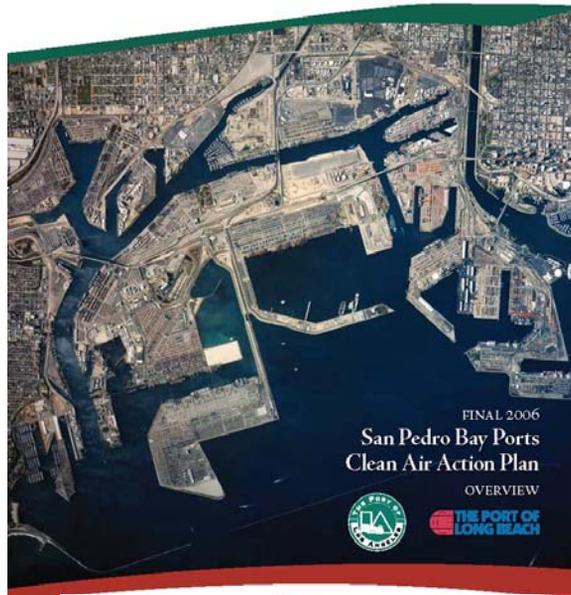


# San Pedro Bay Ports Clean Air Action Plan



## Topics

- Background
- Goals & Standards
- Implementation Strategies
- Technology Evaluation Initiatives
- Emissions Reductions
- Funding
- Next Steps



## Action Plan Drivers

- Minimize health risk from port operations
- Accelerate existing emissions reduction efforts
- Set consistent project-specific & source-specific standards
- Enable port development



## Action Plan Foundations

- Work cooperatively to minimize adverse environmental impacts of operations
- Build upon Ports & Tenants existing programs
- Reduce “Fair Share” of port-related operational emissions
- Ensure that all new projects meet health risk criteria
- Action Plan is a “Living Document” which will be updated & improved annually

# Action Plan Development

- Clean Port Summit – March 2006
  - Outcome: work together towards solutions
- SPBP Clean Air Action Plan Working Group formed
  - Both Ports
  - South Coast Air Quality Management District (AQMD)
  - California Air Resources Board (CARB)
  - Environmental Protection Agency (EPA)



# Sources and Challenges



## Target Pollutants: DPM, NO<sub>x</sub>, SO<sub>x</sub>

- DPM-Diesel Particulate Matter: Microscopic particles that includes soot from diesel exhaust; toxic air contaminant
- NO<sub>x</sub> -Nitrogen Oxides: An ozone precursor that significantly contributes to smog
- SO<sub>x</sub>- Sulfur Oxides: A precursor to particulates
- The South Coast Air Basin exceeds federal air quality standards for both ozone and particulate matter

## Standards – Three Levels

- San Pedro Bay Standards
  - Reduce public health risk from port-related toxics
  - Reduce port “Fair Share” pollutant emissions
  - Prevent port-related violations of National Ambient Air Quality Standards (NAAQS)
- Project Specific Standards
  - Meet 10 in 1,000,000 excess cancer risk threshold
  - Implement maximum feasible controls for projects exceeding CEQA thresholds for criteria pollutants
- Source Specific Performance Standards

# Control Measures

Measure #	Control Measure/Initiative
SPBP-HDV1	Performance Standards for On-Road HDV
SPBP-HDV2	Alternative Fuel Infrastructure for Natural Gas HDV
SPBP-OGV1	OGV Vessel Speed Reduction
SPBP-OGV2	OGV Reduction of At-Berth Emissions
SPBP-OGV3	OGV Auxiliary Eng Fuel Improvement Standards
SPBP-OGV4	OGV Main Eng Fuel Improvement Standards
SPBP-OGV5	OGV Main & Aux Eng Emission Improvements
SPBP-CHE1	Performance Standard for CHE
SPBP-HC1	Performance Standards for HC
SPBP-RL1	PHL Switch Engine Modernization
SPBP-RL2	Existing Class 1 Railroad Operations
SPBP-RL3	New and Redeveloped Rail Yards
	Technology Advancement Program
	Infrastructure & Operation Efficiency Improvements
	Construction Standards

## Ports' Five-Year Commitments

- Heavy-Duty Vehicles (Trucks)
  - Replacement/Retrofit of frequent & semi-frequent callers
  - LNG Fueling Infrastructure
  - Two Ports & SCAQMD \$206,000,000
- Ocean-Going Vessels
  - 100% compliance w/VSR to 20 nautical miles; extend to 40 nautical miles in '08
  - Port of Los Angeles – 15 berths will be AMP'd
  - Port of Long Beach – 10 to 16 berths will be shore-powered
  - ≤0.2% sulfur fuels for main & auxiliary engines
  - NOx and PM controls on new and existing vessels
  - Two Ports \$201,800,000

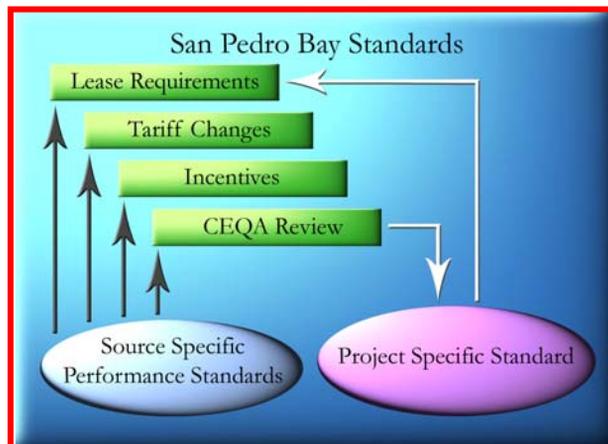


# Ports' Five-Year Commitments

- Railroad Locomotives
  - Standards for switcher and line-haul locomotives
  - Standards for new or modified rail yards
  - Two Ports & SCAQMD \$21,000,000
- Cargo Handling Equipment
  - Standards for equipment
- Harbor Craft
  - Standards for harbor craft
- Infrastructure and Efficiency Improvements
  - Two Ports \$5,000,000
- Technology Advancement & Source Testing
  - Two Ports \$15,000,000 (minimum)



# Relationships of Implementation Strategies



# Control Measures - Trucks

## SPBP-HDV1 Performance Standards for On-Road Trucks

- By end of 2011, Frequent or Semi-Frequent Trucks will meet or exceed EPA 2007 on-road PM standards (0.01 g/bhp-hr for PM) and be the cleanest available NOx – fuel neutral



# Control Measures - Trucks

## SPBP-HDV1 Population

- Estimated Population of Trucks (Initial 2005 EI Update)
  - ~41,000 Trucks Servicing Both Ports
  - ~7,000 Frequent Callers (1+ calls/day) ~50% of All Calls
  - ~9,800 Semi-Frequent Callers (0.5-<1 calls/day) ~30% of All Calls
  - ~16,800 Frequent & Semi-Frequent Callers That Represent 80% of All Truck Visits



# Control Measures - Trucks

## SPBP-HDV1 Measure & Funding Focus

- Measure Focus (Fuel Neutral):
  - All Frequent & Semi-Frequent Callers (MY<1993) - ~10,600
  - All Semi-Frequent Callers (MY1993-1997) - ~5,100 Trucks
  - All Semi-Frequent Callers (MY1998-2003) - ~850 Trucks
- Funding & Implementation
  - Emblem Program + Incentive Program w/Impact Fee Component
    - Impact fee targets beneficial cargo owners
    - Requirements for “Wages & Quality of Life”
    - Provide truck frequency & total numbers serving the Ports
  - Impact fee (& potential State Bond) will cover gap of ~ \$1.6 billion
  - ~ \$170 Million commitment from POLB/POLA over 5 years
  - SCAQMD (\$12 Million 1st year/\$6 Million following years)

# Control Measures - Trucks

## SPBP-HDV2 Alt Fuel Infrastructure for Natural Gas Trucks

- Ports to release RFP for fueling & central maintenance facility
- Funding:
  - \$4 Million from POLB/POLA over two years
  - SCAQMD (tbd)
- Implementation: Ports operational funding (incentives)



# Control Measures Ocean Going Vessels

## SPBP-OGV1 Vessel Speed Reduction

- 100% Compliance All OGV
  - Initially 20 nm (measured from Pt. Fermin), extended to 40 nm in 2008
- Implementation:
  - tariff, incentives, & leases
- Issues:
  - Coast Guard/Marine Exchange/Radar
  - Determine Benefits & Impacts



# Control Measures Ocean Going Vessels

## SPBP-OGV2 At-Berth Emission Reductions

- 100% shore-power:
  - Container terminals
  - Cruise ship terminals
  - Selected crude terminals
- POLA 15/POLB 10-16 shore-powered berths in five years
- Standardize shore-power/AMP
- Use of alternative control technologies
- Work cooperatively with tenants to accelerate
- Implementation: leases



# Control Measures Ocean Going Vessels

## SPBP-OGV3 & OGV4 Fuel Standards

- Use of  $\leq 0.2\%$  sulfur fuels for auxiliary & main engines
  - Initially 20 nm (measured from Pt. Fermin), extended to 40 nm in 2008
- Work w/fuel providers, shipping lines, & other Ports on supply issues
- Implementation: leases & tariffs pending legal evaluation
- Issues:
  - Fuel availability
  - On-board tankage



# Control Measures Ocean Going Vessels

## SPBP-OGV5 Main & Aux Engine Improvements

- Emission reduction engine technologies
  - Sea water scrubbers
  - Slide valves
  - SCR
  - Others
- Technology Advancement Program
- Implementation: leases & voluntary



# Control Measures Cargo Handling Equipment

## SPBP-CHE1 Performance Standards for CHE

- Beginning 2007, all yard tractor purchases will meet:
  - Cleanest available NOx engine & 0.01 g/bhp-hr PM (fuel neutral)
  - By end of 2010 all yard tractors will meet EPA 2007 on-road standards
- By end of 2012 all pre 2007 on-road or Tier IV off-road CHE  $\leq 750$  hp will meet 2007/Tier IV engine standards
- By end of 2012 all CHE  $> 750$  hp will meet Tier IV standards
- Implementation: leases



# Control Measures – Harbor Craft

## SPBP-HC1 Performance Standards for HC

- Second year, all home-based HC will meet Tier 2 or equivalent engine standards
- All assist tugs will use shore-power while home fleeting
- Fifth year, all previously re-powered home-based HC will be retrofitted with most effective CARB verified technologies
- Within five years of Tier 3 HC engines becoming available, all home-based HC will be re-powered with new engines
- Implementation: voluntary & incentives



# Control Measures Railroad Locomotives

## SPBP-RL1 Rail Switch Engine Modernization

- By 2008, all PHL engines replaced with Tier 2
- Equipped w/ idling devices
- Use emulsified or equivalent diesel fuels
- Retrofit with DPF or DOC technologies
- New PHL switch engines must meet EPA Tier 3 equivalent standards



# Control Measures Railroad Locomotives

## SPBP-RL2 Existing Class 1 Railroad Operations

- By 2011 all switcher & helper locomotives entering Port facilities will be 90% controlled for PM & NOx, idle restrictors, & ULSD
- Starting 2012 through 2014 fleet average for long haul will be Tier III, idle restrictors, & ULSD
- Implementation: MOU & contractual mechanisms



# Control Measures Railroad Locomotives

## SPBP-RL3 Clean Rail Yard Standards

- New rail yards must operate cleanest locomotive technology available
- Yard equipment must meet CHE standard
- Trucks must meet HDV standard
- Implementation: leases

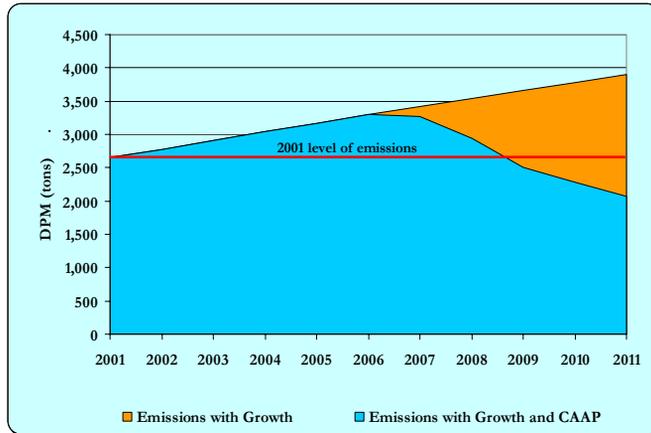


# Evaluation of Technologies/Concepts

- Technology Advancement Program
  - Combine expertise & resources
  - Specific projects identified in control measures
  - “Green Container” transport systems
  - Emerging technology development
  - Emission inventory improvements
  - Two Ports’ funding initial commitment:  
\$15 million over five years

# Future Emissions Projections with Implementing CAAP

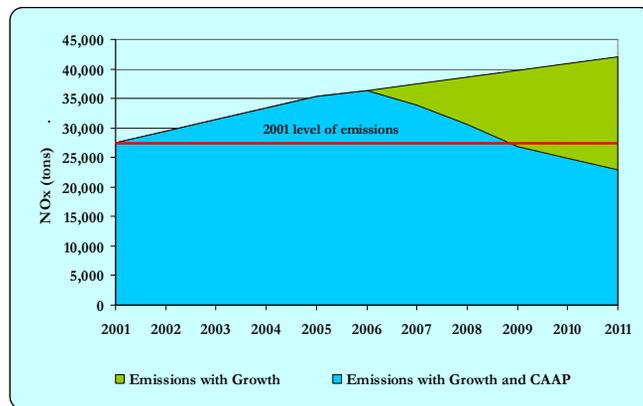
## DPM



Using CARB's Goods Movement Plan growth assumptions

# Future Emissions Projections with Implementing CAAP

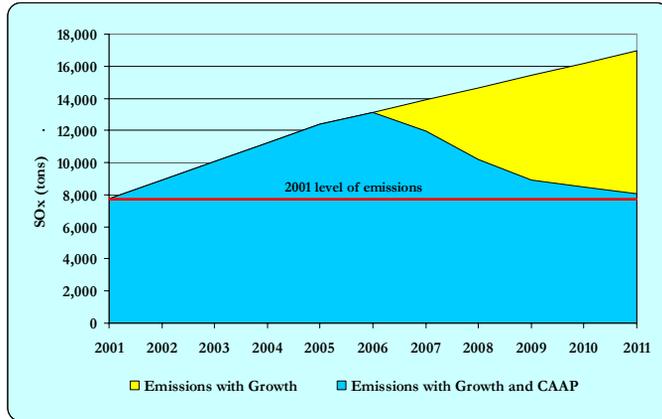
## NOx



Using CARB's Goods Movement Plan growth assumptions

# Future Emissions Projections with Implementing CAAP

SO<sub>x</sub>



*Using CARB's Goods Movement Plan growth assumptions*

## Estimated Emission Reductions

Trucks	782 tons/yr DPM
	6,228 tons/yr NO <sub>x</sub>
	2 tons/yr SO <sub>x</sub>
Ships	331 tons/yr DPM
	5,281 tons/yr NO <sub>x</sub>
	2,207 tons/yr SO <sub>x</sub>
Cargo Handling Equipment	11 tons/yr DPM
	376 tons/yr NO <sub>x</sub>
PHL Switchers	2 tons/yr DPM
	163 tons/yr NO <sub>x</sub>
Total Reductions - 5 <sup>th</sup> Year	1,126 tons/yr DPM (>3,000 tons)
	12,048 tons/yr NO <sub>x</sub> (>36,200 tons)
	2,209 tons/yr SO <sub>x</sub> (>5,600 tons)

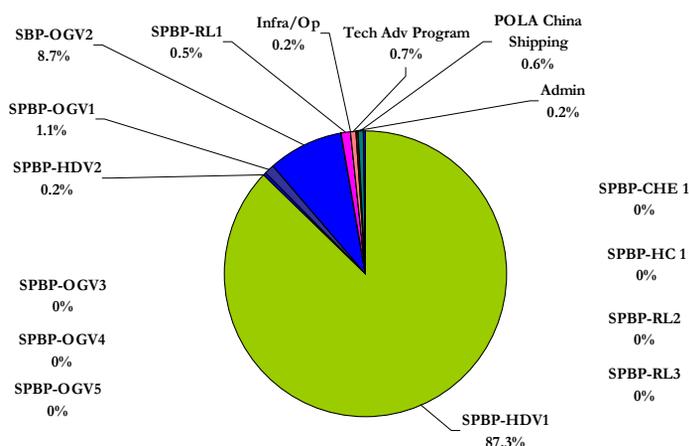
# Funding

Proposed Minimum Commitments Over Next Five Years:

- Port of Los Angeles  
\$177,500,000
- Port of Long Beach  
\$240,400,000\*
- SCAQMD Initial Commitment  
\$47,000,000
- Impact Fee/State Bond/Other  
\$1,602,900,000

\* - POLA & POLB spending equal on CAAP; POLB higher because of shore-power infrastructure costs

# Funding Distribution



# Tracking, Monitoring, and Reporting

- Expanding Port-Area Air Monitoring Network
  - Two Ports and AQMD
  - Monitors Air Quality
  - Cooperation on Methods/Evaluation
- Emissions Inventory
  - Regular Updates
- Monitor Progress on Clean Air Action Plan
  - Track implementation of each measure
- Report Progress on Clean Air Action Plan
  - At least annually

## Next Steps

- Draft Plan and technical data
  - [www.portoflosangeles.org](http://www.portoflosangeles.org)
  - [www.polb.com](http://www.polb.com)
- Joint POLA/POLB Board meeting
  - Monday November 20, 2006
  - 1:00 pm
  - City of Long Beach City Hall