

Changes to the In-Use Off-Road Diesel Vehicle Regulation



**April 7, 2009 and April 29, 2009
Sacramento and Diamond Bar**

Off-Road Implementation Section

California Environmental Protection Agency

Air Resources Board



Outline

- Changes Required in AB 8 2X
 - Goals for Interpreting Language
 - Three Amendments Driven by AB 8 2X
 - Interpretation
- Fleet Examples
- Economic and Emission Impact of Changes
 - State Implementation Plan context
- Minimizing Emission and Economic Disbenefits
- Other Potential Amendments
- Next Steps

Assembly Bill AB 8 2X

- Approved by Governor on February 20, 2009
- Part of budget agreement
- Directs ARB to make amendments to off-road regulation
- Not self-implementing
- Regulation not delayed
- Will help some fleets meet 2010 requirements

Goals for Interpreting Language

- Implement Legislature's direction
- Simplicity
 - Align with existing structure where possible
- Maintain existing flexibility in regulation

Amendments Directed by AB 8 2X

- 20/20/60 BACT Changes for 2011 to 2013
- Credit for Reducing Total Fleet Horsepower
- Credit for Reduced Activity

20-20-60 BACT

- Staff's proposed change: Apply the number directly to the total BACT percents (NOx/PM) for three years

Revised BACT Schedule

(% turnover required/ % retrofit required)

	2010	2011	2012	2013	2014
Existing	8 / 20	8 / 20	8 / 20	8 / 20	8 / 20
Proposed	8 / 20	4.8 / 12	4.8 / 12	14.4 / 36	8 / 20

Calculation of Proposed Percents

- Turnover

- Covers years 2011-2013

- Total percent turnover required = $3 * 8\% = 24\%$

- 20/20/60 percentages of 24% = 4.8/4.8/14.4

- Retrofits

- Covers years 2011-2013

- Total percent turnover required = $3 * 20\% = 60\%$

- 20/20/60 percentages of 60% = 12/12/36

Medium Fleets and Large Fleets Meeting the Targets in 2012

- Avoid penalizing fleets that meet the fleet averages in 2012
- For all medium fleets and for large fleets that met the fleet average targets in 2012
 - Maximum turnover required for the 2013 compliance date is 8%
 - Maximum retrofit required for the 2013 compliance date is 20%

Credit for Retirement that Reduces Total Fleet Horsepower

- Staff's Proposed changes
 - Total fleet horsepower be reduced from March 1, 2006 to March 1, 2010
 - Retirement of Tier 0s only
 - Fleets can choose between previous (non-shrinking) early retirement credit and the new credit
 - Credit does not expire

Staff Rationale

- Differentiates fleets that fluctuate hp from a fleet that has permanently reduced its total fleet hp
 - Provides more equity between fleets
- Keeps amendments aligned with existing structure such that fleets continue to turn over the dirtier engines first

New Records Required

- Same as currently required for early turnover
 - Vehicle and engine data
 - Vehicle retirements
 - For each and every vehicle within the fleet between March 1, 2006 and March 1, 2010
 - Date of any purchase and/or retirement between those dates
- Suggestions?

Credit for Reduced Activity

- Staff's proposed changes
 - Total fleet activity must be down – not just per vehicle activity
 - Credits apply to 2010 and 2011 only
 - Reduction of total fleet activity – from July 1, 2007 to March 1, 2010
 - Compare July 1, 2007 - June 30, 2008 annual activity to March 1, 2009 - February 28, 2010
 - Count reduced activity 1 to 1: % activity reduced = % horsepower as credit

Reduced Activity Definitions

- Hours multiplied by Horsepower
 - Provides a fleet which stops using a 2000 hp off-road truck, but uses a 35 hp lawnmower much more, from losing credit they should receive
 - Requires hour meters on every vehicle, and logs extending back to July 2007
 - Frequency of hour meter readings?
 - Staff are considering what records to require, and what method of submittal would be required

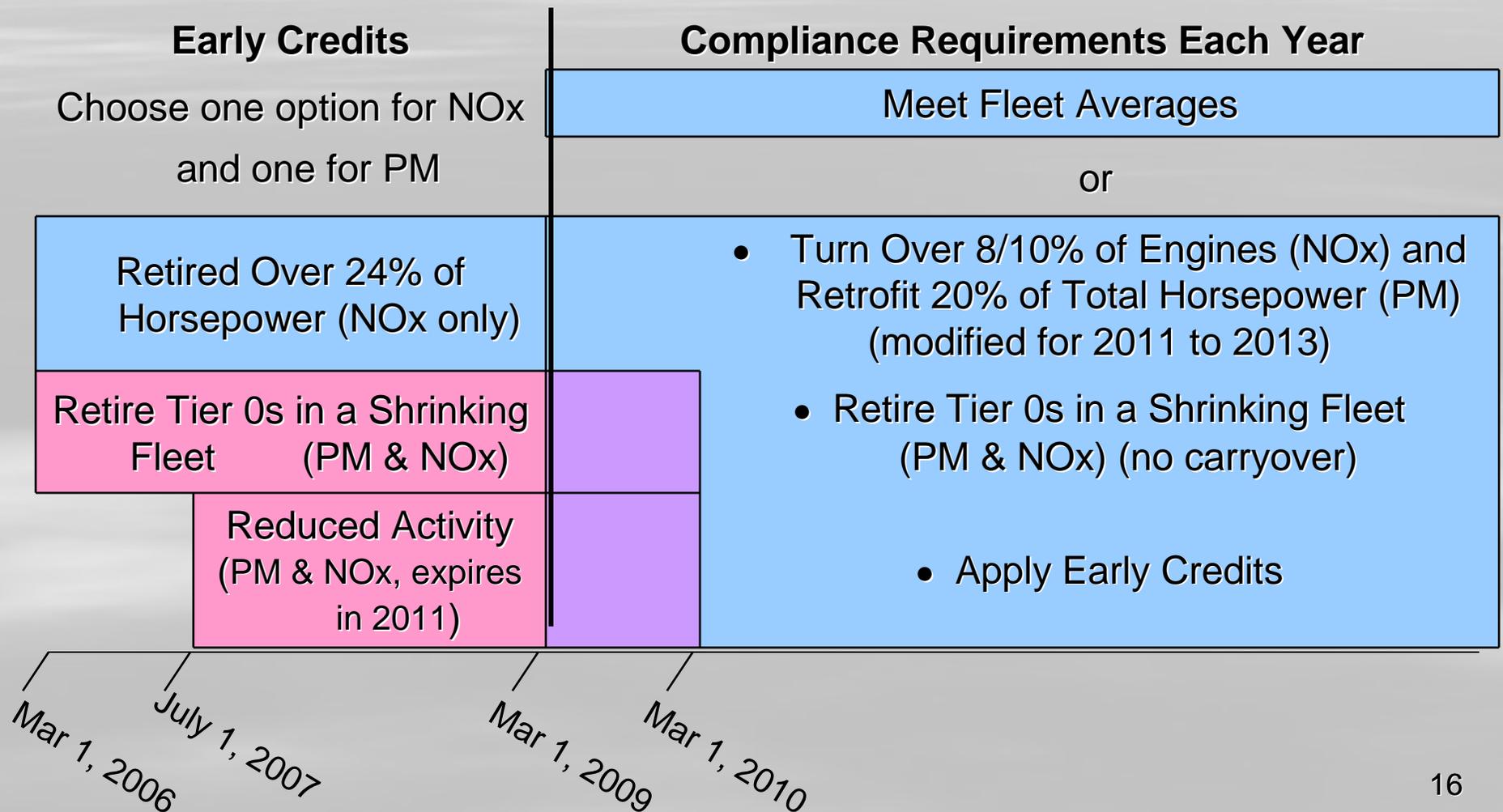
Other Reduced Activity Options

- Staff may investigate other options for fleets which do not have hour meters or logs
 - Red dye diesel or non-red dye claimed for tax purposes
 - Fleets would be required to submit fuel use receipts
 - Other options?

No Doublecounting the Same Reductions

- For PM and NO_x, fleets must choose one of:
 - Previous (non-shrinking) early retirement credit
 - New shrinking fleet credit
 - Reduced activity credit
- Option can be different for PM and NO_x
- Allows fleets to obtain the most credit for each pollutant

Timeline and Options

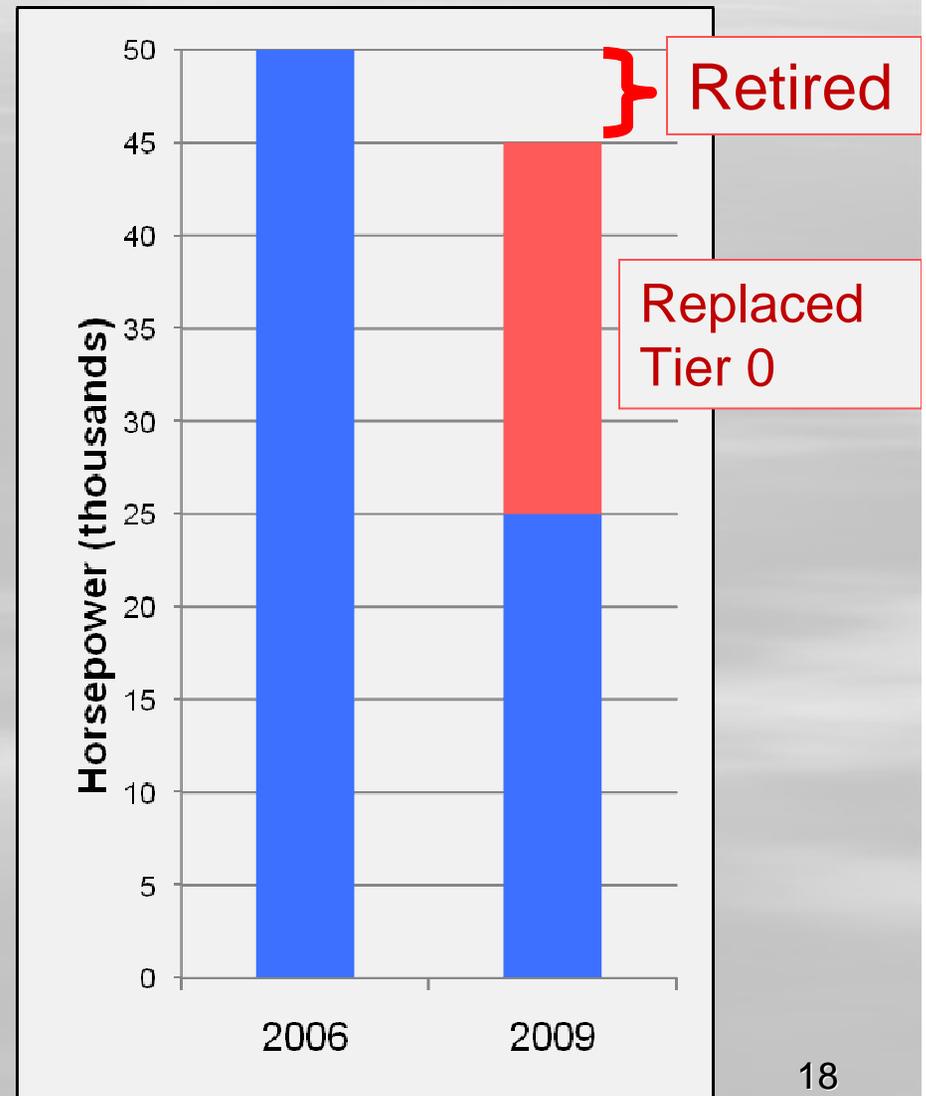


Fleet Examples



Fleet Example 1

- Total fleet horsepower 50,000 hp on March 1, 2006
 - No reduced activity
 - Has retired/sold 5,000 horsepower of Tier 0 vehicles
 - Has replaced or repowered 20,000 hp with upgrades from Tier 0



Example 1 Continued

	NOx	PM
Previous Credits	13,000 HP	0
New: Retirement Credit	5,000 HP	5,000 HP
<u>Choosing an option</u>	13,000 HP	5,000 HP

5000 HP Retired

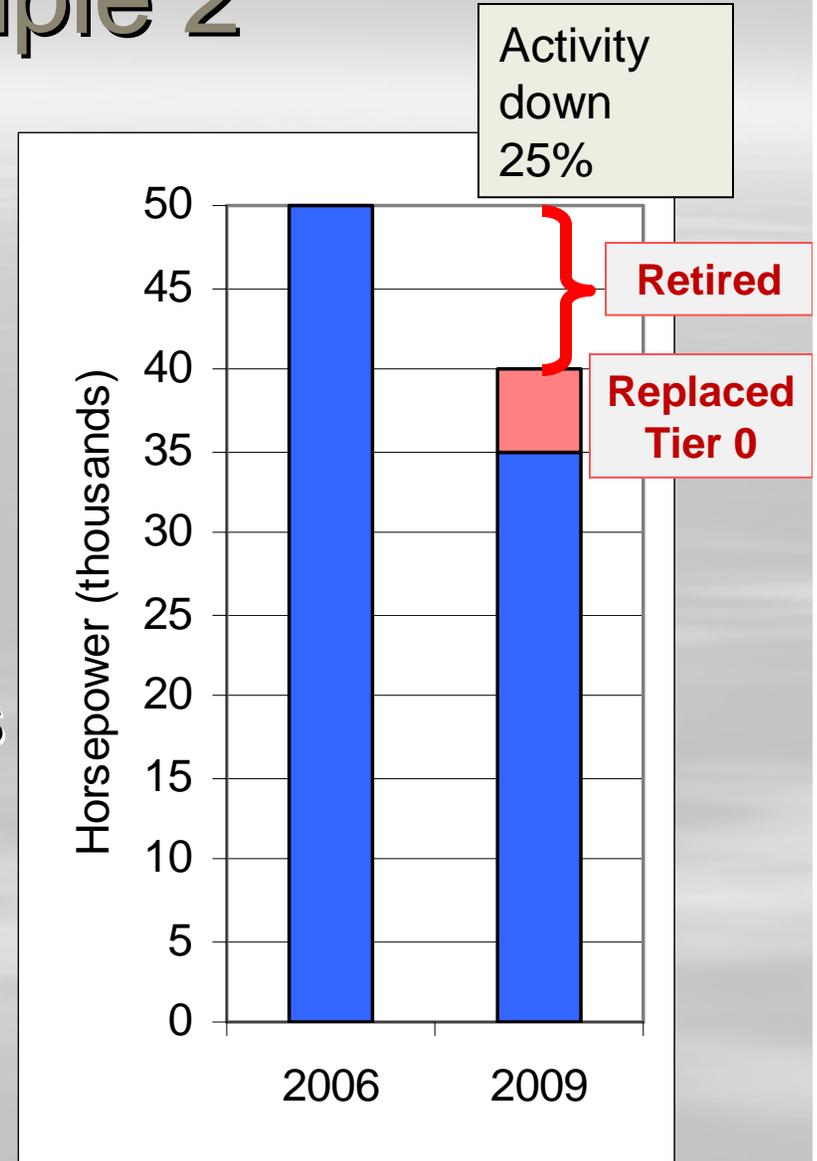
Replaced T0: Gives 13,000 HP Credit NOx

2009

Fleet Example 2

Total fleet horsepower 50,000 hp on March 1, 2006

- Reduced activity by 25%
 $25\% \times 50,000 \text{ HP} = 12,500 \text{ HP}$
- Retired/sold 10,000 hp
20% of overall hp
- Replaced 5,000 hp of Tier 0s
10% of overall hp



Example 2 Continued

	NOx	PM
Previous Credits	3,000 HP	0
New: Retirement Credit	10,000 HP	10,000 HP
New: Reduced Activity	12,500 HP Expiring in 2011	12,500 HP Expiring in 2011
<u>Choosing an option</u>	10,000 HP (Retirement Credit)	12,500 HP Expiring in 2011 (Reduced Activity)

Economic and Emissions Impact of Legislatively Driven Changes

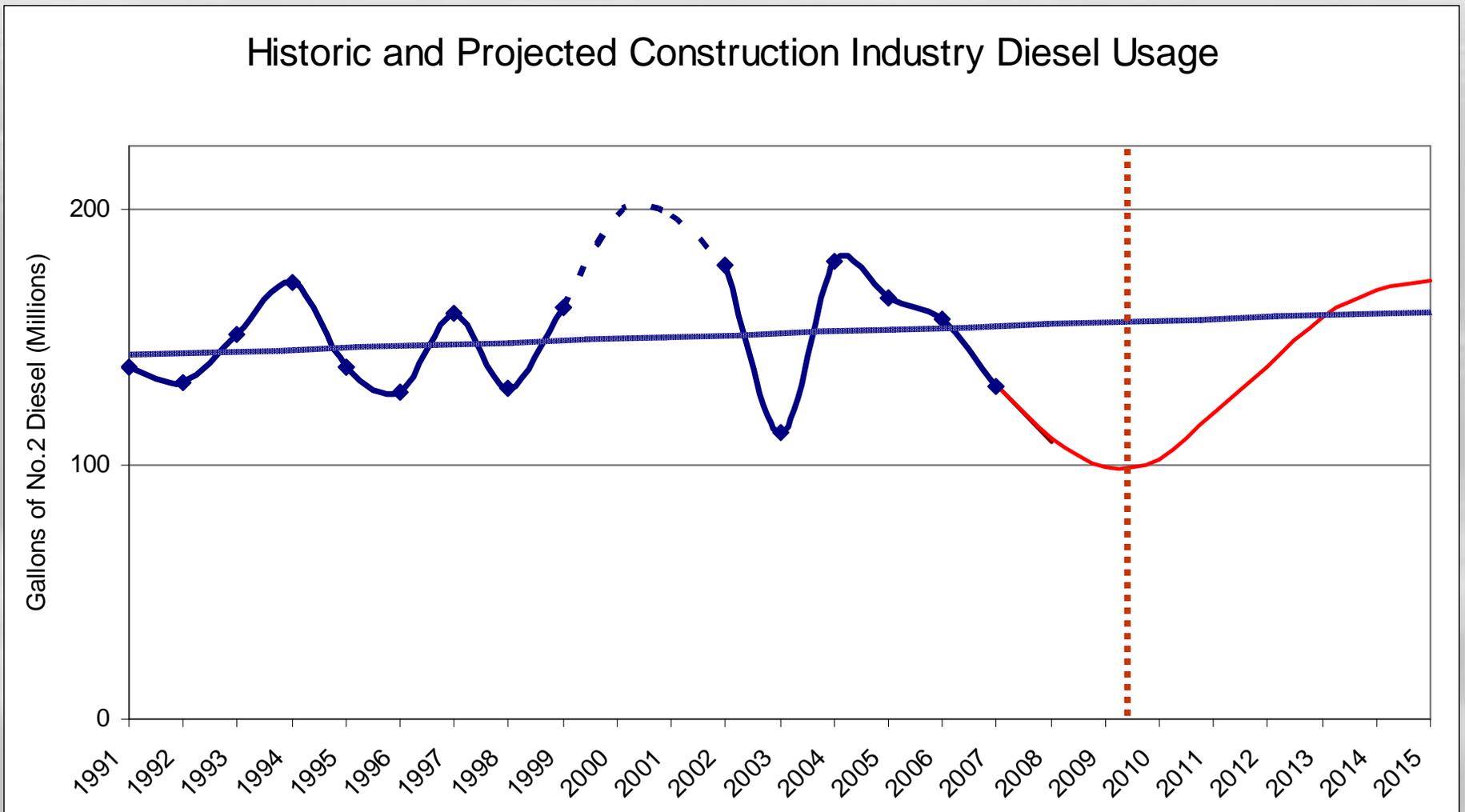


Economic Impact of Legislatively Directed Changes

- Provides relief to fleets affected by current recession
- Could negatively impact retrofit manufacturers/installers
 - Had geared up to meet off-road regulation requirements
 - If some go out of business, this could make future compliance for fleets more difficult

Historic Industry Activity

Historic and Projected Construction Industry Diesel Usage



Estimating Emissions Impact

- Allowing fleets to take fewer actions now leaves California with an older, dirtier fleet
 - If activity rebounds, loss in emission benefits
- Assumed average activity reduced by 34%:
 - Taken from Operating Engineer hours, Energy Information Administration Fuel Use trends
 - Assumed normal distribution across fleets

Emissions Impact Estimate

If activity is consistent with the baseline:
(discounting short-term decreases and increases)

Loss of Life due to Amendments	260 Fewer Early Deaths Prevented
NOx Reductions in 2014 (SIP Attainment Year)	17% of Benefits Lost 4.6 Tons of NOx / day

Need for Emission Reductions

- Attain ozone and PM standards
 - Particularly in South Coast and San Joaquin Valley
 - Could lose federal highway funds
- Must reduce Diesel Particulate Matter (PM)
 - 70% of known cancer risk from all air toxics
 - Thousands of deaths per year in California (heart disease and cancer)
- Must reduce oxides of nitrogen (NO_x)
 - Ozone and secondary PM formation
 - Ozone is a serious lung irritant, associated with premature deaths and asthma

Minimizing Emission & Economic Disbenefits Potential Options



More Credit for Retrofits Done Earlier

- For example:
 - 3x credit for retrofits before 12/31/09
 - 2x credit for retrofits before 12/31/10
 - 1.5 credit for retrofits before 12/31/11
- Pros
 - Could spur fleets to act now
- Cons
 - Could lead to fewer retrofits in total by 2011 and 2012 compliance dates

Exempt Retrofit Vehicles from Turnover

- Lifetime turnover exemption for the vehicle
 - Exemption transfers with machine if sold
- Limit amount each fleet can accrue
 - Max hp or number of vehicles

Exempt Retrofit Vehicles from Turnover Cont'd

- Pros

- Allows vehicle owners to keep their equipment longer
 - Could enhance resale value of equipment
- Motivates early installation of retrofits
 - Short-term emission benefits
 - Continued development and verification of retrofit technology
- Minimal long-term emission disbenefits

- Cons

- Fleets would still need to pay for retrofits today

Provide Additional Incentive Funding

- ARB is in the process of applying for federal stimulus money
 - Diesel Emission Reduction Act (DERA)

National Clean Diesel Campaign US EPA DERA Funding

\$300M allocated to National & State Programs

- State Program - \$88M
 - ARB allocated ~ \$1.7M for diesel programs

- National Program - \$206M
 - Three competitive components
 - National Clean Diesel (\$156M)
 - Smartway Financing (\$30M)
 - Emerging Technology (\$20M)

Restrictions on Uses of New Credits?

- Suggestions?
- Other ideas?



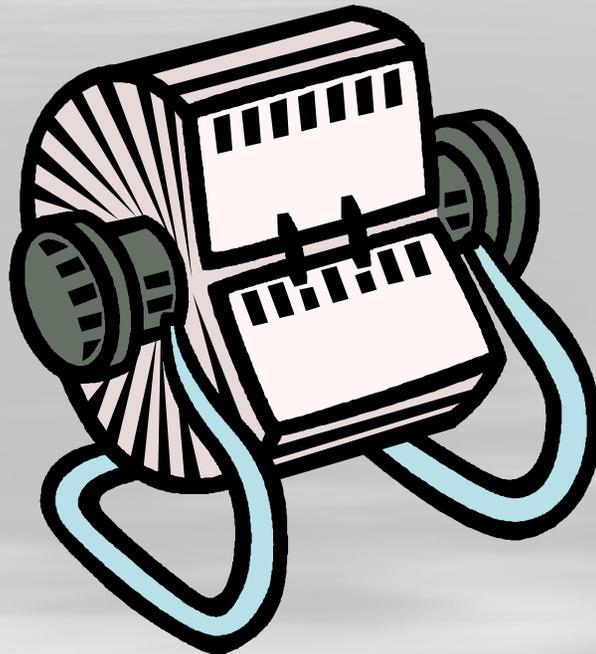
Other Potential Amendments to the Regulation

- Definition of nonprofit training centers
- Clarification that manufacturer delay provisions apply to installer delay as well
- Others?

Next Steps

- Workshops
 - April 7, 2009: Sacramento
 - April 29, 2009: Diamond Bar
- Public Notice and Staff Report
 - Completed and posted early June
- Board Hearing: July 23 and 24

ARB Website and Contacts



California Environmental Protection Agency

Air Resources Board



In-Use Off-Road Vehicle Regulation Homepage: www.arb.ca.gov/msprog/ordiesel/ordiesel.htm

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IN-USE OFF-ROAD DIESEL VEHICLE REGULATION

Monday, August 25, 2008 *This page last reviewed August 22, 2008*

UP LINKS

- ARB Programs
 - Diesel Program
 - Mobile Vehicles and Equipment
 - Mobile Sources
 - **Off-Road Diesel**

LOCAL LINKS

- Archived Documents
- Background
- Contacts
- Current Regulation
- Fact Sheets
- Fleet Average Calculators
- Frequently Asked Questions (FAQ)

Quick Links

- [Overview & Fact Sheets](#)
- [Free Training Seminars](#)
- [Reporting Forms](#)
- [Compliance Planning Tools](#)
- [Regulation Language](#)

On July 26, 2007, the Air Resources Board (ARB) adopted a regulation to reduce diesel particulate matter (PM) and oxides of nitrogen (NOx) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. For more information you can call the diesel vehicle information hot line at (866) 6-DIESEL or (866)



Off-Road Contacts

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Knowledge Center - <http://www.arb.ca.gov/msprog/ordiesel/knowcenter.htm>

Off-Road Regulation - www.arb.ca.gov/msprog/ordiesel/ordiesel.htm

Diesel Hotline - 1-866-6DIESEL (1-866-634-3735)

DOORS Hotline - 1-877-59DOORS (1-877-593-6677)