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)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<tr>
<td>Existing</td>
<td>8 / 20</td>
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<td>8 / 20</td>
<td>4.8 / 12</td>
<td>4.8 / 12</td>
<td>14.4 / 36</td>
<td>8 / 20</td>
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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

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
    - 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 ≤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

- Repowers
- NOx Retrofits
  - Mar 2006 to 2009 Tier 0 Replacements over 8%/yr
  - All Mar 2009- Mar 2010 Replacements Tier 0
- T0 Retirements that reduce fleet size Mar 2006 to Mar 2010
- Reduced Activity July 2007 to Mar 2010

PM Credits on March 1, 2010

- PM Retrofits
- T0 Retirements that reduce fleet size Mar 2006 to Mar 2010
- 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

- 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 2000 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**

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**Economic and Emissions 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

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**Economic Impact of Legislatively Driven Changes**

**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

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Example Fleet Activity

<table>
<thead>
<tr>
<th>Activity (HP*hrs, millions)</th>
<th>July 2007</th>
<th>March 2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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<tr>
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<td>0</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
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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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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?
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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

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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
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