

*Federal Advisory Committee Act:
Mobile Source Technical Review Subcommittee*



***Initiatives for
Sustainable
Freight Transport
in California***

Long Beach

December 2015

Richard W. Corey

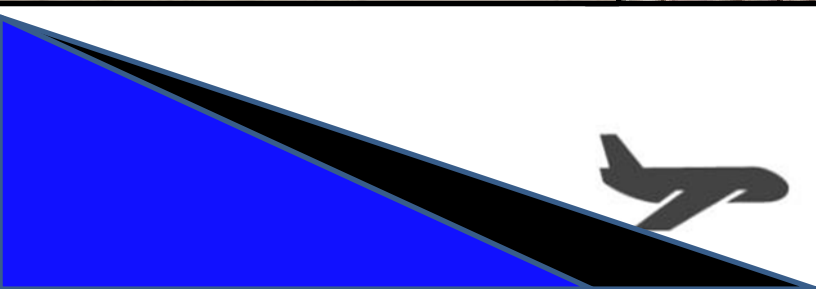
Executive Officer

California Environmental Protection Agency

 **Air Resources Board**

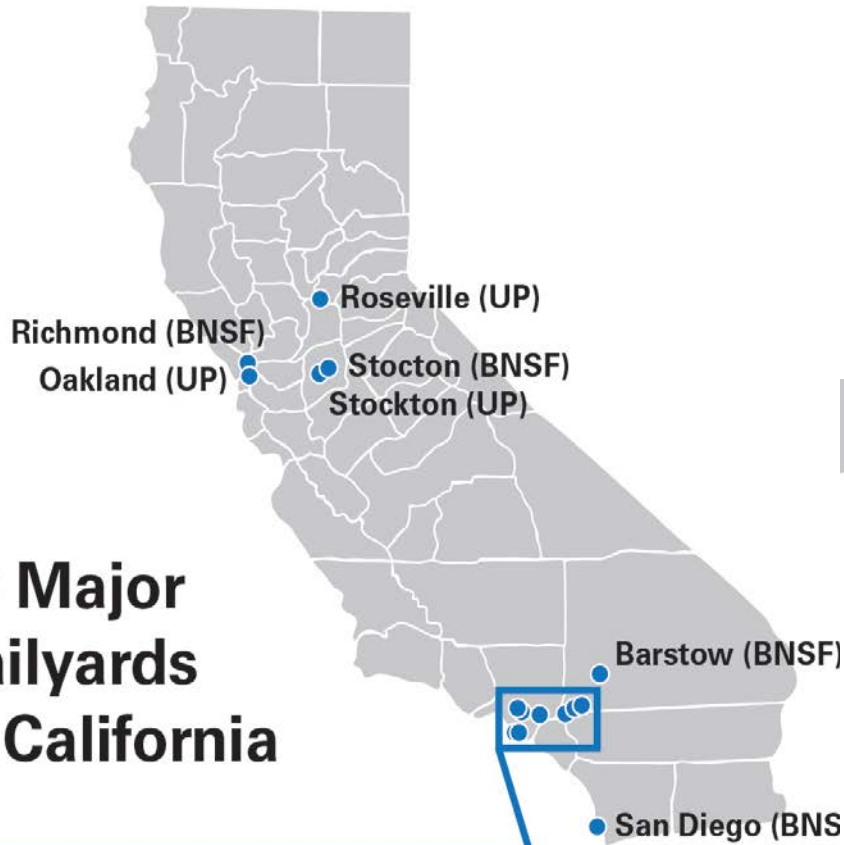


California Freight Transport System (facilities and equipment)

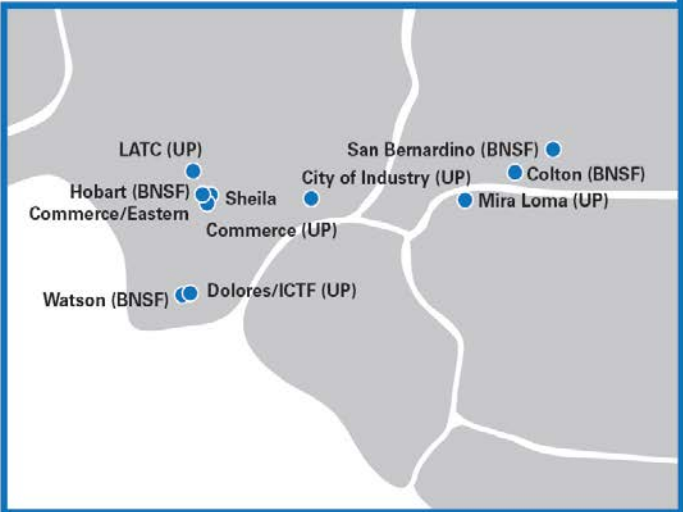




18 Major Railyards in California

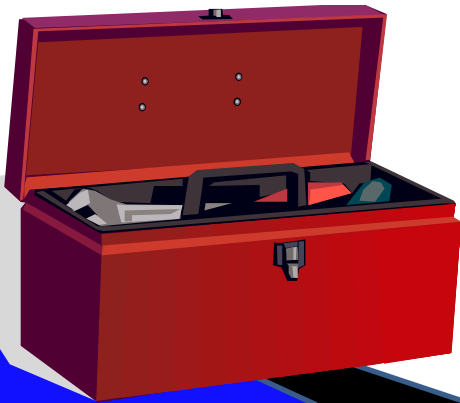


3 International Border Truck Crossings



Tools to cut emissions

- Monitoring and health risk assessments
 - Plans and technology evaluations
 - Regulations & agreements
 - Advocacy for nat'l/internat'l action
 - Incentives & port initiatives
 - Efficiency improvements
 - Project mitigation
 - Land use decisions



Key ARB milestones

- 1998: identify diesel particulate matter (PM) as a toxic air contaminant
- 2000: adopt Diesel Risk Reduction Plan to cut health risk statewide by 85%
- 2003+: begin adopting rules for in-use engines requiring fleets to retrofit filters and accelerate turnover

2000 Diesel Risk

Reduction Plan

Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles



California Environmental Protection Agency
 Air Resources Board

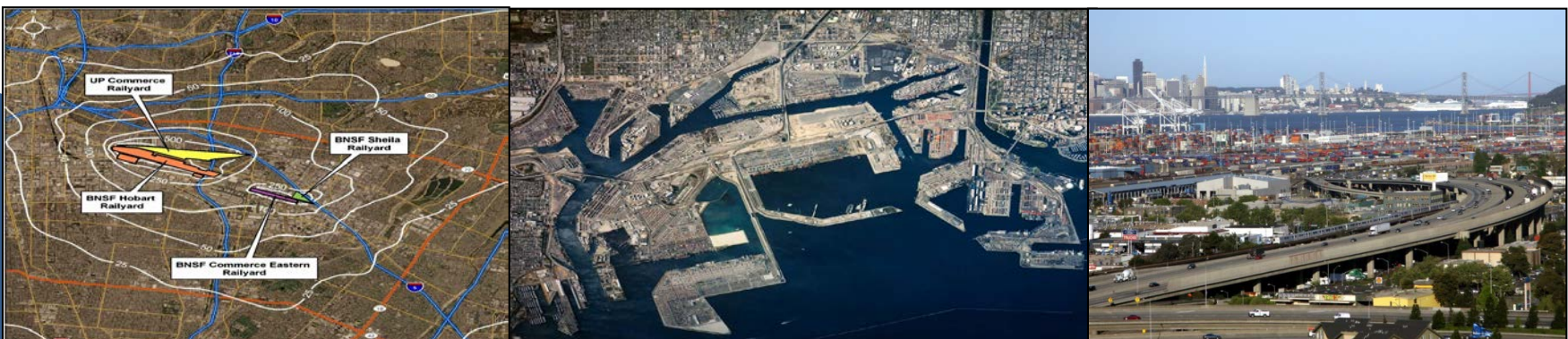
Stationary Source Division
Mobile Source Control Division

October 2000

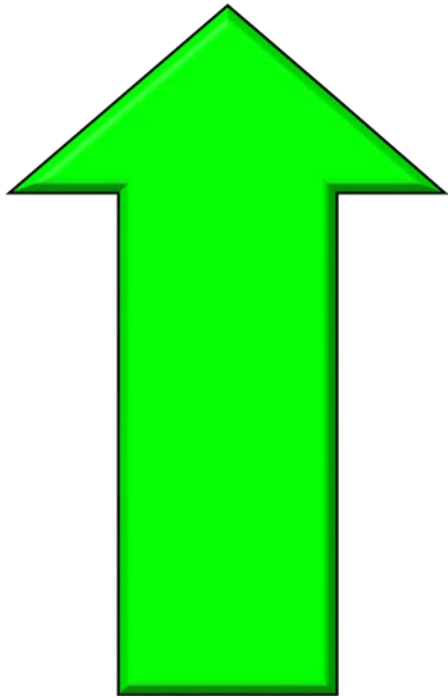


Health risk assessments for diesel PM near freight facilities (in 2002-2005)

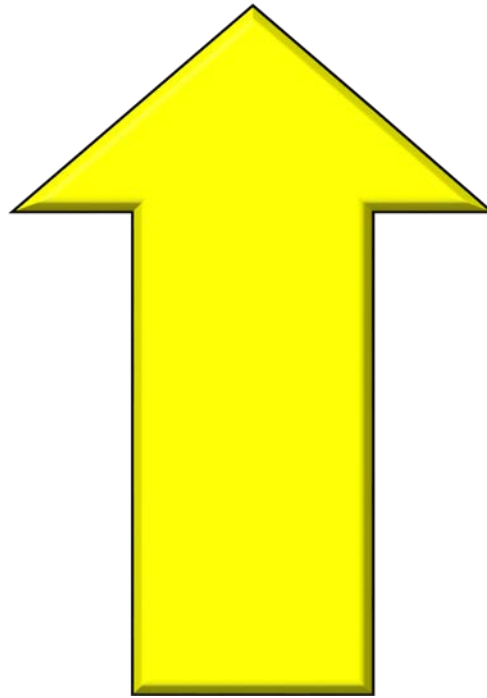
- Ports of LA/Long Beach: 10-500+ per million (*high risk near facility, big footprint*)
- Major railyards: 40-2,500 per million (*homes very close to railyards*)
- West Oakland: 10-1,200 per million (*combined port, 2 railyards, 4 freeways*)



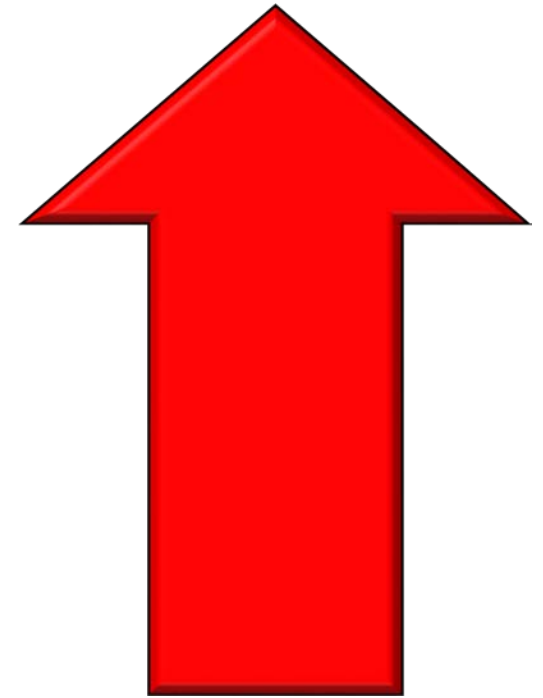
California freight system – 2005



Cargo
growth



Infrastructure
needs

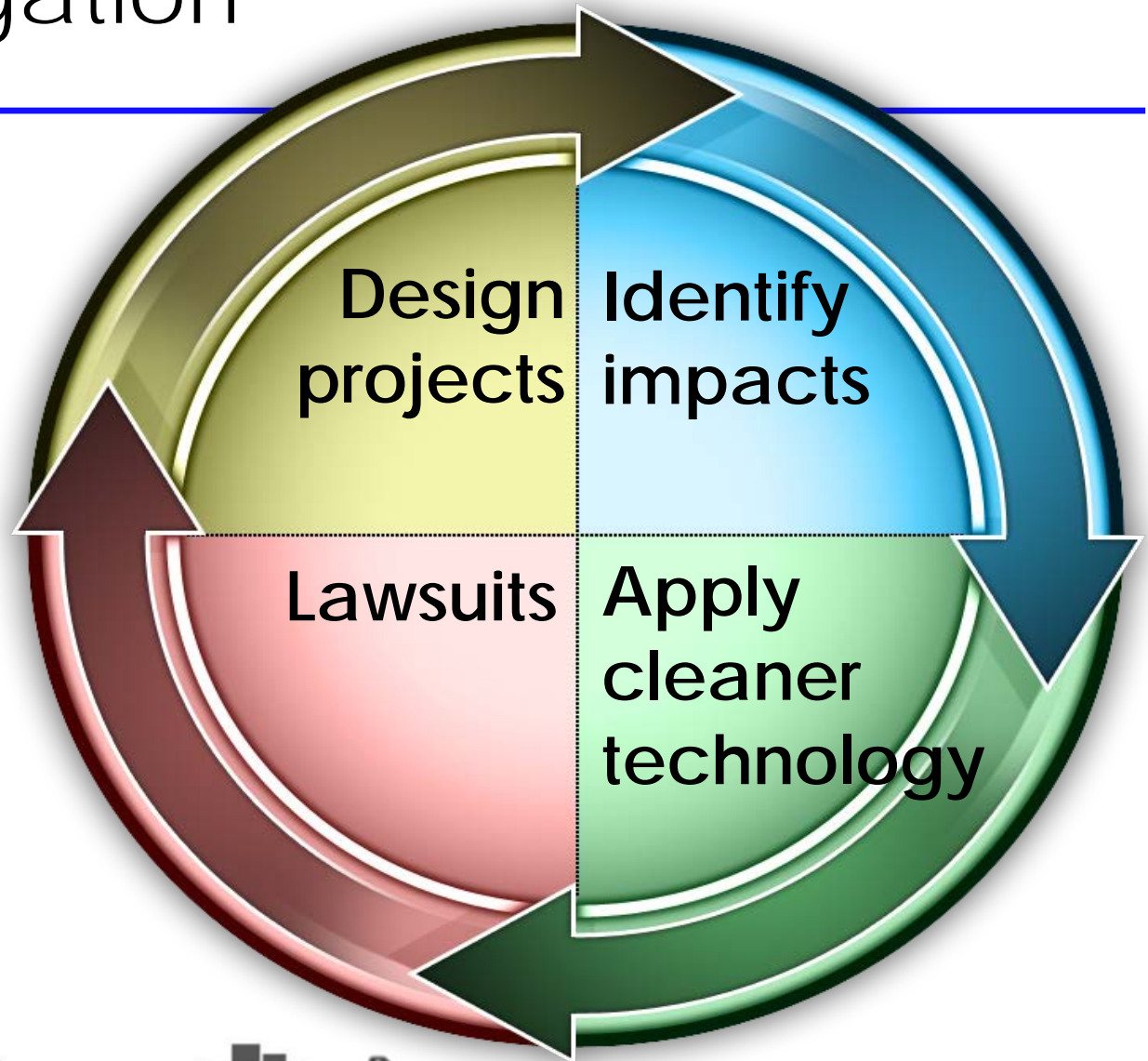


Community
concerns




Cycle of litigation

NEPA/CEQA
analysis on
freight
infrastructure
projects



Air Resources Board Elements of Goods Movement Action Plan

Emission Reduction Plan for Ports and Goods Movement in California



**Approved by the Air Resources Board
April 20, 2006
Long Beach**

Air Resources Board
California Environmental Protection Agency

2007 SIP
Revised Draft

Air Resources Board's
Proposed State Strategy for California's
2007 State Implementation Plan

Release Date: April 26, 2007

California Environmental Protection Agency
Air Resources Board

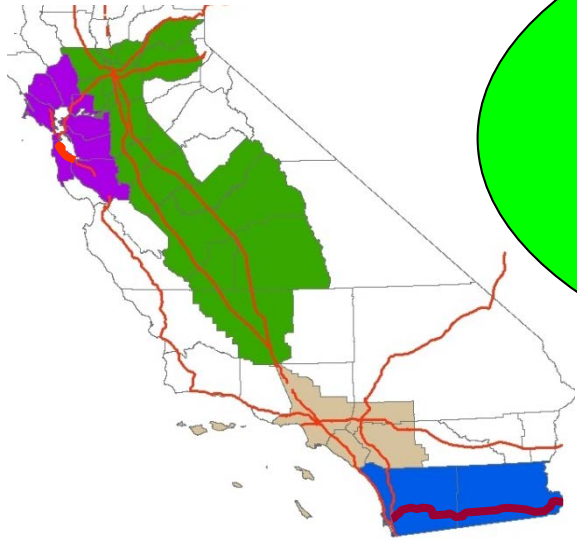
This document has been prepared by the staff of the California Air Resources Board. Publication does not signify that the contents reflect the views and policies of the Air Resources Board. The Air Resources Board will consider this document as a revision to the California State Implementation Plan at a noticed public meeting tentatively scheduled for June 21-22, 2007.

1. By 2010, "no net increase" in emissions relative to 2001
2. By 2020, reduce State diesel PM risk by 85%

...and use \$1B for cleaner equipment



State policy response



Goods Movement
Action Plan key principle:
“Simultaneous and continuous
improvement” of infrastructure
and environment

Voters approve ballot initiative
for trade corridors (Nov 2006)

- \$2 billion for infrastructure
- \$1 billion for air quality



Key measures in place

| Trucks | Ships | Locomotives | Equipment & harbor craft |
|---|---|---|---|
| <ul style="list-style-type: none"> • Drayage trucks • All truck fleets • Optional low-NOx standards • Tractor-trailer GHG • Idling limits • Smoke limits • International trucks • Transport refrigeration | <ul style="list-style-type: none"> • Lower sulfur fuel (auxiliary engines, then main engines & boilers) • At berth/ shore power • Ban on incineration • Ports: vessel speed reduction | <ul style="list-style-type: none"> • Low sulfur fuel • Fleet average NOx limits for South Coast • Diesel PM risk reduction at rail yards | <ul style="list-style-type: none"> • Low sulfur fuel • In-use diesel equipment at ports, railyards • In-use gas forklifts • Ground service equipment • In-use harbor craft |



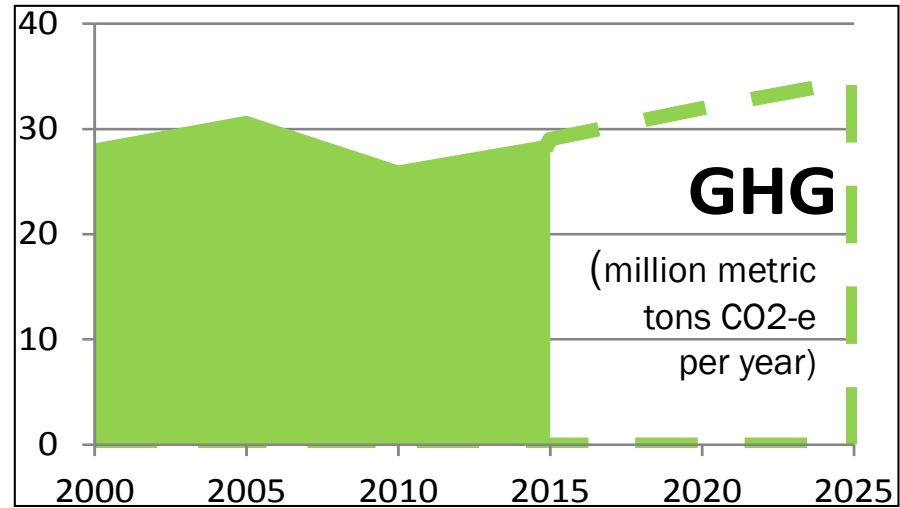
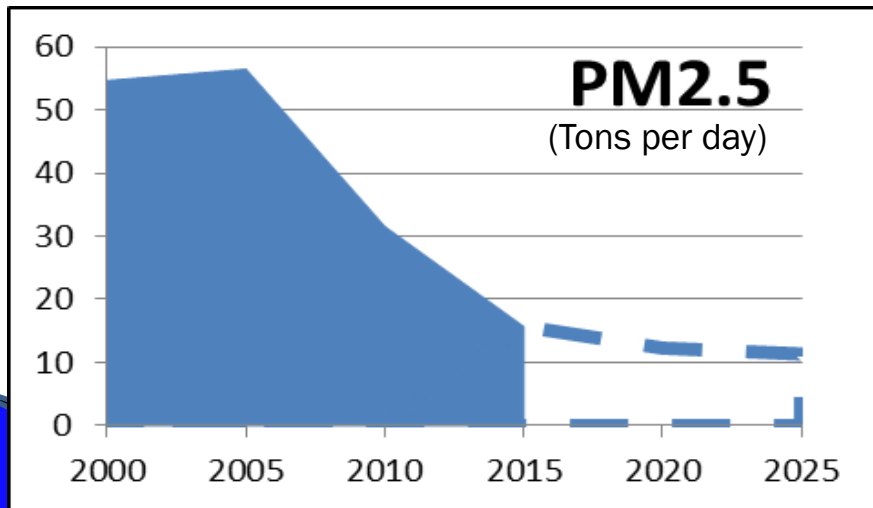
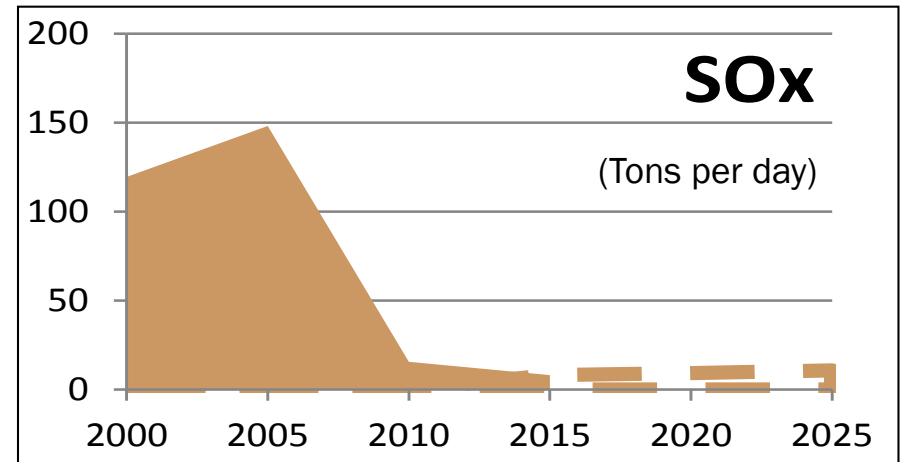
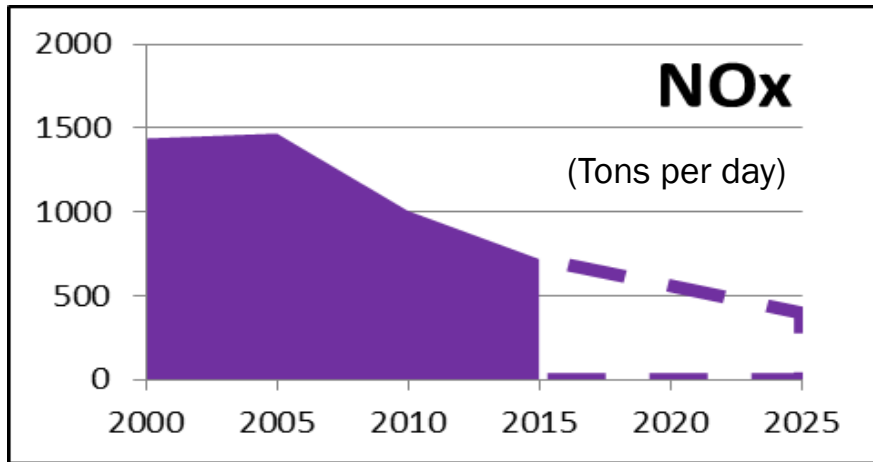
Change in cancer risk since 2005

85% reduction at
largest California ports

40-70% reduction at
California's highest risk rail yards



Progress in reducing freight emissions in California (2000-2025)



In California by 2023...

- Virtually all on-road and off-road freight equipment will be Tier 4 diesel or better
- Introduction of cleaner locomotives, ships, and aircraft depends on natural turnover
- On-road fuels – carbon intensity down 10%





Start Small
THINK BIG

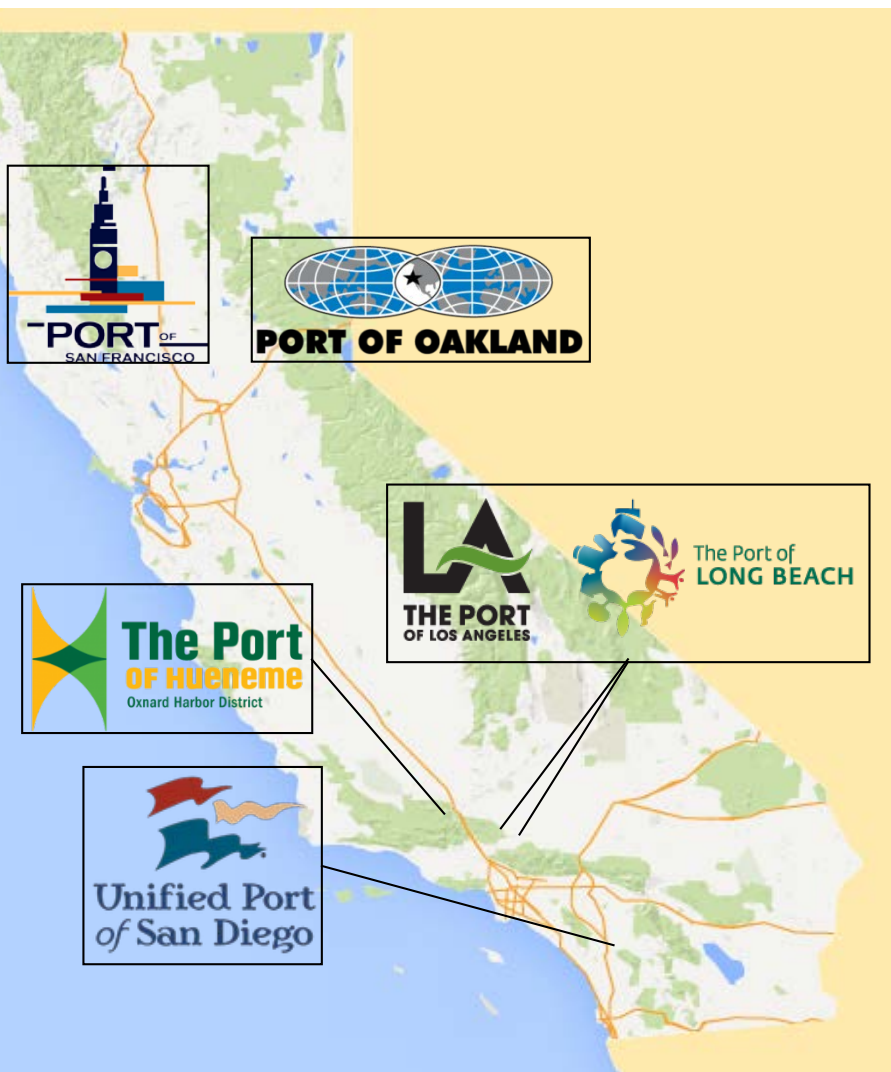


LESSONS LEARNED





Statewide requirements (Ships at-berth rule)



California under the
At Berth Rule:

- 23 terminals and 63 berths equipped for shore power
- 200 shore power ready vessels (2014)
- 2 alternative systems approved





Technology phase-in (At-berth rule)

Container



Refrigerated cargo



Passenger



| Year | % of visits with shore power |
|------|------------------------------|
| 2014 | 50% |
| 2017 | 70%+ |
| 2020 | 80%+ |





Room for innovation (At-berth rule)



Vaults

AMP mobile



Capture & control



Mobile reel

Tower





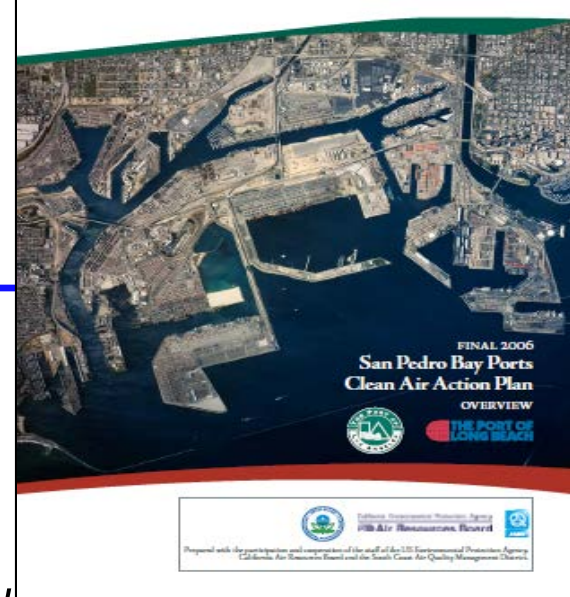
Inspections and enforcement





Partners

- Local air agencies can offer expertise, on-ground presence, technology research & funding
- Communities can raise political will
- Ports can offer complementary programs
- Industry can partner on agreements
- EPA can expand requirements to US



2006 CAAP





The next leap forward



Attainment,
toxics, and
climate goals
demand
more



How to meet air quality needs for freight system

- Increased efficiency at equipment, company, sector, and system levels
- Zero tailpipe emissions everywhere possible
- Near-zero emissions with renewable fuels everywhere else





May 2013

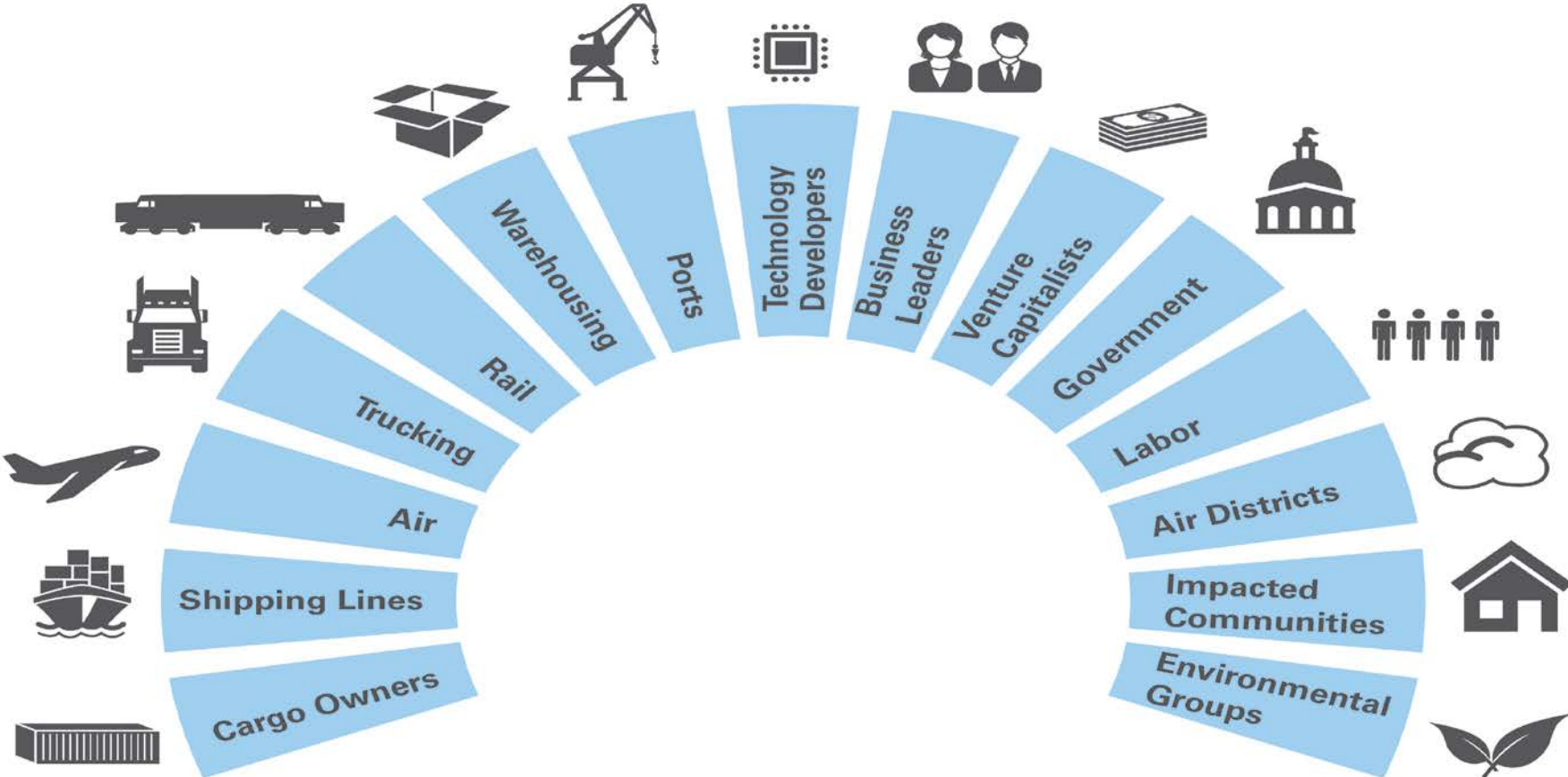
80+ leaders from government (federal, state & local), utilities, air districts, business, logistics, agriculture, community and academia

“Sustainable Freight Transport System”

Participant recommendation: seek the triple bottom line – economic, environmental, and community benefits

Stakeholder participation

Hundreds of meetings w/thousands of stakeholders



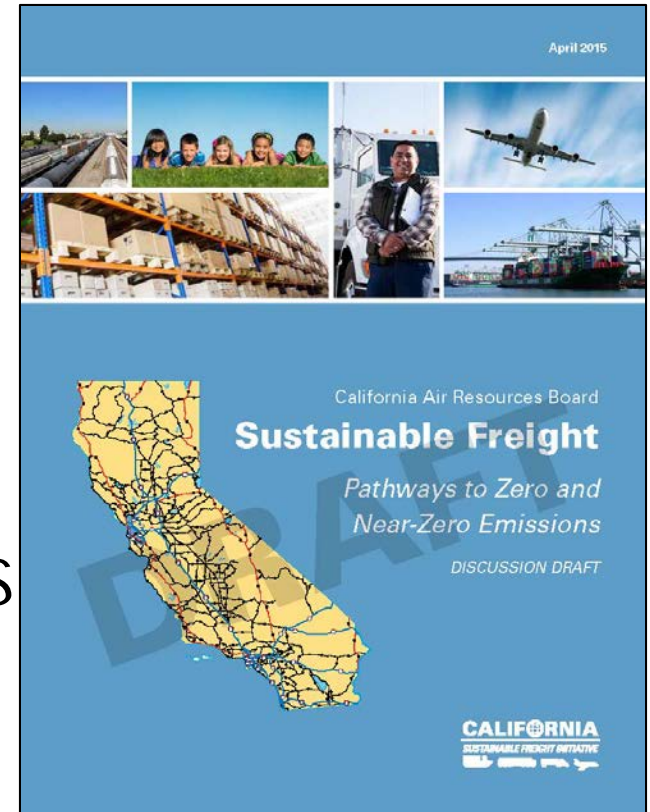
Where to focus next ?

- Go well beyond 2010 truck standards for attainment and climate
- For air toxics, children are more vulnerable (3x increase in exposure w/new method)
- So, need deeper reductions at hubs
 - Locomotives now 1° source of railyard risk
 - Ships now 1° risk/NOx source at ports
- Plus, efficiencies for climate & attainment

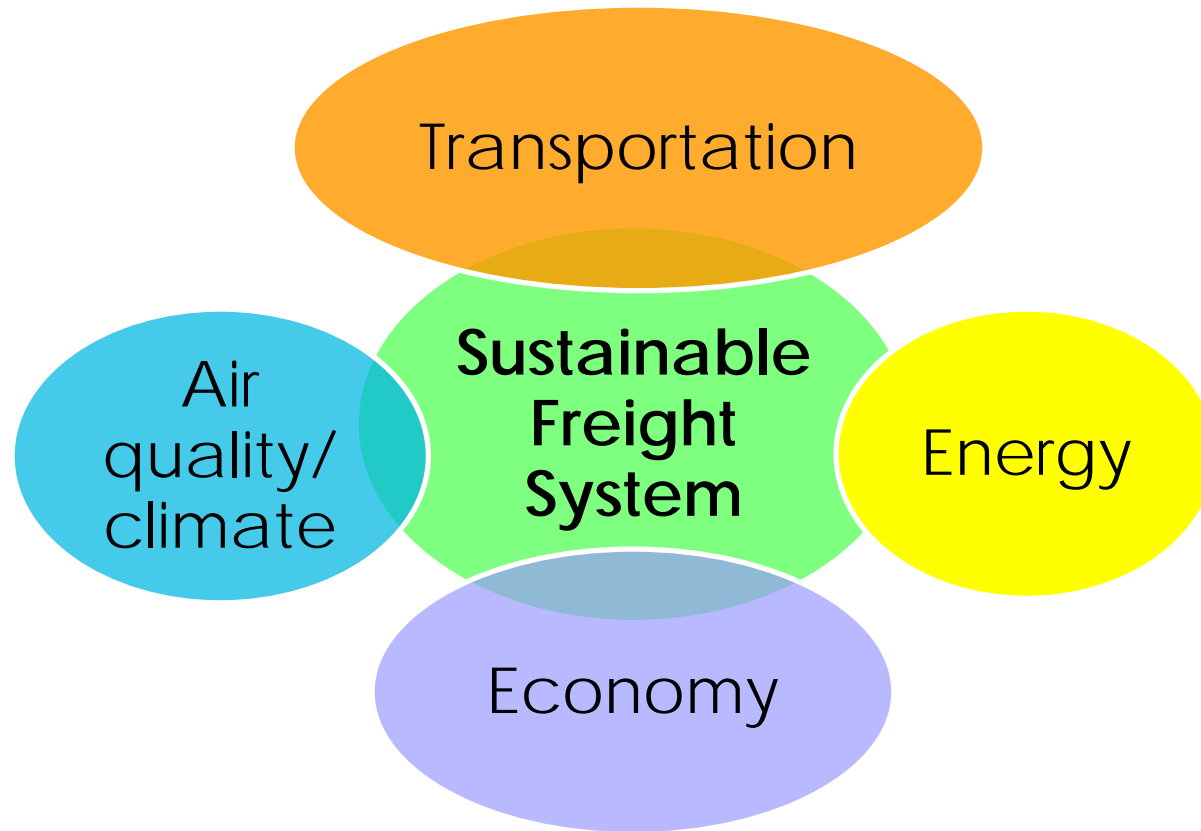


ARB Pathways to Zero and Near-Zero Emissions document

- Immediate actions
 - trucks/\$\$
- Near-term measures
 - trucks, ships, locomotives, all equipment types
- Longer-term approaches
 - facility emission cap
 - land use/infrastructure
 - system efficiency



Success requires an integrated effort



Governor's Executive Order B-32-15: California Sustainable Freight Action Plan

State agencies, in consultation with stakeholders, to develop plan by July 2016:

- Metrics for efficiency, zero-emission technology, economics
- Actions to advance State objectives
- Corridor-level freight pilot projects



Envisioning the system in 2030 & 2050



- Future freight system
 - Hub locations and modes
 - Equipment & information technology
 - Freight and fuel/energy infrastructure
- Resilient and responsive to change
 - Economic demands and opportunities
 - Manufacturing and logistics innovation
 - Government expectations



Opportunities for collaboration

- National freight policy and funding
- Tighter national truck NOx standards
- National/regional locomotive measures
- International ship/aircraft standards
- Low carbon fuel standards



CALIF^{OR}NIA

SUSTAINABLE FREIGHT INITIATIVE



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