

A CLEANER PORT.
A BRIGHTER
FUTURE.



CMANC

Alternative Maritime Power Conference

California Ports' Environmental Perspective

Port of Los Angeles

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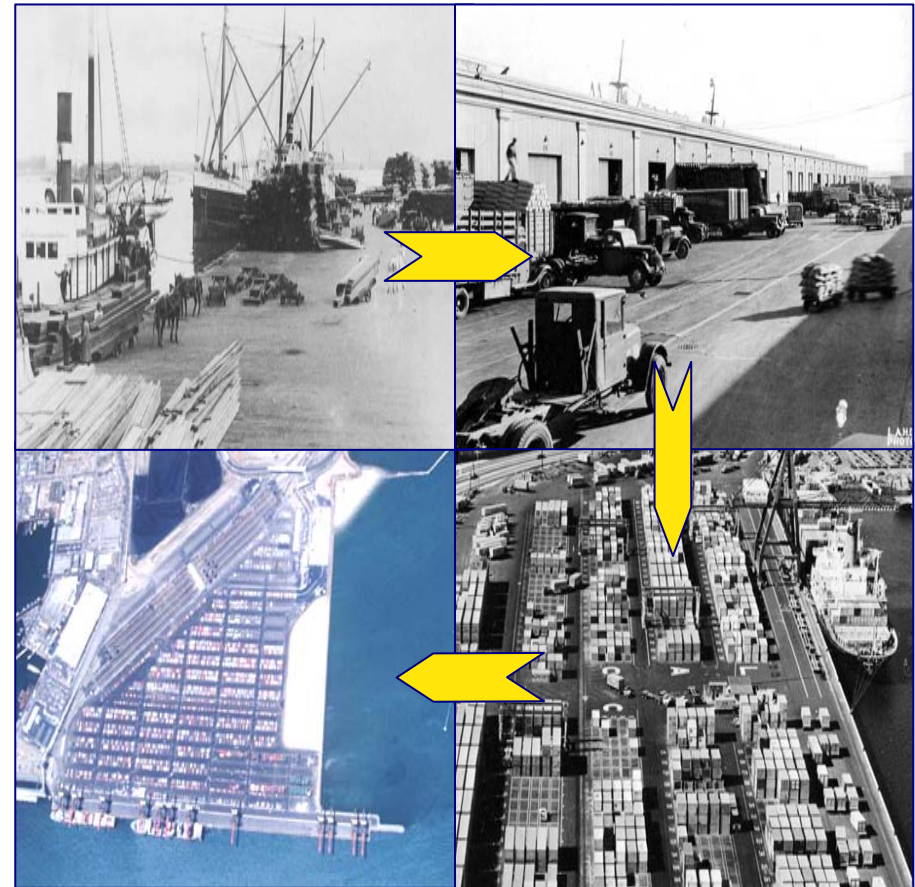


AIR



Evolution of Cargo Handling

- Containerization
- Near-Dock Intermodal Facilities
- Rise in Pacific Rim Trade & Discretionary Cargo
- Scales of Economy
 - Larger Ships
 - Bigger Terminals
 - Bigger Cranes
 - Deeper Channels





2004 Top Container Ports

In TEUs, or Twenty-Foot Equivalent Units -2004
(000s)

Top North American Ports

1. Los Angeles, CA	7,320
2. Long Beach, CA	5,780
3. New York/ New Jersey	4,470
4. Oakland, CA	2,044
5. Charleston, NC	1,860
6. Virginia Port Authority	1,800
7. Tacoma, WA	1,797
8. Savannah, GA	1,695
9. Vancouver, BC	1,664
10. Seattle, WA	1,466

Top World Ports

1. Hong Kong	21,930
2. Singapore	21,330
3. Shanghai	14,550
4. Shenzhen	13,660
Los Angeles/Long Beach	13,100
5. Busan	11,430
6. Kaohsiung	9,710
7. Rotterdam	8,220
8. Los Angeles	7,320
9. Hamburg	7,000
10. Dubai	6,420
11. Antwerp	6,060
12. Long Beach	5,780

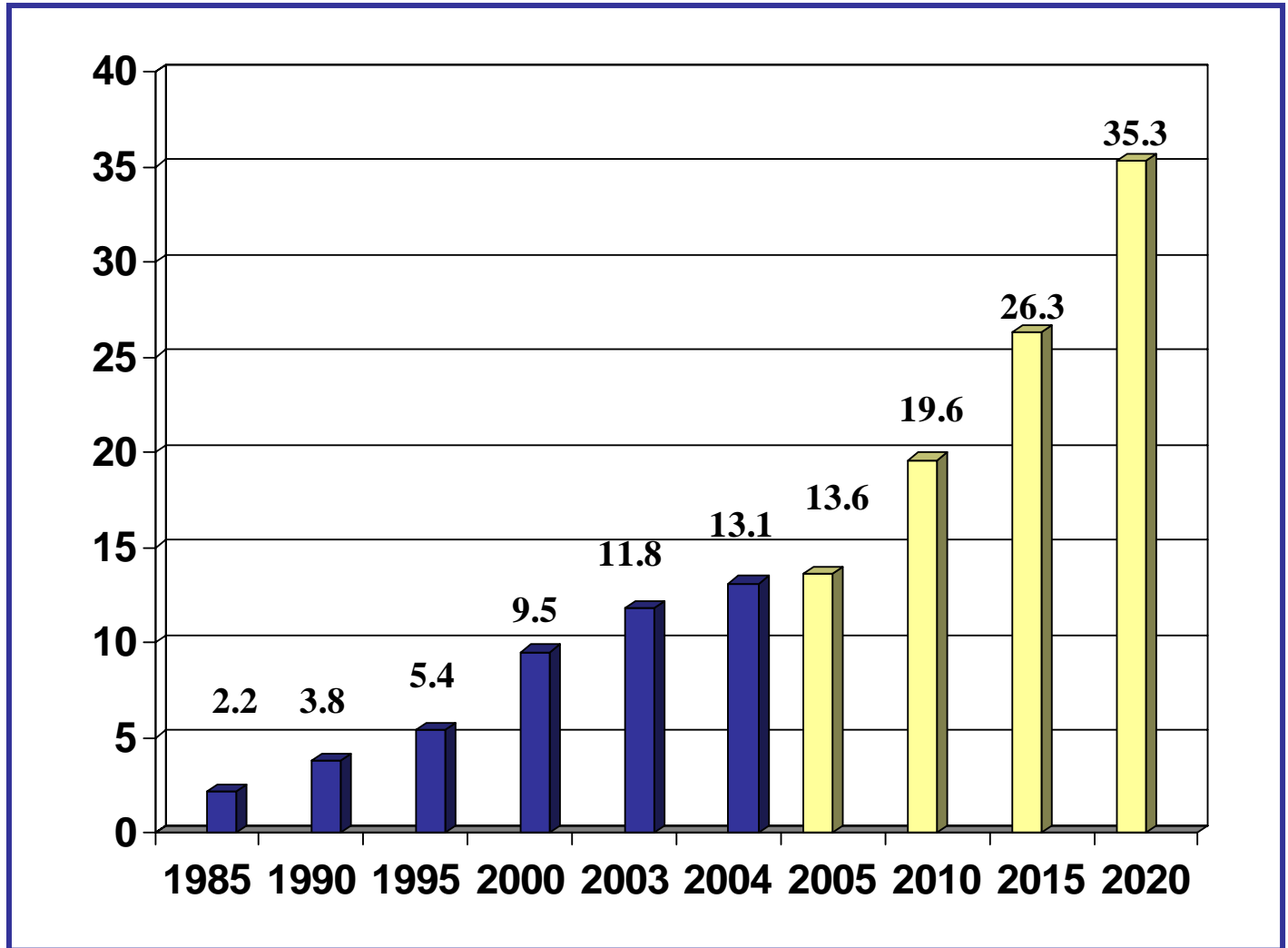
In 2004, the Port of Los Angeles & Long Beach handled:

• **43%** of all total U.S. IMPORT containerized trade

• **22.8%** of all total U.S. EXPORT containerized trade



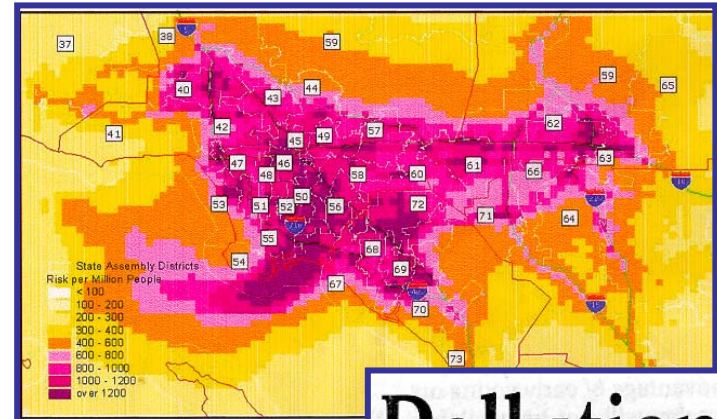
Port Projected Cargo Growth





Air Quality Issues

- Diesel Emissions
- Identified as Air Toxic by ARB
- AQMD's MATES II Study
- Health Effects Studies
- Community Concern



Latino areas
are hit hard by
environmental
health threats

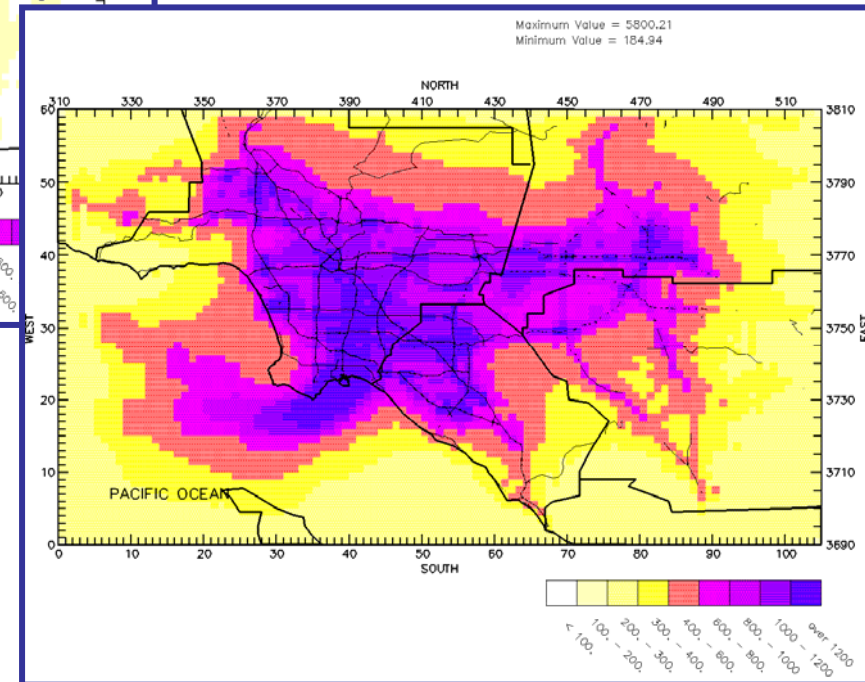
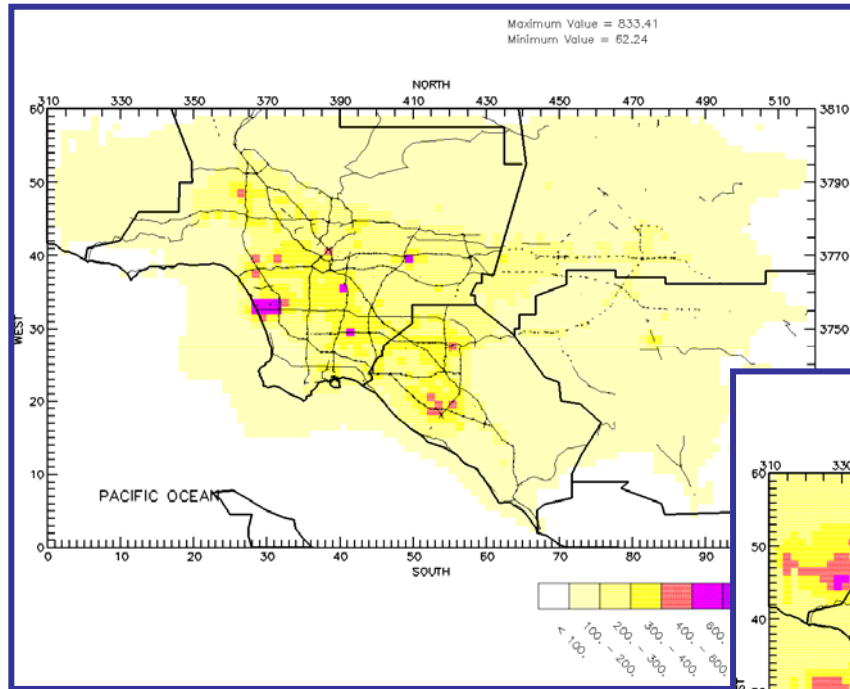
REPORT: Group suffers more
from pollution than the rest
of the population, study finds.

Pollution,
traffic are
linked
to illness

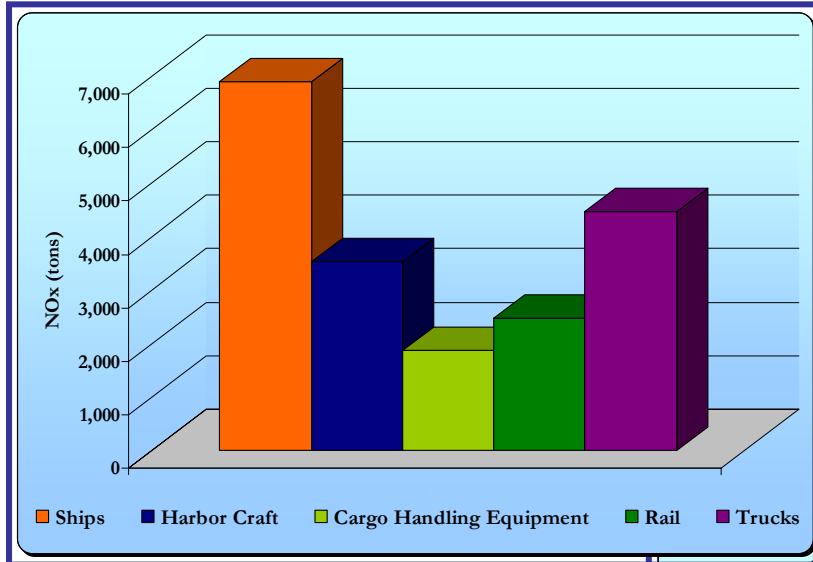
ENVIRONMENT: German
study finds heart attacks are
three times more likely in
congestion. Bad air is blamed.



Modeled Cancer Risk Without & With Diesel Emissions

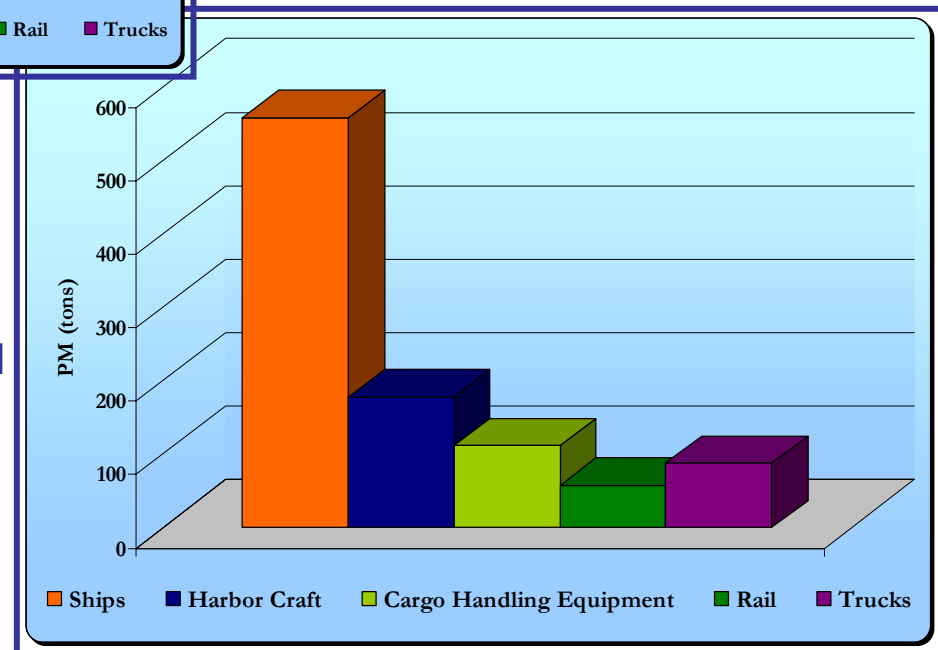


Summary 2001 Emissions Inventory



2001 Annual Total: 19,220 tons NOx

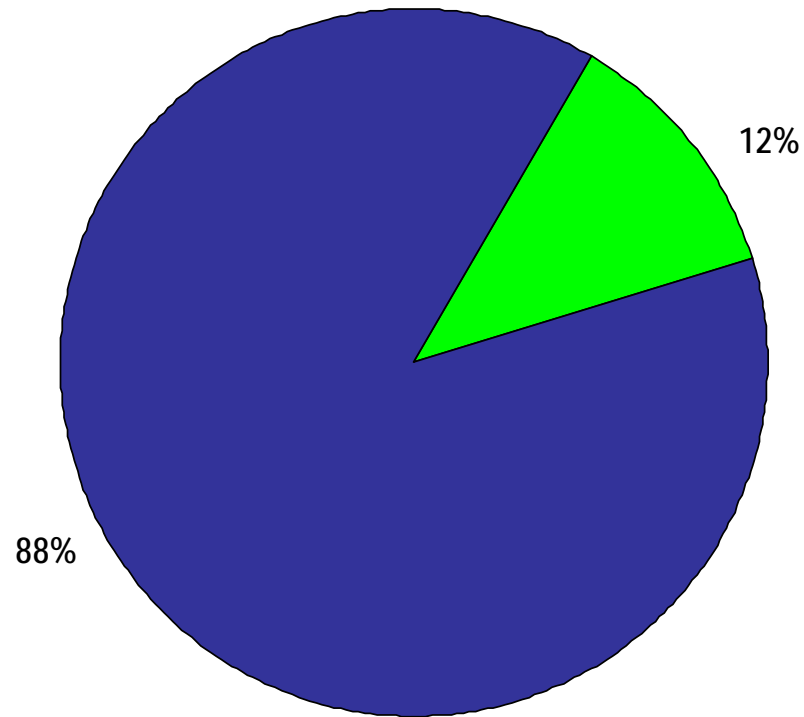
2001 Annual Total: 993 tons PM





Contribution of POLA Diesel PM₁₀ Emissions to Air Basin

(2001)

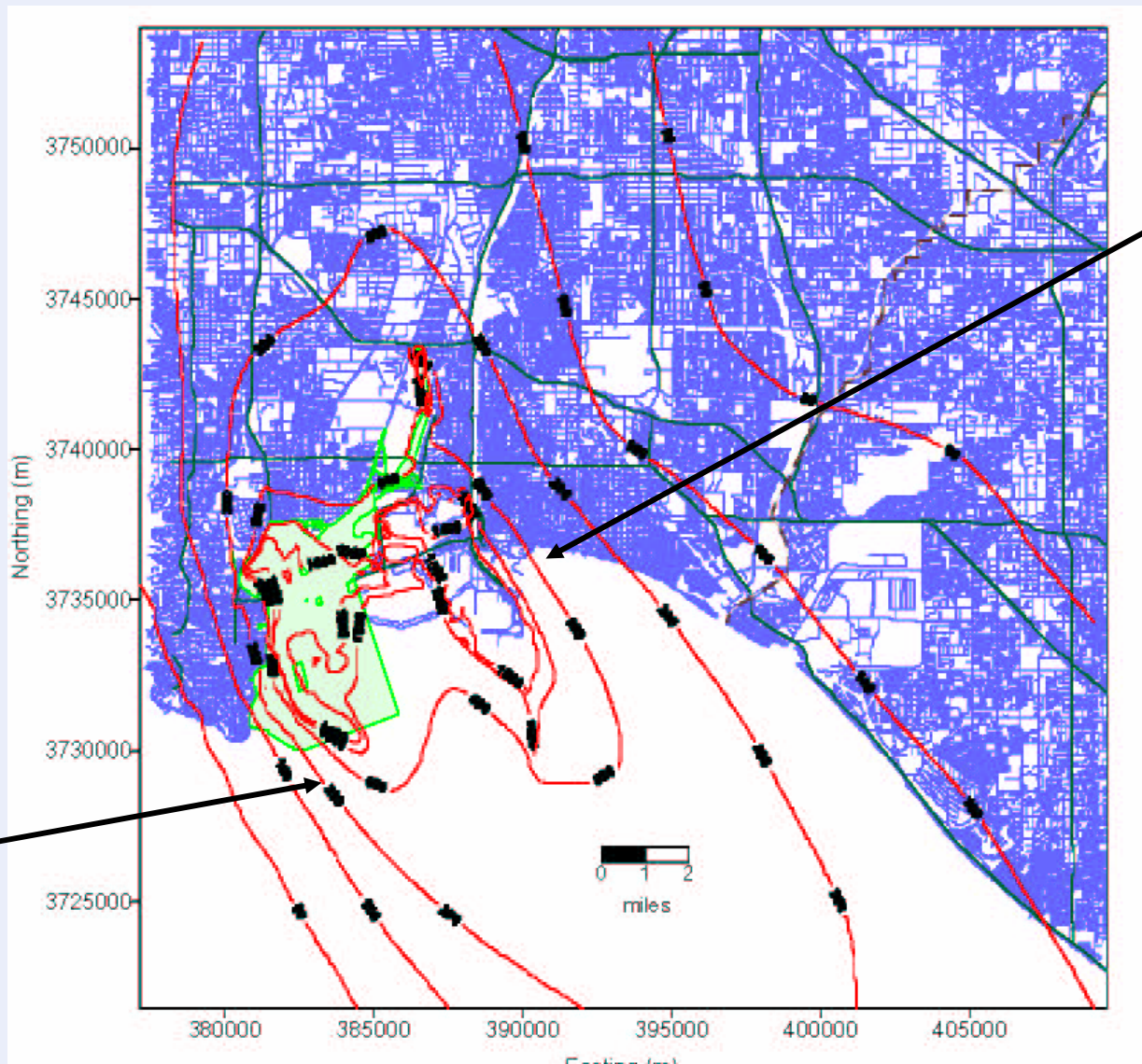


Total Diesel PM₁₀ = 23 tons/day



EIRs: HRAs and Mitigations

CARB All In-Port Diesel (inside breakwater)



500

200



Air Emission Control Measures

2004/5

- Initial Effort to Return Emission Levels to 2001
- Intensive 9 Month Evaluation/1,000's of Hours
- 68 Measures Developed for All Five Source Categories

Source Category	# Measures	Adopted Regs.	Engine Standard	Cleaner Fuels	Repower/ Retrofit	Op Eff./ Improv.
OGV	17	4	3	5	2	3
HC	11	5	1	1	3	1
CHE	9	6	2	-	1	-
Rail	12	5	3	1	1	2
Trucks	19	9	2	1	3	4
	68	29	11	8	10	10



Clean Air Program 5-Year Plan

Public Policy Shift

- New Mayor Villaraigosa Elected in Nov 2005
- New Commissioners Most Progressive/Aggressive Board Ever on Reducing Port-Related Environmental Impacts
- Public Policy Shift of New Board for Air Quality Focuses On:
 - ✓ Reduce Port-Related Air Emissions in Interest of Public Health
 - ✓ Focus on DPM & NO_x
 - ✓ Disconnect Cargo Growth w/Increase of Emissions
 - ✓ Evaluate & Facilitate the Introduction of Alternative Fuel as Rapidly as Possible (LNG, Electric, Biofuels, etc)
 - ✓ Monitor, Document, & Report on Performance
 - 4 Monitoring Stations, New 2005 Inventory
- Development of CAP 5-Year Plan



Control Measures

Ocean Going Vessels (OGV):

- **Vessel Speed Reduction**
1.5 NOx/day; 70%
- **Alternative Maritime Power**
38 tons NOx; 2 tons PM
- Engine Fuel Improvement
- Reroute cleanest ships
- Partner w/International Trading
Partner - Shanghai
- Establish Pacific Ports Air Quality
Collaborative



Harbor Craft (HC):

- Cleaner Fuels (Biofuels)
- **Engine Replacement/Retrofit**
- Electric Infrastructure



Alternative Maritime Power

Connecting Ships to Electric Power While at Berth

China Shipping Terminal

Stern/Barge: 6.6 KV – 440V



Yusen Terminal

Side Mounted: 6.6KV





Control Measures

Cargo Handling Equipment (CHE):

- Focus on Cleaner Engines & Supporting Infrastructure
 - Alternative Fuel Equipment
 - Alternative Fuel Infrastructure
 - **Diesel Oxidation Catalyst 639**
 - **Emulsified Diesel 106**
 - **New Diesel Technology**
- Encourage Rapid Fleet Turnover
- Build Alt. Fuel Infrastructure



Heavy Duty Vehicles (HDV):

- Major Incentive Focus
- Focus Cleaner Engines & Supporting Infrastructure
 - Alternative Fuel Trucks
 - Alternative Fuel Infrastructure
 - Diesel Particulate Filter
- **Facilitate Rapid Turnover**
- **Gateway Cities Program**
253 trucks; 139 Tons NOx
30 Tons PM / Yr.



Control Measures

Rail (R):

- Focus on Cleaner Switch-Locomotive Engines, Operational Controls, Electrification, & New Technologies
- Facilitate Rapid Turnover of Switch Engines
 - **Locomotive Switch Engine Replacement**
 - Alternative Fuels/Hybrids
 - Idling Controls for Switchers
- Line Haul Progress on Idling Controls
- Evaluate Electrification & Other Technology





Clean Air Program 5-Year Plan

Implementation Strategies

- **Magnitude of Control Measures Will Demand Multiple Implementation Strategies – Regulatory Issues**
 - ✓ Voluntary Measures
 - ✓ Port Incentive Funding
 - ✓ Port Infrastructure Improvement Funding
 - ✓ Green Port Program
 - ✓ Credit Trading/Market-Based Incentives
 - ✓ Regulatory Incentive/Grant Programs
 - ✓ Tariff Changes
 - ✓ Lease Negotiations/Requirements
 - ✓ Leasing Policy – Directive 2: Environmental

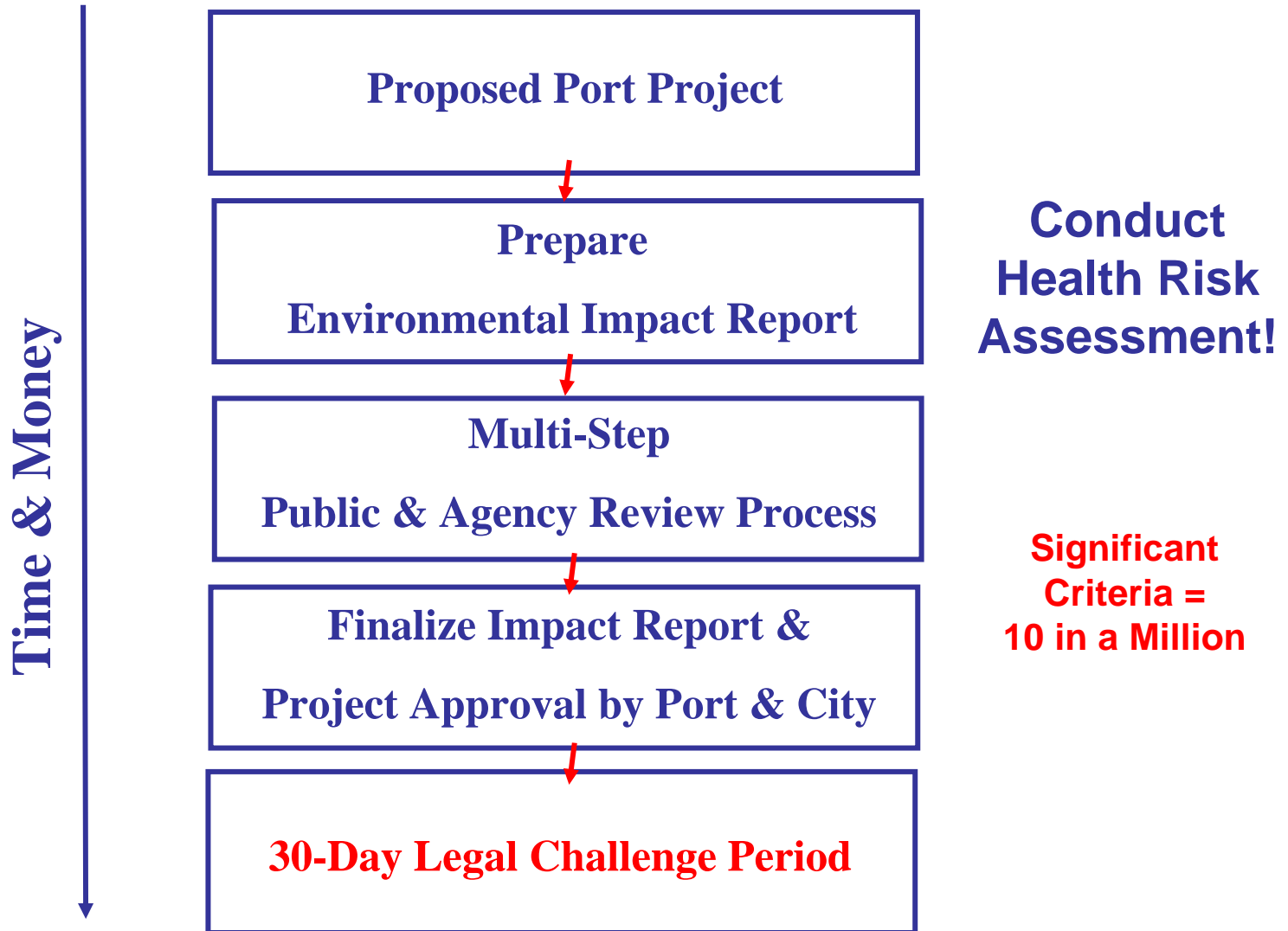


Leasing Policy – Environmental Requirements

- **Environmental Facilities Plan, including:**
 - **Air emission controls**
 - Water, stormwater and sediment quality
 - Trash management and recycling
 - Lighting and noise control and facility appearance
 - Hazardous material management requirements
 - Facility restoration and decommissioning requirements
 - CEQA mitigation measures and reporting requirements
- **Special Air Measures**
 - **Vessel speed reduction program**
 - **Cold ironing while in Port**
 - **Use of low sulfur fuel in main and auxiliary engines**
 - **Alternative fuel in all new yard tractors**
 - **Use of clean “low emission” trucks and locomotives to service the terminal, as required**



Typical Environmental Review Process





Clean Air Program 5-Year Plan

Status

- In Preparation w/ ARB, AQMD and POLB
- Public Draft May 2006
 - ✓ **30 Day Public Review Period**
 - ✓ **Workshops & Public Meeting**
- Harbor Commission Approval June/July 2006

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**It may look like an ocean.
But it's really a highway.**

AIR