

Moving Rail to Tier 3 and Beyond



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South Coast Air Quality Management District

Breakout Session 3 – Rail Track: Discussions Regarding Next Steps
Faster Freight Cleaner Air Conference
Long Beach, CA
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Why Are We Concerned?

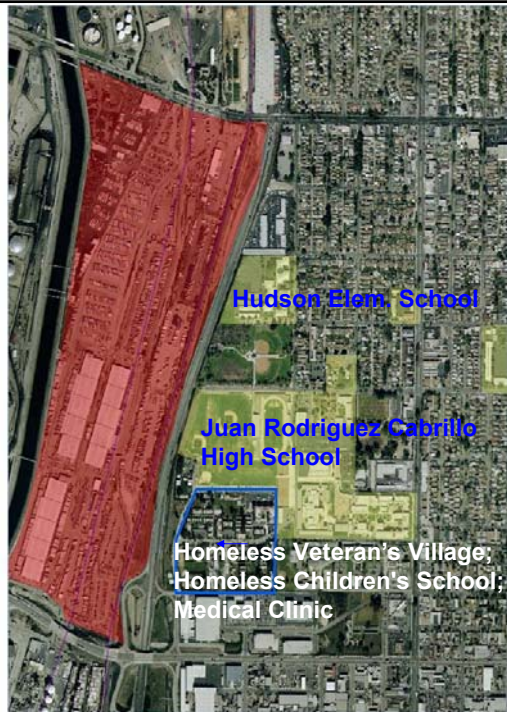
- Findings of Premature Deaths
- Railyards Situated Adjacent to Communities and Schools
- Limited Control of Locomotive Emissions and Long Useful Life

Recent Health Impact Estimates

- 6,500 premature deaths/yr
 - 2,400 from goods movement
- 9,000 hospitalizations/yr
- 1.7 million cases respiratory illness/yr
- 1.3 million school absences
- 2.8 million lost workdays/yr

Source: CARB 2004, California Estimates

**Proposed Site,
Southern
California
International
Gateway
(SCIG)
BNSF Railyard**



USC Children's Health Study

New England Journal of Medicine, Sept 2004

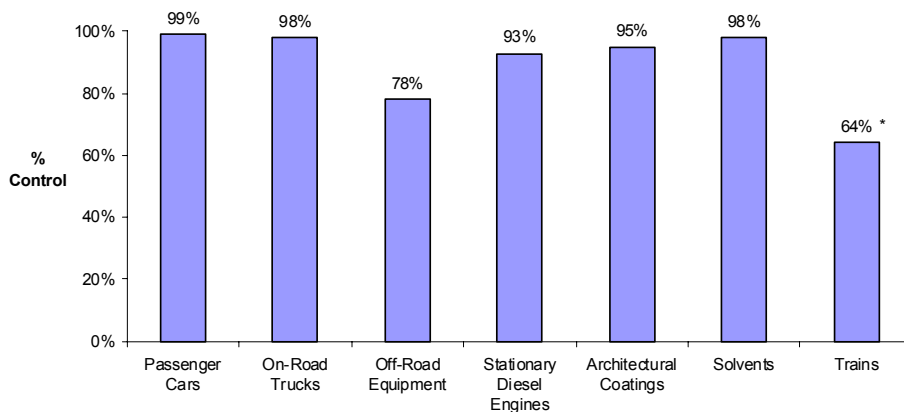
- Lower lung-function growth rate associated with PM₁₀, PM_{2.5}, NO₂ and acid vapor
- “By age 18, lungs of many children growing up in smoggy areas are underdeveloped and will likely never recover”
- Pollutants of harm “derive from vehicle-related emissions and combustion of fossil fuels”



“When we began the study 10 years ago, we had no idea we would find effects on the lung this serious.”

— John Peters, M.D., study's senior author

Level of Control for Several Categories vs. Trains (Uncontrolled vs. Existing Regulations)



* Assuming full implementation of the locomotives MOU

Needed Pollution Reduction (percent from baseline)

	2014	2023
NOx	34%	75%
VOC	15%	22%
SOx	47%	---
PM2.5	17%	---

Source: Draft 2007 Air Quality Management Plan

What's Being Done About Locomotive Emissions?

Aftertreatment Technologies

- Particulate Matter
 - Diesel Oxidation Catalysts (20-30% Red.)
 - Diesel Particulate Filters (>85% Red.)
- NO_x
 - In-Cylinder Technologies
 - Selective Catalytic Reduction (90% Red.)
 - Other (NO_x Absorber)

SCAQMD Locomotive Projects

Three Locomotive Retrofit Projects:

- Demo Particulate Filter (DPF) + SCR with Metrolink
- Demo DPF on Switch Locomotive with Pacific Harbor Lines
- Demo SCR on EMD Passenger Locomotive



What More Can Be Done About Locomotive Emissions?

Operational

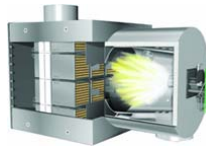
- Siting On-Dock Facilities Rather Than Near-Dock
- Create Intermodal Facilities In Remote Areas
- More Efficient Management/Movement of Containers

Technology

- Greater Use of Cleaner Fuels, Alternative Fuels
- Retrofitting Existing Locomotives with NOx and PM Aftertreatment Devices
- Developing Near-Zero and Zero Transportation Systems



NG Switcher



Particulate Filter



MagLev



Electric Tow Tractor

Regulatory

- U.S. EPA –Authority to Adopt New, Tighter Emission Standards
- Strengthen Idling Limits and Restrictions

How Do We Move Locomotives to Tier 3 and Beyond?

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- Support U.S. EPA Adoption of Tighter Tier 3 Emission Standards to be Implemented as Soon as Possible
- Advance Control Technologies for Locomotives Through Demonstrations
- Urge of the Use of the Cleanest Technologies And Fuels Possible
- Begin the Development of Advanced Transportation Systems

**We Can Be Partners
With the Railroads, But
We First Must Realize the
Promise of Truly Clean Rail**



The future is what we make of it.