

## 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**



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## 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

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## 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

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## Goals for Interpreting Language

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

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## 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

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## 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
<b>Existing</b>	8 / 20	8 / 20	8 / 20	8 / 20	8 / 20
<b>Proposed</b>	8 / 20	4.8 / 12	4.8 / 12	14.4 / 36	8 / 20

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## 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

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## 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%

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## 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

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## 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

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## 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?

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## 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

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## 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

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## 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?

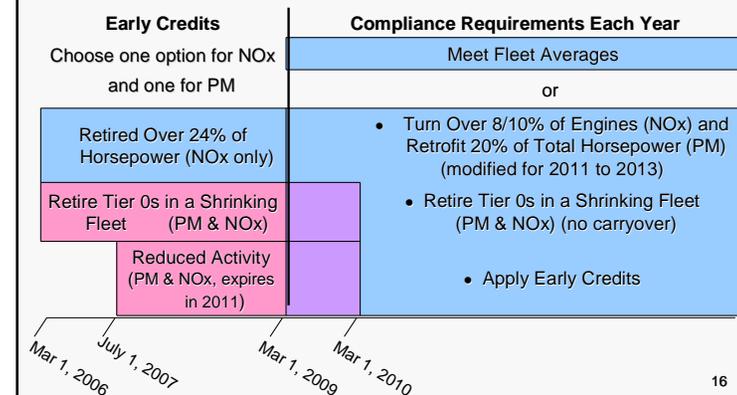
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## No Doublecounting the Same Reductions

- For PM and NOx, 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 NOx
- Allows fleets to obtain the most credit for each pollutant

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## Timeline and Options



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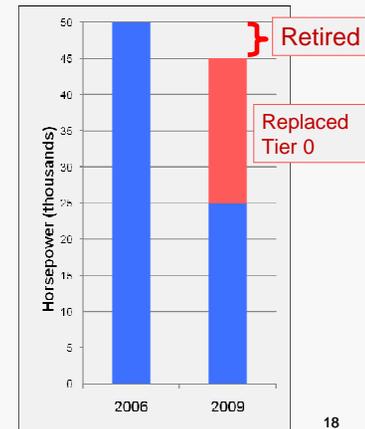
## Fleet Examples



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## 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



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## Example 1 Continued

	NOx	PM	
Previous Credits	13,000 HP	0	<p>5000 HP Retired</p> <p>Replaced T0: Gives 13,000 HP Credit NOx</p> <p>2009</p>
New: Retirement Credit	5,000 HP	5,000 HP	
<b>Choosing an option</b>	13,000 HP	5,000 HP	

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## 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



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## 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
<b>Choosing an option</b>	10,000 HP (Retirement Credit)	12,500 HP Expiring in 2011 (Reduced Activity)

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## Economic and Emissions Impact of Legislatively Driven Changes



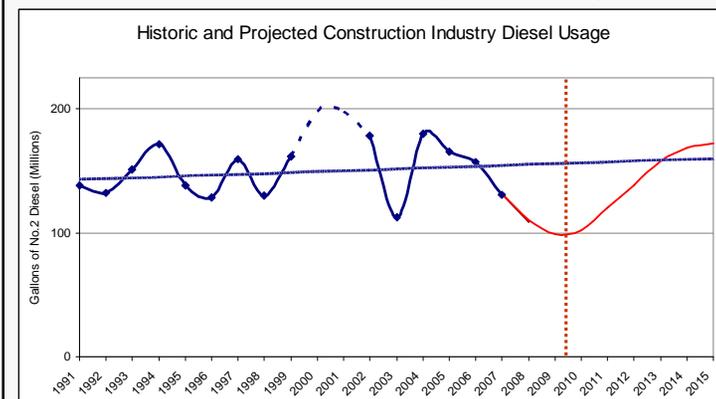
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## Economic Impact of Legislatively Directed Changes

- 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

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## Historic Industry Activity



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## 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

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## 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

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## 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

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## Minimizing Emission & Economic Disbenefits Potential Options



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## 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

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## 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

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## 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

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## Provide Additional Incentive Funding

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

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## 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)

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## Restrictions on Uses of New Credits?

- Suggestions?
- Other ideas?



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## Other Potential Amendments to the Regulation

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

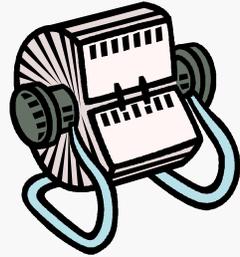
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## Next Steps

- 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

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## ARB Website and Contacts



California Environmental Protection Agency  
Air Resources Board



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In-Use Off-Road Vehicle Regulation Homepage:  
[www.arb.ca.gov/msprog/ordiesel/ordiesel.htm](http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm)

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**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<sub>x</sub>) 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)

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## 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](http://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)

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