

How Technology is Proven Suitable and Durable



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South Coast Air Quality Management District

*Statewide Rail Yard Agreement
Technology Symposium*

Public Meeting to Discuss

Status of Locomotive Aftertreatment Design, Research, and Demonstrations

Sacramento, CA

June 10, 2009

Technology Evaluation/Demonstration

- After-treatment Control Devices – Retrofit vs. Integration
- Technology Transference
- Research, Development, & Demonstration
- Meeting Certification Levels
- Meeting Verification Levels
- Warranty Requirements

Technology Transference

- European Rail Experience
 - Particulate Filter Retrofits
 - Particulate Filter Intergration
- On-Road Technologies in Off-Road Use
 - Off-Road Retrofit Showcase Program
 - SCAQMD Rail Demonstrations
- Applicability of Existing Technologies

Rail Electrification Feasibility

Some Examples of Electric Freight Locomotives in Use Today

Clockwise:

- Italy
- Slovakia
- Russia
- Switzerland (built 1922)
- Australia
- Japan



Potential for U.S. Application

- All Electric and Dual-Mode Electric/Diesel Freight Locomotive
- Matt Rose, BNSF – *“First, is the technology out there? Absolutely.”*
- Joseph Doherty, GE - *“It's not a technology leap. It's an incremental move.”*



Existing Dual Model Passenger Locomotive – New York City:
To Prevent Diesel Emissions in Tunnels and at Terminals



Alameda Corridor: Potential Initial Segment?

Advanced Technologies

Example: General Atomics Concept for Linear Synchronous Motors

- Potential benefits:
 - Move existing diesel-powered locomotives with no emissions
 - No need to switch locomotives

