

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



April 29, 2009
Diamond Bar

Off-Road Implementation Section

California Environmental Protection Agency

Air Resources Board



Outline

- Changes Required in AB 8 2X
 - Goals for Implementing Language
 - Three Amendments Driven by AB 8 2X
 - Implementation (Revised based on input at April 7 workshop)
 - Credit for Tier 1 retirements
 - Different time period for reduced activity
 - Get credit even if records are imperfect
 - Simplified credit accounting provisions
- 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 Implementing Language

- Follow 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 and Tier 1s (subject to criteria on next slide)
 - Fleets can choose between previous (non-shrinking) early retirement credit and the new credit
 - Credit does not expire

Credit for Tier 1 Retirements

- Credit for Tier 1 retirement added to proposal based on input at April 7 workshop
 - Turn over “dirtiest first”
 - Include Tier 1s without a PM standard (i.e., Tier 1s between 50 and 174 horsepower)
 - Other Tier 1s to count if all other Tier 0s and Tier 1s without a PM standard are retired first

No Credit for Retirement of Higher Tiers

- Change proposed is consistent with the Order of Turnover requirements in Title 13, section 2449.1(a)(2)(A)3
 - No credit for turnover of Tier 2 or higher vehicles until Tier 0 and dirtiest Tier 1 vehicles are retired
- Avoids presenting fleets with an incentive to retire their cleaner vehicles first, making their fleets dirtier
 - For example, a fleet that retires its Tier 2 and 3 vehicles and keeps its Tier 0 and 1 vehicles

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
- **Input** – Feedback on revisions?

New Records Required

- April 7 proposed - 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
- On April 7, stakeholders suggested ARB should accept fewer records
 - **Input** – suggestions re: what should be required?

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 January 1, 2007 - December 31, 2007 annual activity to March 1, 2009 - February 28, 2010
 - **Input** – Time period better?
 - 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

Enable Fleets with Incomplete Records to Receive Credit

- To get credit $\leq 15\%$, a fleet would have to show some record that they reduced their activity for the relevant time period
 - Records could include employment records, revenue records, man-hours, taxes, operation records, fuel use, etc.
- To get credit $> 15\%$, a fleet would have to submit hour meter logs for each vehicle

Feedback Requested

- Two sets of criteria for reduced activity records?
 - Depending on the amount of credit claimed
 - Appropriate level at which to set the threshold for requiring more complete records?
- Requirements for records for getting reduced activity credit more than the threshold
 - Should hour meter records be required for every vehicle?
- Other suggestions for how to give credit for fleets that have incomplete hour meter records?

Simplified Credit Options

Fleets receive credit for:

- Repowers (NOx) and Retrofits (PM, or NOx/PM)
- Electric or alternative fuel vehicles (and other specialty cases) (NOx/PM)

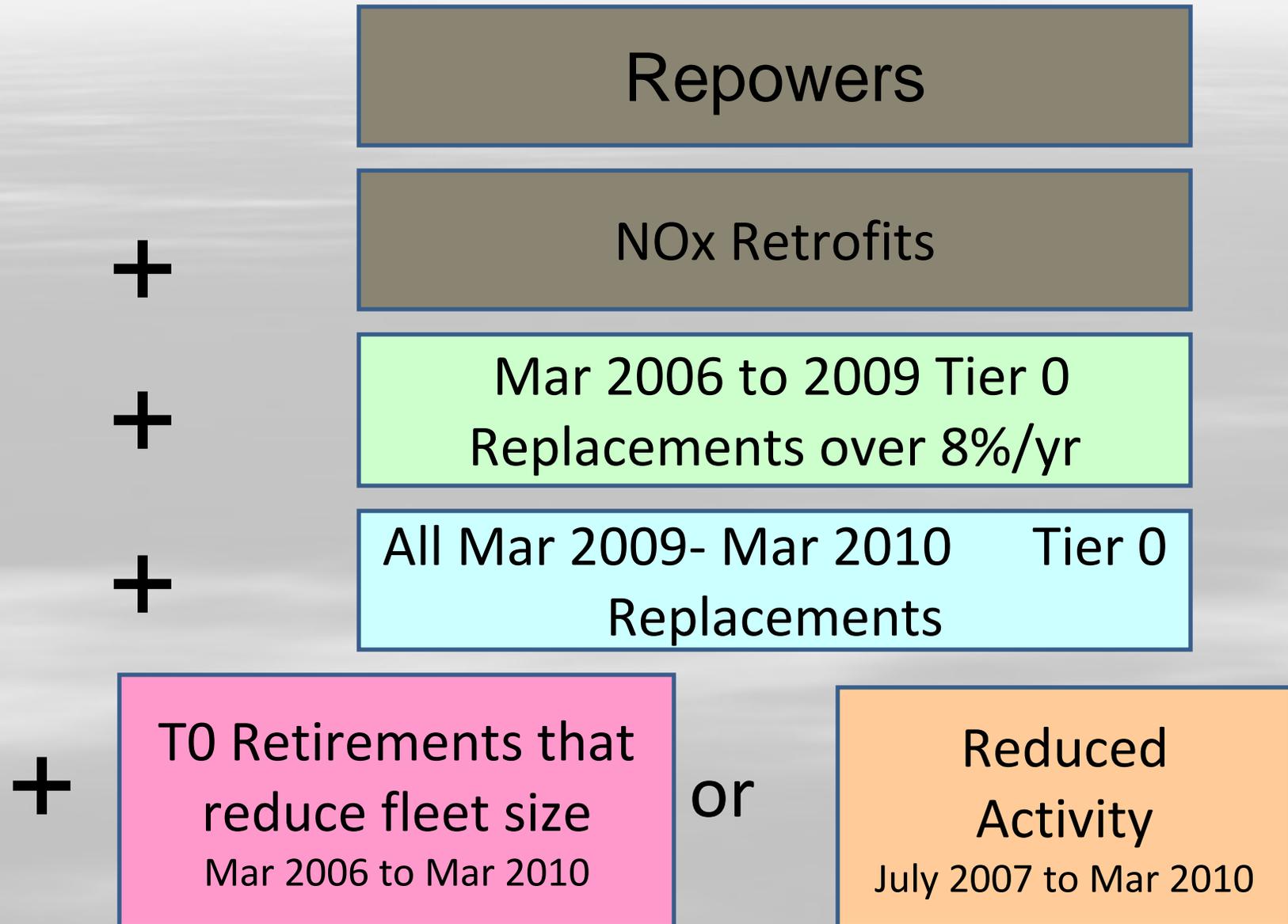
AND

- March 2006 to March 2009 Tier 0 replacements over 8% per year on average (NOx)
- March 2009 to March 2010 all Tier 0 replacements (NOx)

AND

- One of the following to both NOx and PM:
 - Reduced activity July 2007 to March 2010
 - Retired Tier 0s that reduced fleet size March 2006 to March 2010 (or March 2009 to March 2010, if that provides more credit)

NOx Credits on March 1, 2010



PM Credits on March 1, 2010

PM Retrofits

+

T0 Retirements that
reduce fleet size
Mar 2006 to Mar 2010

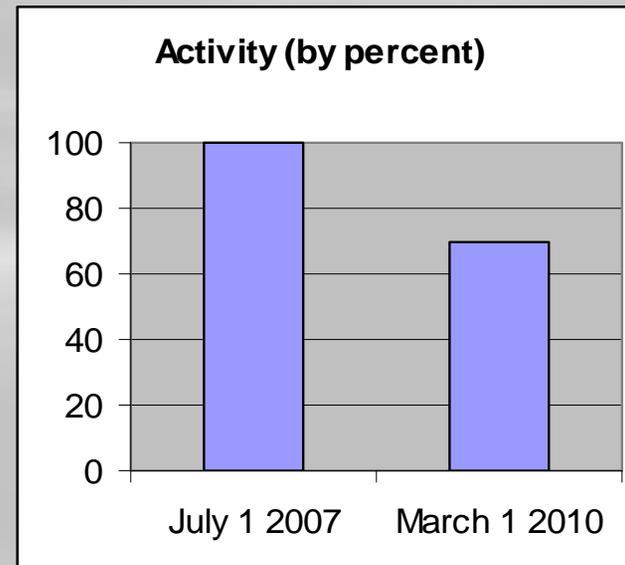
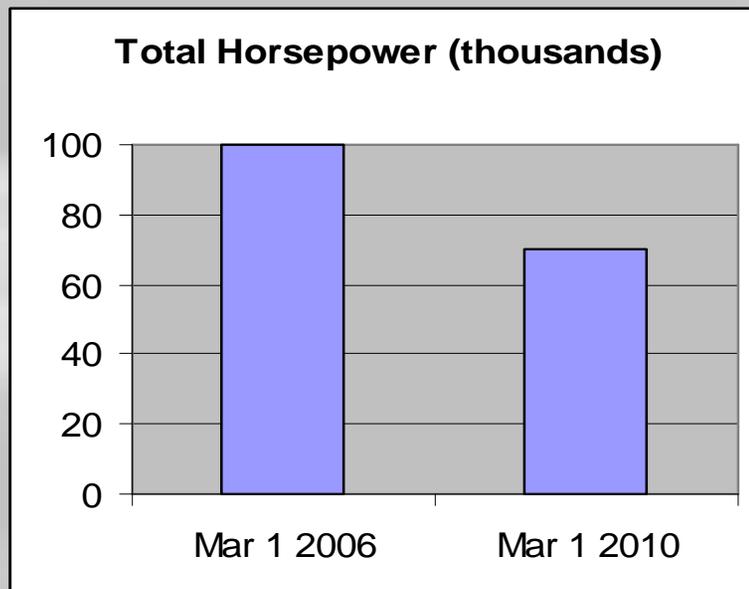
or

Reduced
Activity
July 2007 to Mar 2010

Why not new credit for both retirement and activity reduction?

Consider example fleet.

- Business decreases by 30% from 2007 to 2010
 - Vehicle use (activity) down by 30%
 - Fleet sells off 30% of their equipment
- Emissions are down by **30%** total (30,000 hp)



If Allowed to Combine Credits

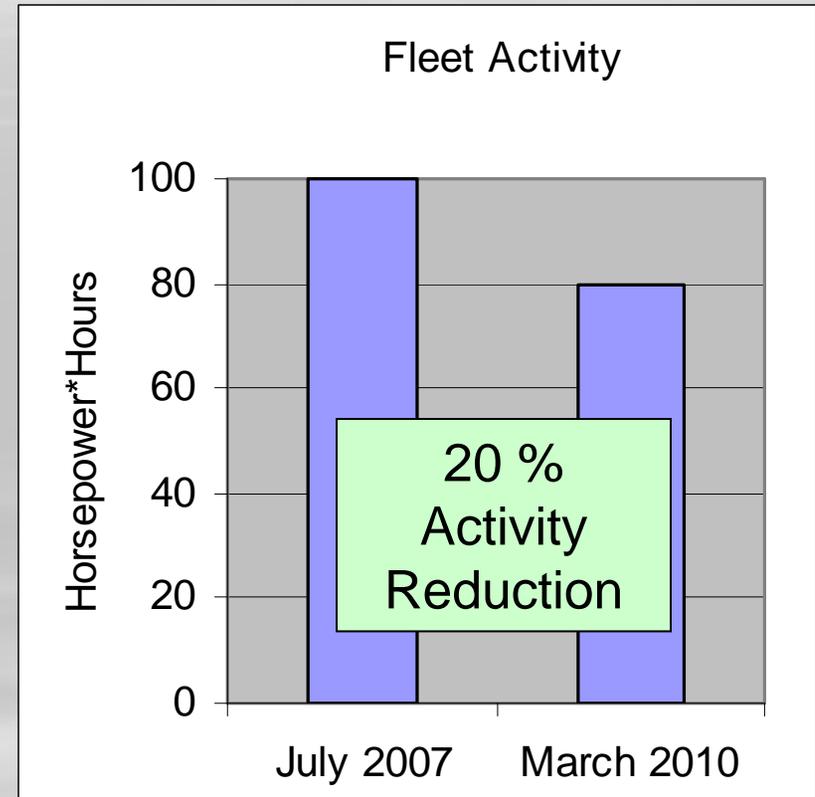
- Fleet would receive 60,000 hp total credit to PM and NOx for retiring 30,000 HP
- Equivalent to 86% of the fleet's final horsepower (60,000 hp/70,000 hp)
- Overstates emission reductions actually achieved
- As shown in handout
 - No turnover required until 2016
 - No retrofits required until 2013

Fleet Examples



1. Fleet with reduced activity

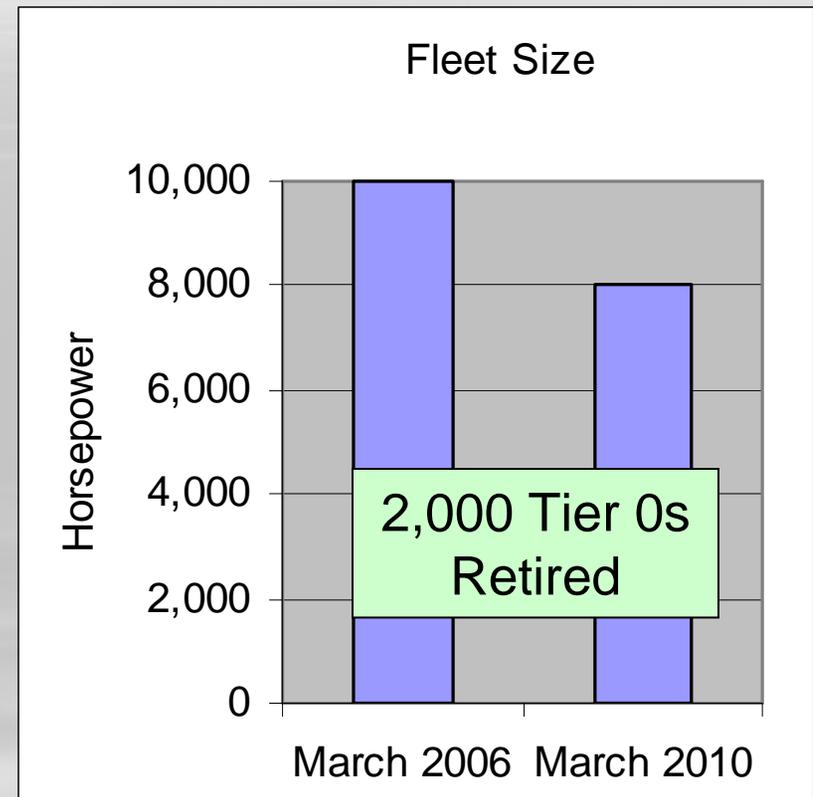
- Fleet on July 1, 2007 = 10,000 hp
- Fleet reduces activity by 20%
- No retirements
- No replacements
- **0 credit under old provisions**



20% (2,000 HP) Credit to PM and NOx

2. Fleet with retired Tier 0s

- Fleet on July 1, 2007 = 10,000 hp
- Fleet retires 2,000 hp Tier 0s in 2008, and does not replace the horsepower
- No change in total activity (remaining vehicles used more in this case)
- **0 credit under old provisions**



2,000 HP Credit to PM and NOx

Economic and Emissions Impact of Legislatively Driven Changes



Economic Impact of Legislatively Driven Changes

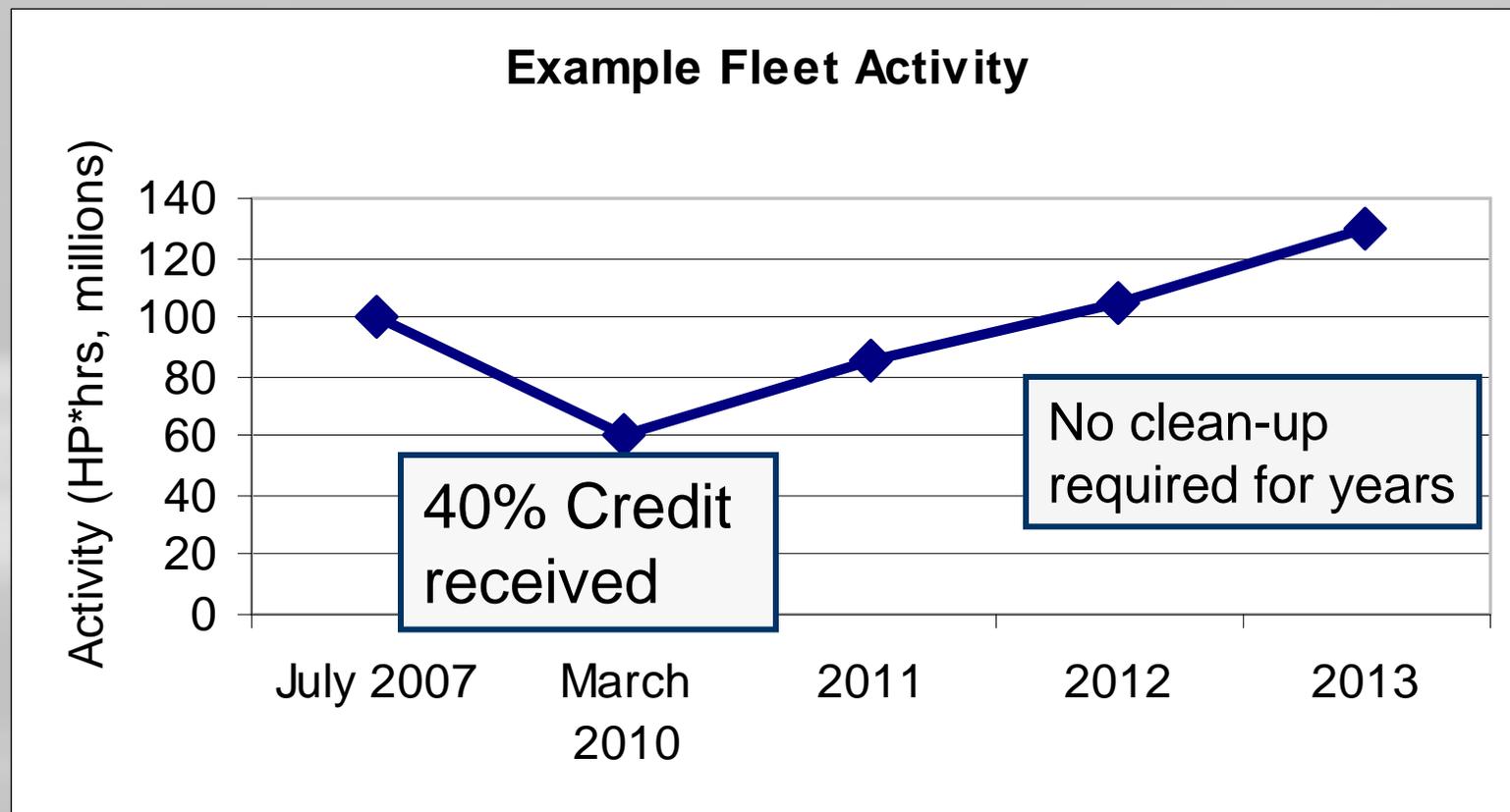
- Provides relief to fleets affected by current recession
- Could negatively impact retrofit manufacturers/installers
 - Had geared up to meet off-road regulation requirements
 - If some go out of business, this could make future compliance for fleets more difficult

Estimating Emissions Impact

- Legislatively directed changes will allow many fleets to take fewer actions
- Consider a fleet which uses a 40% reduced activity credit, with no vehicle retirement
- No actions may be required for the first two years, no repowers, replacements, retirements, retrofits, etc.
- They will have older, dirtier vehicles than if they did not receive credits

Estimating Emissions Impact

- When activity resumes or even exceeds previous level, the fleet has the same inventory as 2007, but no clean up has occurred



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 (NOx)
 - Ozone and secondary PM formation
 - Ozone is a serious lung irritant, associated with premature deaths and asthma

Minimizing Emission & Economic Disbenefits Potential Options



Double Credit for NOx Retrofits

- Provide double credit for NOx retrofits installed by January 1, 2010
 - Example: NOx retrofit installed and verified to reduce NOx 60% on a 200 hp engine
 - Receives 400 hp carryover turnover credit toward the NOx BACT requirements
- Same double credit as is currently provided for early PM retrofits
- Alternatively, the double credit for NOx retrofits could extend through March 1, 2011
- **Input** – Likely to encourage additional retrofits?

Exempt Retrofit Vehicles from Turnover

- Lifetime turnover exemption for vehicles retrofit early
 - Exemption transfers with machine if sold
- Limit amount each fleet can accrue
 - Max hp or number of vehicles
 - **Input** – Suggestions re: where to set limit (20 percent of a fleet's horsepower?)

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
- **Input** – Would this encourage early retrofitting?

Minimum Annual Retrofitting for Fleets that Utilize the New Credit

- At the April 7, 2009, workshop, the Natural Resources Defense Council (NRDC) proposed:
 - Minimum annual retrofitting and turnover for fleets
 - Regardless of how much new retirement and reduced activity credit they receive
 - NRDC proposed requiring 10% annual retrofitting and 4% annual turnover for fleets not meeting the fleet average targets
- ARB staff does not propose requiring any minimum annual turnover

Minimum Annual Retrofitting

- Could require 5% per year retrofitting in 2010 through 2012 for fleets not meeting the fleet average targets and utilizing the new credit
- Fleets are granted double credit for retrofits completed through January 1, 2010
 - Therefore, a fleet could actually satisfy the 2010 requirement by retrofitting 2.5 % of its hp
- Would add complexity
- Would spur early retrofitting
- **Feedback** – Good idea? What level is appropriate?

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)

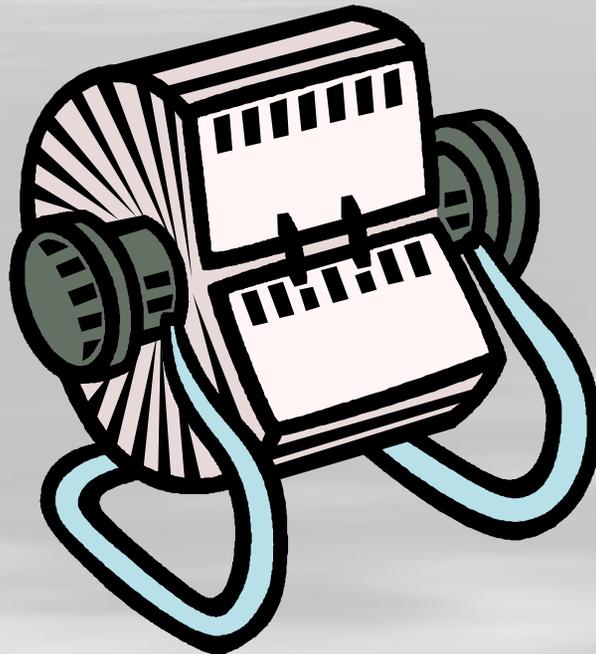
Other Potential Amendments to the Regulation

- Definition of nonprofit training centers
- Clarification that manufacturer delay provisions apply to installer delay as well
- Clarification to safety provisions regarding FAA safety-related requirements
- Public agency fire prevention activities reclassified as forest operations
- **Others?**

Next Steps

- Gather feedback from today's workshop
- 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

Home **Programs** **Rulemaking** **Board Meetings** **Laws & Regulations** **Data & Statistics** **Permits, Etc.** **Events**

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 (NO_x) 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

General Off-Road Regulation Questions:

**Kim Heroy-Rogalski, Manager
Off-road Implementation
Section**

kheroyro@arb.ca.gov

(916) 327-2200

Elizabeth Yura, Staff

eyura@arb.ca.gov

(916) 323-2397

Advisory Group/Safety: Beth White, Staff

eiwhite@arb.ca.gov

(916) 324-1704

DOORS:

Cory Parmer, Staff

pparmer@arb.ca.gov

(916) 323-1180

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)