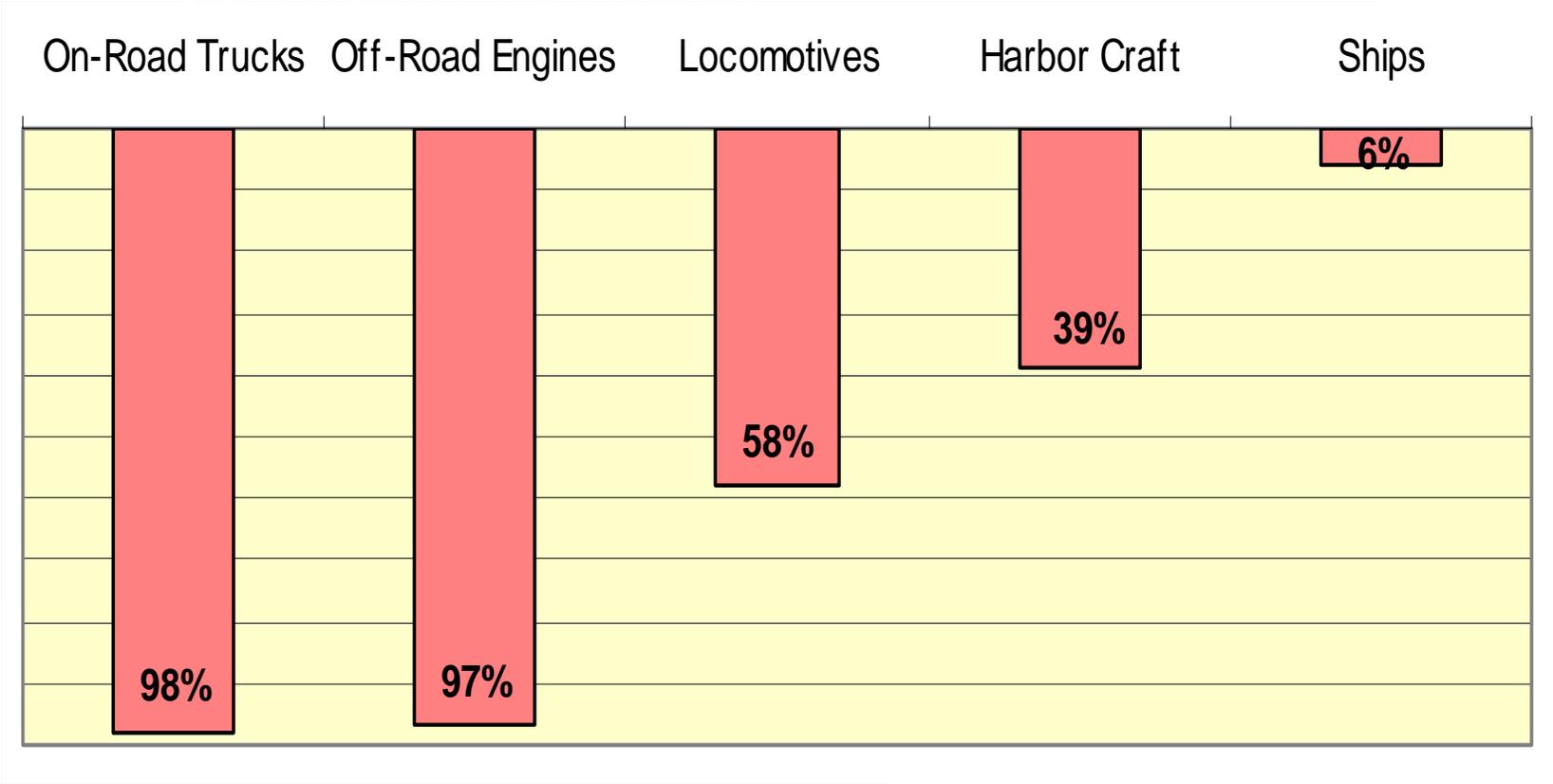
\*Assuming ports recent baseline inventories and 2003 AQMP growth and control factors.

# Projected TEU Growth: San Pedro Bay Ports



# Stringency of NOx Rules for New Engines

(Percent Reduction Based on Adopted New Engine Standards)



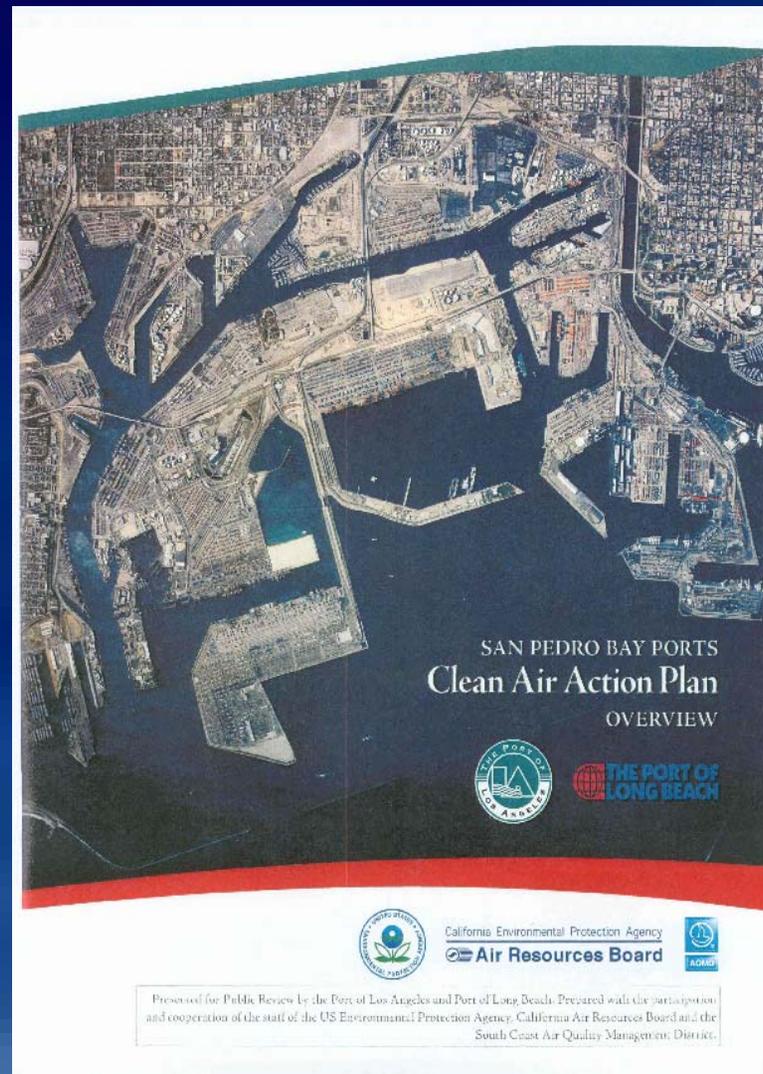
# International & Federal Actions

- MARPOL Annex VI
  - Standards Weak
  - Sulfur Emissions Control Area?
- Potential EPA Rulemakings for Marine Vessels & Locomotives
  - Foreign flag vessels?
  - Stringency?

# State & Local Actions

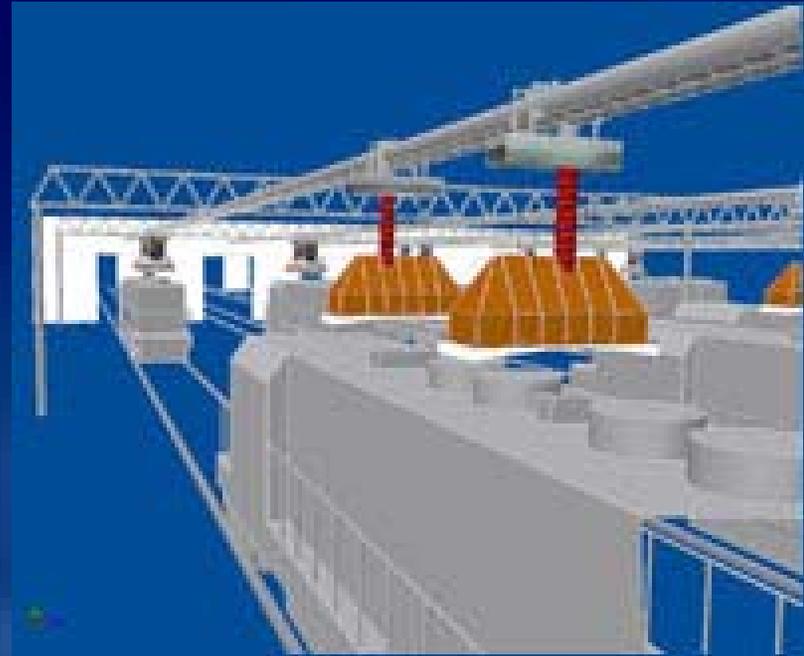
- CARB
  - Cargo Handling & Marine Auxiliary Engine Rules
  - Locomotive MOUs
  - Emission Reduction Plan for Ports and Goods Movement
- SCAQMD
  - Carl Moyer Funds
  - Rail Rules
  - 2007 Air Quality Management Plan
- Ports . . .

# *San Pedro Bay Ports Clean Air Action Plan*



# Example Control Measures

- Ocean Going Vessels
  - Low-Sulfur Fuels
  - Shore Power
  - SCR
- Cargo Handling Equipment
  - Replacement & Retrofit
- Trucks
  - Replacement & Retrofit
- Rail
  - Low-Sulfur Fuels
  - Hybrids, Alt-Fuel, Aftertreatment



# Elements Essential to Success

- Funding
  - E.g. container or other fee
  - Public funding
  - Greatest need: trucks
- Use of all available implementation tools
  - BACT for publicly-funded projects
  - Ports' authority as landlords
  - Rulemaking
  - Incentive programs
  - Project approval conditions

# Elements Essential to Success, Cont'd

- Technology Transfer
  - E.g. SCR for ships
- Federal Assistance
  - E.g. Locomotive emissions standards
  - Funding
- Design infrastructure projects with minimum impact
  - E.g. on-dock rail . . .



