

Statewide Regulatory Drivers

For On-Road and Off-Road Diesel Vehicle Fleets

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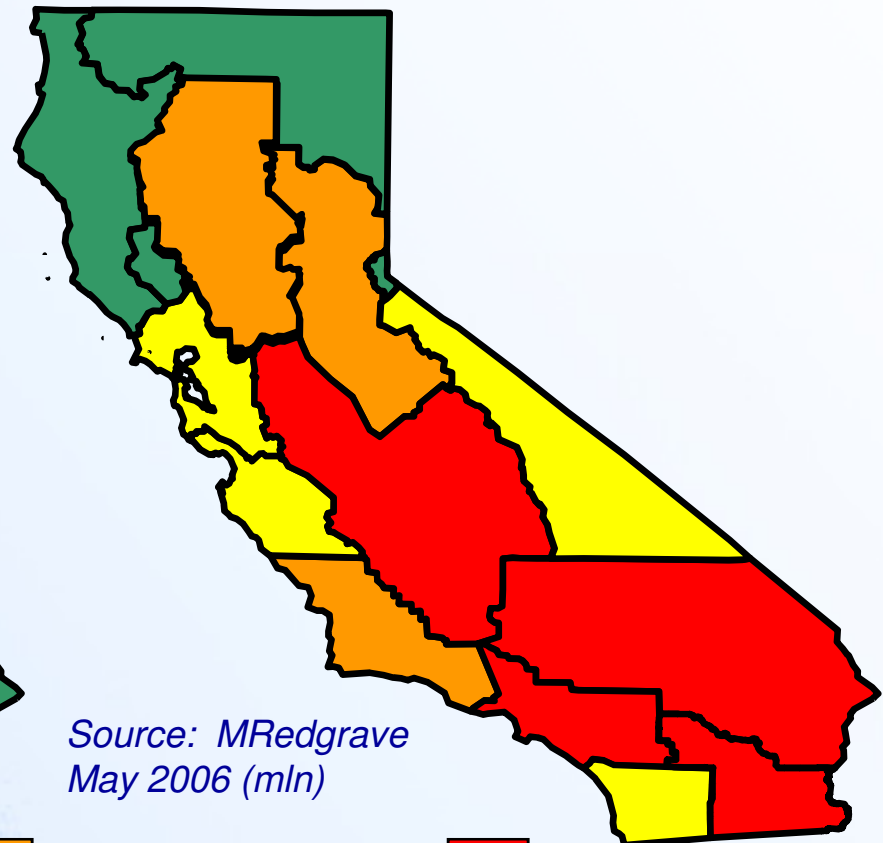
Number of State PM10 and Ozone Exceedance Days Based on 2005 Monitoring Data

Days Over State 24-Hour PM10 Standard



Source: ADAM
September 2006 (tfn)

Days Over State 8-Hour Ozone Standard



Source: MRedgrave
May 2006 (mln)



Significant Health Impacts Attributed to Diesel PM

- 2,900 premature deaths compared to 3,700 car accident deaths and 2,000 homicides in 2001



- 2,500 chronic bronchitis cases
- 240,000 asthma attacks and respiratory symptoms
- 3,600 hospital admissions
- 600,000 lost work days
- 3.2 million minor restricted activity days

Diesel Risk Reduction Plan

- Adopted 2000
 - 75 percent risk reduction by 2010
 - 85 percent risk reduction by 2020
- Multiple Strategies:
 - Stringent new engine standards
 - Cleaner diesel fuel (<15 ppm sulfur)
 - Ensure in-use emissions performance
 - Aggressive reductions from in-use engines

Why Reduce In-use Diesel Emissions?

- Diesel engines are long lived
- New engine standards offer long-term reductions
- In-use emission rules provide near-term reductions
- Control technology is available

Regulations Approved to Date: In-use Diesel Engines & Vehicles

- Urban buses 2000
- Solid Waste Collection Vehicles 2003
- Stationary Engines 2003
- TRUs 2004
- Portable engines 2004
- Bus/truck idling (3) 2002/04/05
- Loco/harbor craft fuel 2004
- Transit Fleet Vehicles 2005
- Public On-Road Fleets
and Private Utilities 2005
- Cargo Handling Equipment
(Port /Rail) 2005

Anatomy of ARB's In-Use Regulations

- Best Available Control Technology (BACT)
- Phase-in based on several factors
 - Retrofit Availability (filters, catalysts)
 - New Engine Availability
 - Fuel Availability
- Compliance Flexibility
- Verification an important element

BACT Approach

- Retrofit
 - Highest level verified device
- Repower
 - Newer engine
- Replacement
 - New diesel or alternative fuel vehicle
- Retire old vehicles
 - Reduce diesel fleet size

Compliance Flexibility

- Allow additional time to repower engine if verified retrofit controls are not available
- Special provisions for smaller fleets
- Special provisions for very low usage fleets
- Early compliance credit

Some Approved Regulations

- Urban Bus
- Transit Fleet Vehicles
- Solid Waste Collection Vehicles
- Public Agency and Utility Fleets

Urban Bus Rule

- More stringent new “urban bus” engine emission standard
- Fleet requirements
 - Fuel path choice
 - Alt fuel
 - Diesel
 - PM emissions reductions
 - 85 percent of 2002 baseline
 - By 2007 (diesel) or 2009 (alt fuel)
- Zero emission bus purchasing requirement

Fleet Rule for Transit Agencies

- Transit fleet vehicle requirements
- Fleet NOx average
 - 3.2 grams by December 31, 2007
 - 2.5 grams by December 31, 2010
- Fleet PM emissions reductions
 - PM total reduced from 2005 baseline
 - 40% by December 31, 2007
 - 80% by December 31, 2010

Solid Waste Collection Vehicle Rule

- Applies to model years 1960 to 2006
- Residential and commercial vehicles over 14,000 GVWR
- Emission reductions
 - 1,130 tons of PM
 - 30,600 tons NO_x + HC
- Phase-in: 2004 - 2010
- Requires BACT



Public Agency and Utility Fleets Rule

- Applies to model years 1960 to 2006
 - On-road vehicles only
- Diesel vehicles over 14,000 GVWR
- Vehicles owned and operated (includes leased vehicles) by municipality or utility
- Requires BACT
- Phased compliance through 2013
- Special provisions for low population counties

Regulations In Development

- Public and Private Off-Road Equipment
- Private On-Road Fleets

Regulatory Concept: Off-Road Equipment

- Fleet average approach
 - Will address diesel PM and NOx
- Meet fleet average or apply BACT
 - Retrofit with verified device
 - Repower with newer, cleaner engine
 - Replace with equipment having newer engine
- Eliminate unnecessary idling

Proposed Phase In Schedule: Off-Road Equipment

- Begin in 2009
- Targets SIP and DRRP commitments
 - 85% reduction in Diesel PM by 2020
 - NOx emission reduction targets
- Full implementation by 2020
 - Later for smaller fleets

Preliminary Regulatory Concept: On-Road Vehicles

- Reduce diesel PM and NOx
- Based on BACT
- Will apply equally to ALL heavy-duty diesel vehicles traveling in California
- Phase-in schedule based on consideration of supply of control technology and retrofit market expansion
- Potential phase out of pre-1994 vehicles

Proposed BACT Phase In Schedule: On-Road Vehicles

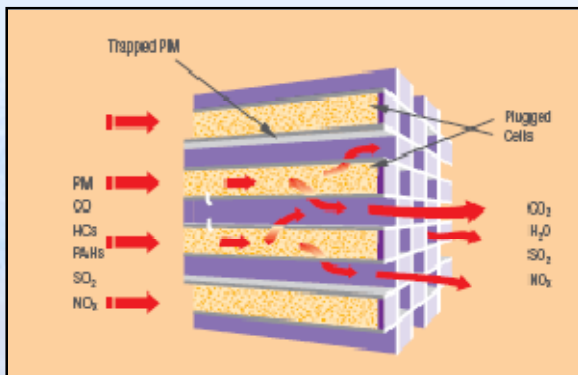
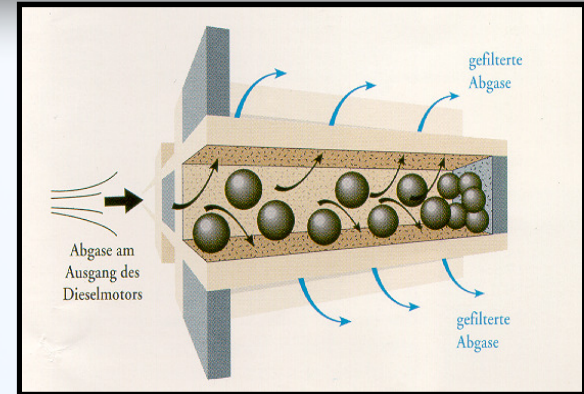
- Begin in 2008
- Target older vehicles first
- Evaluating potential implementation periods
- Must achieve SIP and DRRP commitments

Diesel Emission Control Strategy Verification Process

- Description of the strategy or device
- Test plan, test data, and field experience
- Durability requirements
- Field demonstration
- Performance under real-world conditions
- Warranty requirements

Verified Technology

Level 1 (25 - 50% Reduction) Diesel Oxidation Catalyst



Level 2 (50 - 85 % Reduction) Flow-Through-Filter, DOC & Emulsified Diesel Fuels

Level 3 (> 85 % Reduction or < 0.01 g/bhp-hr) Active and Passive Diesel Particulate Filters



Incentives

- Carl Moyer Program
- Lower Emissions School Bus Program
- U.S. EPA
 - Transportation Funding Program
 - West Coast Collaborative

Summary

- Further emission reductions from diesel engines critical
 - Localized risk
 - Ambient Air Quality Standards
- Clean engine standards important component
 - Turnover is slow
- In-use strategies key
- Need additional device verifications
- Incentive funding plays important role

For More Information

- General Information:

<http://www.arb.ca.gov/diesel/dieselrrp.htm>

- Verifications:

<http://www.arb.ca.gov/diesel/verdev/verdev.htm>

- Diesel Mobile Program

<http://www.arb.ca.gov/diesel/mobile.htm>

- Carl Moyer Program

<http://www.arb.ca.gov/msprog/moyer/moyer.htm>

- Low Emission School Bus Program:

<http://www.arb.ca.gov/msprog/schoolbus/schoolbus.htm>

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