



**Public Workshop to Discuss Reducing Emissions
from
In-Use Commercial Harbor Craft**

May 17, 2006

California Environmental Protection Agency



Air Resources Board

Presentation Overview

- Need for Reductions
- Commercial Harbor Craft
- Emission Inventory
- Demonstration Projects
- Regulatory Development
- Concepts Under Consideration

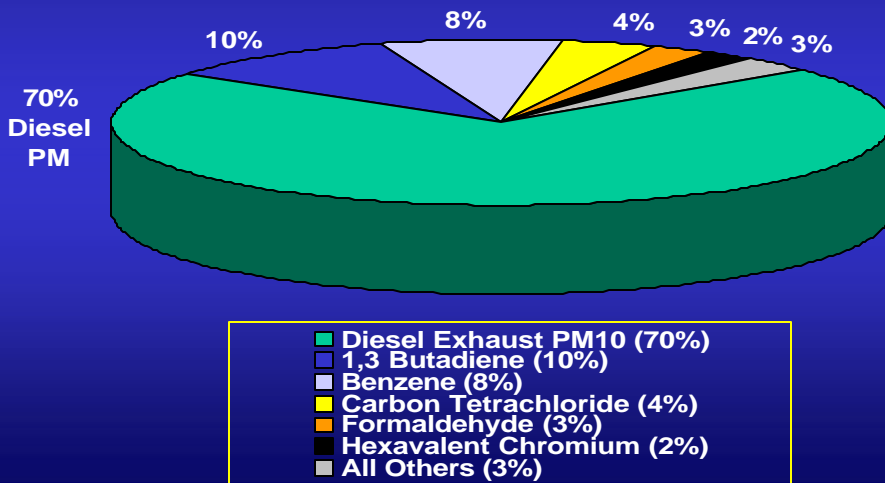
Need For Reductions



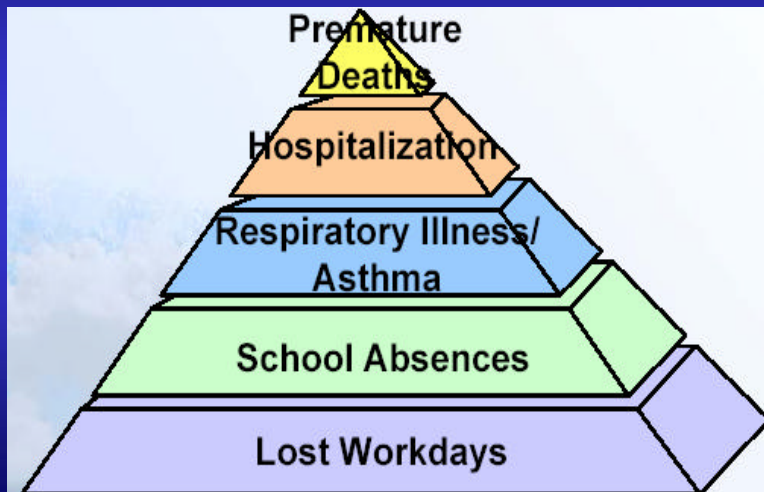
Despite Progress Much Left to Do

- Over 90% of Californians exposed to unhealthy air
- Additional emission reductions needed to attain air quality standards
- Risk from air toxics is too high

Statewide Air Toxics Risk for Year 2000



What Are The Health-Related Impacts of Air Pollution?



Framework For Continuing Improvement

- 2000 Diesel Risk Reduction Plan
- Governors Environmental Action Plan
- 2006 Goods Movement Plan
- Attainment of State & Federal Air Quality Standards

Main Commercial Harbor Craft Strategies

- New Harbor Craft Engine Standards
- Harbor Craft Fleets

Commercial Harbor Craft



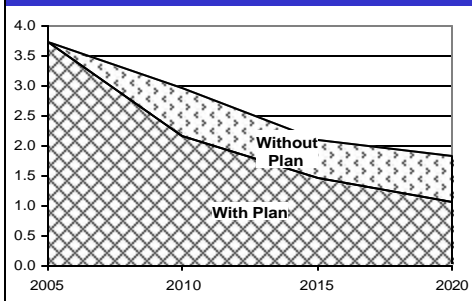
Variety of Commercial Harbor Craft are Used in California

- Commercial Fishing Boats
- Commercial Passenger Fishing Boats
- Crew and Supply Boats
- Ferry / Excursion Boats
- Pilot Boats
- Tow / Push Boats
- Tug Boats
- Work Boats

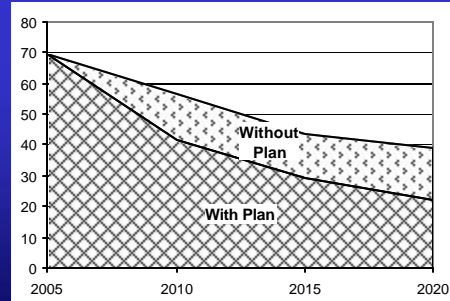
Commercial Harbor Craft Diesel PM and NOx Emissions

Impact of Plan Strategies on
Statewide Harbor Craft Emissions
(tons per day)

Diesel PM



NOx



Current Regulation Activities

- Update Emissions Inventory
- Demonstration Emission Retrofit Projects
 - Exhaust Gas Temperature Data Logging
 - ARB Funding Emission Testing Projects with UC Riverside (CE-CERT)
- Regulation Development

Emission Inventory



Emission Inventory Overview

- Estimate emissions for specific locations or regions
- Monitor trends and project future emissions
- Use in air quality models to help assess potential impacts of emission reduction strategies
- Evaluate spatial characteristics

Current Commercial Harbor Craft Inventory

- Developed primarily by the air pollution control and air quality management districts
- Methodology can vary from district to district
- Update being developed

Goals for the Commercial Harbor Craft Inventory Update

- Build into ARB OFFROAD model
- Develop consistent methodology
- Generate improved emission estimates for NO_x, PM, CO, HC, and SO_x
- Accurately reflect adopted regulations and other regulatory programs in the baseline inventory and forecasts

Vessel-specific Profiles

- Vessel-specific profiles have been developed for each vessel type and include:
 - ▶ Activity (including load factors)
 - ▶ Population
 - ▶ Emission factors (for NO_x, PM, CO, CO₂, HC, and SO_x)
 - ▶ Location

Demonstration Projects



U.S. Navy Work Boat / Barge

- (2) 2 stroke DDC engines
- Rypos DPF and
- Rebuilt with Clean Cam Technologies
 - ▶ Preliminary Data Looks Great
 - ▶ Reduced NOx and PM

Blue and Gold Ferry

- Cleaire Longview
 - ▶ PM and NOx Reductions
- Issues with High Back Pressure and Exhaust Temp.
- Working with BAAQMD and Vendor

ARB Data Logging

- Contacting Tug – Ferry – Fishing vessel owners
- Determine Retrofit Compatibility
 - DOC or DPF

Regulatory Development



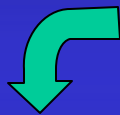
Statewide Goods Movement Emission Reductions Goals from In-Use Harbor Craft

Cleaning up Existing Harbor Craft
and U.S. EPA or ARB Cleaner Engine Standards

Percent Control

2010 25%
2015 30%
2020 40%

Two-pronged Approach will be Used to Pursue Emission Reductions for In-Use Harbor Craft



- Use of CARB diesel (2004)

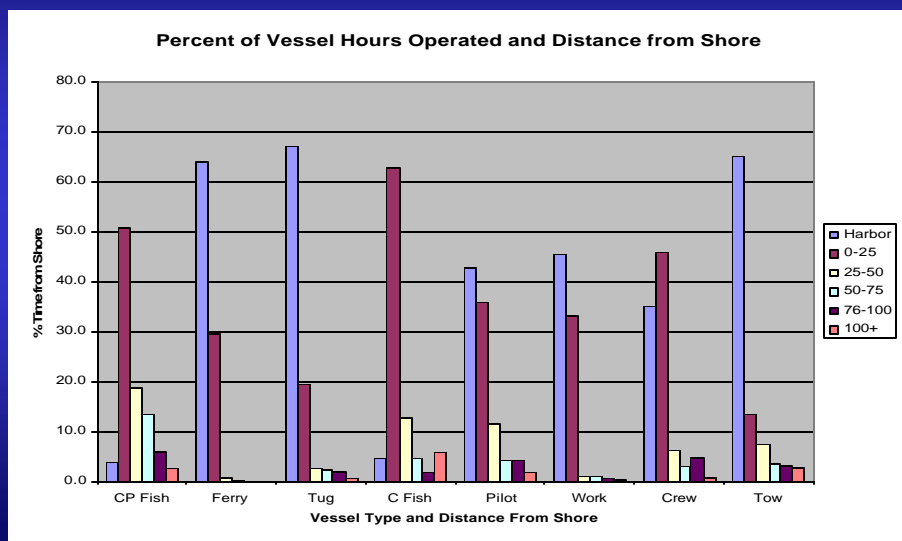


- Develop strategy to achieve reductions through (2006)
 - add-on controls
 - clean new engines
 - incentive funding
 - engine modifications

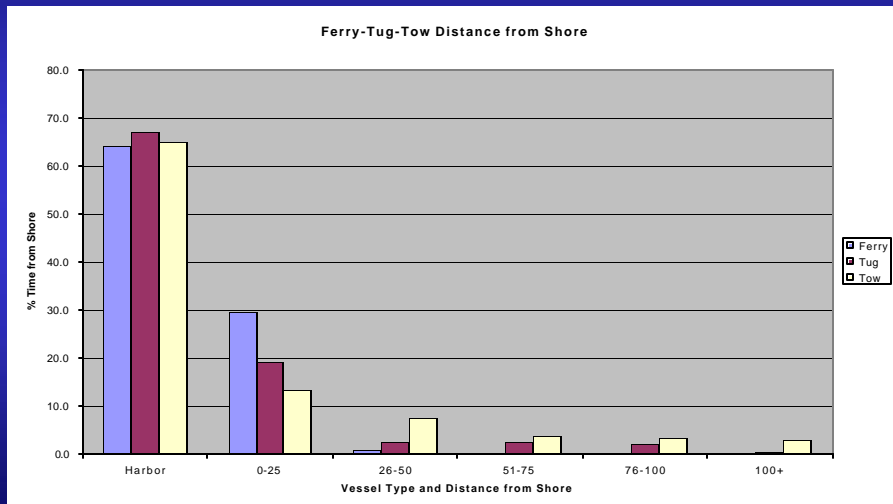
Planned Measure: Reduce Emissions From Existing Harbor Craft

- Reduce emissions through the use of add-on controls, cleaner fuels, and/or repowering with new engines
- First priority - near shore impacts
- Adopt programs 2006-2007
- Fulfill Goods Movement Goals and make progress on DRRP commitment

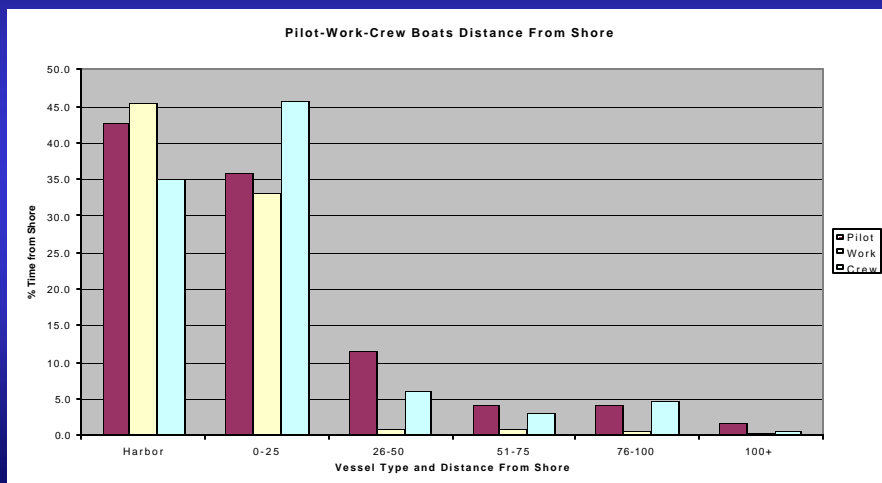
Regulation Targeting Vessels Working Closest to Shore



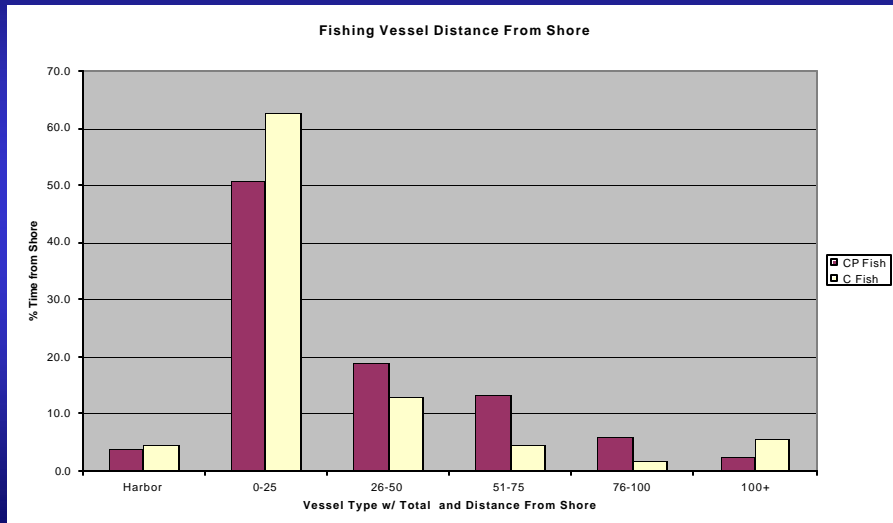
Ferry –Tug –Tow Vessels Working Distance From Shore



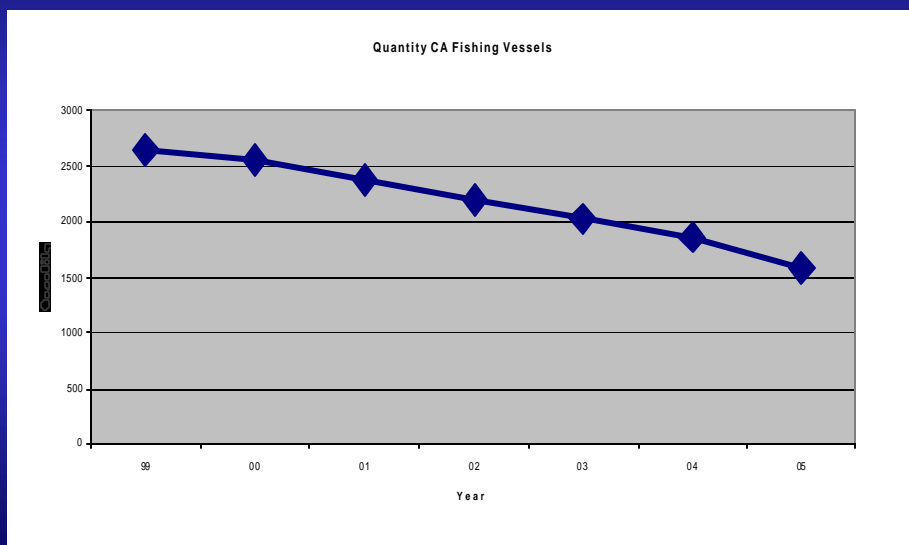
Pilot – Work – Crew Vessels Working Distance From Shore



Fishing Vessels Working Distance From Shore



Decline of Commercial Fishing Vessels



Concepts Under Consideration



Potential Requirements

Near Term Strategies

- Tier II Engines (Repower/Rebuild)
- Level 1 or 2 Retrofit Devices

Longer Term

- Repower with Tier III
- Level 3 Retrofit Devices

Potential Compliance Options

- Fleet Average
- Multi Year Phase-in
- Shore Side Power
- Tier xx engines by date
- Alternative fuels
 - LNG
 - Biodiesel

Potential Exemption Options

- Exemptions
 - Low use vessels
 - Small fleets

Potential Issues

- Cost and Economic Impacts
- Engine Availability
- Verified Emission Control Device Availability

Timeline

- Begin Regulatory Development Process
 - May 2006
- Public Workshops and Stakeholder Meetings
 - May through Fall 2006
- ARB Public Hearing
 - Late 2006 – Early 2007



Commercial Harbor Craft Team Contact List

- **Todd Sterling (Team Lead)**
e-mail: tsterlin@arb.ca.gov
phone: 916.445.1034
- **Kirk Rosenkranz**
e-mail: krosenkr@arb.ca.gov
phone: 916.327.7843
- **Bonnie Soriano**
e-mail: bsoriano@arb.ca.gov
phone: 916.327.6888
- **John Lee**
e-mail: jlee@arb.ca.gov
phone: 916.327.5975
- **Erik White, Manager
Technical Analysis Section**
e-mail: ewhite@arb.ca.gov
phone: 916.327.7213
- **Dan Donohue, Chief
Emissions Assessment
Branch**
e-mail: ddonoho@arb.ca.gov
phone: 916.322.6023

Web Site: <http://www.arb.ca.gov/harborcraft>