

## DIESEL RETROFIT PROGRAM

### Solid Waste Collection Vehicle Rule Workshops

Dec. 9 & 10, 2002

California Environmental Protection Agency



Air Resources Board



## Regulation Planning Process

- ◆ Workshop 1:
  - ◆ June 26<sup>th</sup> & 28<sup>th</sup>, 2001 in Sacramento & El Monte
- ◆ Workshop 2:
  - ◆ September 4<sup>th</sup> & 5<sup>th</sup>, 2001 in Sacramento & Los Angeles
- ◆ Workshop 3:
  - ◆ February 26<sup>th</sup> & 28<sup>th</sup> in Oakland & El Monte
- ◆ Workshop 4:
  - ◆ December 9<sup>th</sup> & 10<sup>th</sup> in Sacramento & El Monte

## Today's Workshop – Purpose

- ◆ **Review Proposed Regulation Changes**
- ◆ **Compare Alternatives with Proposed Regulation**
- ◆ **Update on Verified Devices**
- ◆ **Discuss Research to Date**
- ◆ **Comment Period**

## Proposed Rule – Review of Scope

- ◆ **Applies to Owners of Solid Waste Collection Vehicles**
  - ◆ 1960 - 2006 Model Year Diesel Engines
  - ◆ HDDV Greater than 14,000 lbs. GVWR
  - ◆ Used to Collect Residential and Commercial Waste
- ◆ **Applies to Cities, Counties, and Member Agencies of Regional, State, or Federal Agencies**
  - ◆ Contract
  - ◆ Permit
  - ◆ License for Solid Waste Collection

## Proposed Rule – Definition Additions

- ◆ Definitions Added or Clarified
  - ◆ “For a Fee” to Solid Waste Collection Vehicle
  - ◆ Back-up Vehicle
  - ◆ BACT
  - ◆ Contract
  - ◆ Contractor
  - ◆ Commercially Available
  - ◆ Dual-fuel Engine and Heavy-Duty Vehicle
  - ◆ Heavy-duty Pilot Ignition Engine
  - ◆ Municipality
  - ◆ Repower

## Proposed Rule - Compliance Methods for Owners **CHANGED**

- ◆ Choose the Best Available Control Technology for Each Vehicle
- ◆ Follow the Implementation Schedule
- ◆ Meet the Fuel Requirement
- ◆ Submit Reports to the ARB
- ◆ Keep Records

## Proposed Rule - BACT Options

- ◆ Use Diesel Engine or Power System that Meets the 0.01 g/bhp-hr PM Standard
  - ◆ Repower
  - ◆ Replacement
- ◆ Use Alternative Fueled Engine in Place of Diesel Engine **ADDED**
- ◆ Use Diesel Emission Control Strategy Verified to Highest Diesel PM Emission Reduction Capability

## Proposed Rule – Implementation Schedule

Tier	Engine Model Years	Percentage of Active Fleet	Implementation Dates
1	1994-2002	10	Dec. 31, 2004
		25	Dec. 31, 2005
		50	Dec. 31, 2006
		100	Dec. 31, 2007
2	1960-1993	50	Dec. 31, 2008
		100	Dec. 31, 2009
3	2003-2006	100	Dec. 31, 2009

**CHANGED**

## Proposed Rule – Active Fleet

**CHANGED**

- ◆ Footnote Sample Calculation Deleted
- ◆ Active Fleet Size Equations
  - ◆ TotVeh = Tier%BACT \* (#SWCV)
    - ◆ #AF Removed Because Now BACT Option
  - ◆ TotAddComp = TotVeh – TotComp

## Proposed Rule – Early Implementation Compliance Deadline Extensions

**DATES CHANGED**

50% Fleet in Compliance Tier	Extension Deadline	100% Compliance Extension Deadline
Tier 1	12/31/03	12/31/08
Tier 2	12/31/07	12/31/10

## Proposed Rule – Fuel Requirement

**DATES CHANGED**

- ◆ Beginning December 31, 2004 Active Fleet Fueled by:
  - ◆ Diesel Fuel with 15 ppmw or Less Sulfur Content
  - ◆ Another Fuel Verified by ARB as Diesel Emission Control Strategy

## Proposed Rule – Reporting

- ◆ Deleted Owner Reporting Requirement to ARB
- ◆ Reporting Only Required from Municipalities

## Proposed Rule – Record Keeping

- ◆ Enforcement through ARB's Periodic Smoke and Heavy-Duty Vehicle Inspection Program
  - ◆ Records Kept at Maintenance Facility
    - ◆ Proof of Purchase, Installation and Installation Date of Diesel Emission Control Strategy (DECS)
    - ◆ Serial Number Linking Strategy to Engine Family
    - ◆ Maintenance Dates of Engine and DECS
    - ◆ Fuel/Fuel Additives Receipts/Invoices
    - ◆ Diesel Emission Control System Maintenance Dates
    - ◆ Backup Vehicle ID
    - ◆ Retirement Date of Engine



**NEW**

## Proposed Rule – Record Keeping



**CHANGED**

- ◆ Records Kept on Vehicle
  - ◆ Label Must be in Readily Accessible Location on Vehicle with One of the Following:
    - ◆ DECS System Label and Installation Date
    - ◆ Engine Model Year and Planned Compliance Date
    - ◆ Experimental DECS ID
    - ◆ Backup Vehicle ID
    - ◆ Retirement Date of Engine

## Proposed Rule – Record Keeping



- ◆ Records Kept for Lifetime of Vehicle Unless
  - ◆ Sold Outside of California
  - ◆ No Longer Used for Purpose of Residential and Commercial Solid Waste Collection in the State of California

## Proposed Rule – Extensions

- ◆ Compliance Extension to July 1, 2006
  - ◆ No Low Sulfur Diesel Fuel Available to Owner
    - ◆ Apply by Sept. 1, 2004
  - ◆ Fewer than Four Vehicles in Fleet Automatic Extension to 100 Percent Compliance Deadline
    - ◆ In Tier 1 to December 31, 2007
    - ◆ In Tier 2 to December 31, 2009
  - ◆ No Verified Diesel Emission Control Strategy



## Proposed Rule – No Verified DECS

**DATES CHANGED**

Compliance Extension Type	Annual Extension	Compliance Deadline
EO-Tier 1	2/29/07	12/31/10
EO- Tiers 2 & 3	2/28/09	12/31/10
Owner Application-Tier 1	Thru 7/31/07	12/31/08
Owner Application-Tiers 2 & 3	Thru 7/31/09	<b>12/31/10</b>

## Proposed Rule – Special Circumstances

**NEW SECTION**

- ◆ DECS Failure
  - ◆ Inside Warranty Period
  - ◆ Outside Warranty Period
- ◆ Discontinuation of DECS Fuel
  - ◆ Must use another BACT within 30 days
  - ◆ Compliance plan if BACT not available

## Proposed Rule – Special Circumstances

- ◆ Engine Exempt within One Year of Retirement
- ◆ Experimental Diesel PM Emission Control Technology Users Exempt During Testing and Evaluation
  - ◆ Maximum of Ten Vehicles in the Fleet
  - ◆ Six Months to Comply After Completion

**NEW SECTION**

## Proposed Rule – Special Circumstances (Not in 11/25/02 Draft)

- ◆ Level 1 DECS For Five Years Only
  - ◆ Five Years After Installation, Owner Must Evaluate Availability of & Install Higher Level PM Reduction DECS
  - ◆ Even If Only DECS Available is New Engine Meeting 0.01 g/bhp-hr PM, Owner Must Implement

**NEW PROPOSAL**

## Proposed Rule - Compliance Methods for Municipalities

- ◆ Initial Compliance Report due December 31, 2004
  - ◆ Funding Source to Compensate Contractor for Compliance
- ◆ Annual Report beginning January 31, 2006
  - ◆ Contractor List
  - ◆ Annual Signed Compliance Statement from Each Contractor
  - ◆ Annual Signed Statement from Municipality Stating Received Annual Signed Statements from Contractors
  - ◆ New Contractor Information

**CHANGED**

## Proposed Rule - Compliance Methods for Municipalities

**NEW SECTION**

- ◆ Contractor Not in Compliance Determination
  - ◆ Notification from Executive Officer of ARB
  - ◆ Determination by Municipality through Lack of Submittal of Annual Signed Statement
- ◆ Consequences of Contractor Not in Compliance
  - ◆ Municipality Submit Plan to EO within 90 days of notification or self-determination

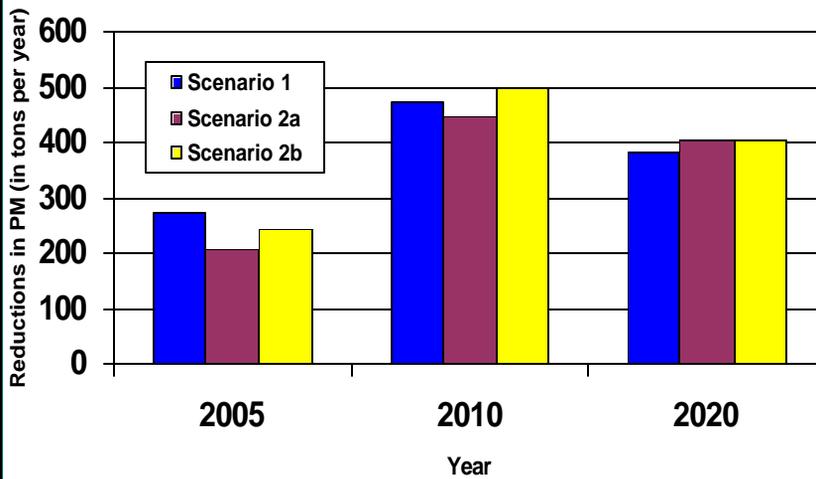
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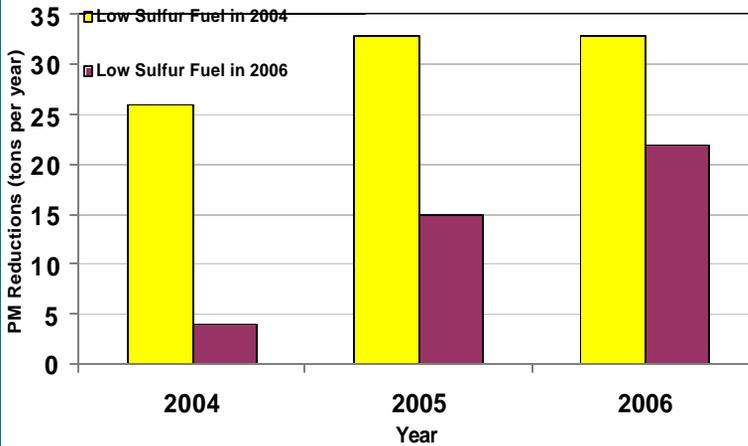
## Regulatory Alternatives

Year	Scenario 2a- Repower to 0.01g/bhp-hr	Scenario 2b- Repower to 0.01g/bhp-hr
2007	1970 – 1987	1970 – 1987
2008	---	1988 – 1990
2009	---	1991 – 1993
2010	1988 – 1990	1994 – 2002
2011	---	1994 – 2002
2012	---	1994 – 2002
2015	1991 – 1993	2003 - 2006
2020	1994 – 2006	---

## Alternatives – Repower/Replace Scenarios



## Alternative – Implement Fuel in 2006



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## Verification of DECS for Collection Vehicles

- ◆ Level 3 (85% Diesel PM Reduction)
  - ◆ Diesel Particulate Filter (DPF)
  - ◆ Verified Systems Exist for 1994 & later Model Years
- ◆ Level 2 (50 - 84% Diesel PM Reduction)
  - ◆ Fuel Additives, Fuel Emulsion Techniques
  - ◆ No Verified Level 2 Strategies Yet
- ◆ Level 1 (25 - 49% Diesel PM Reduction)
  - ◆ Diesel Oxidation Catalyst Systems
  - ◆ Systems for 1991 & later Model Years



**MORE**



**NEW**

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

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## ARB Technical Feasibility Research

- ◆ Exhaust Temperature Data-Logging
- ◆ Fleet Maintenance Survey

## Exhaust Temperature Data-Logging

- ◆ Vehicle Selection
  - ◆ Five Fleets (2 Public, 3 Private)
  - ◆ Front, Side, Rear Loaders and Rolloffs
  - ◆ Mix of Engine Model Years and Models
- ◆ Preliminary Results
  - ◆ Data Collection to be Completed December 2002
  - ◆ Exhaust Temperatures Appear to Correlate with Vehicle Speed and rpm

## Exhaust Temperature Datalogging - Preliminary Results

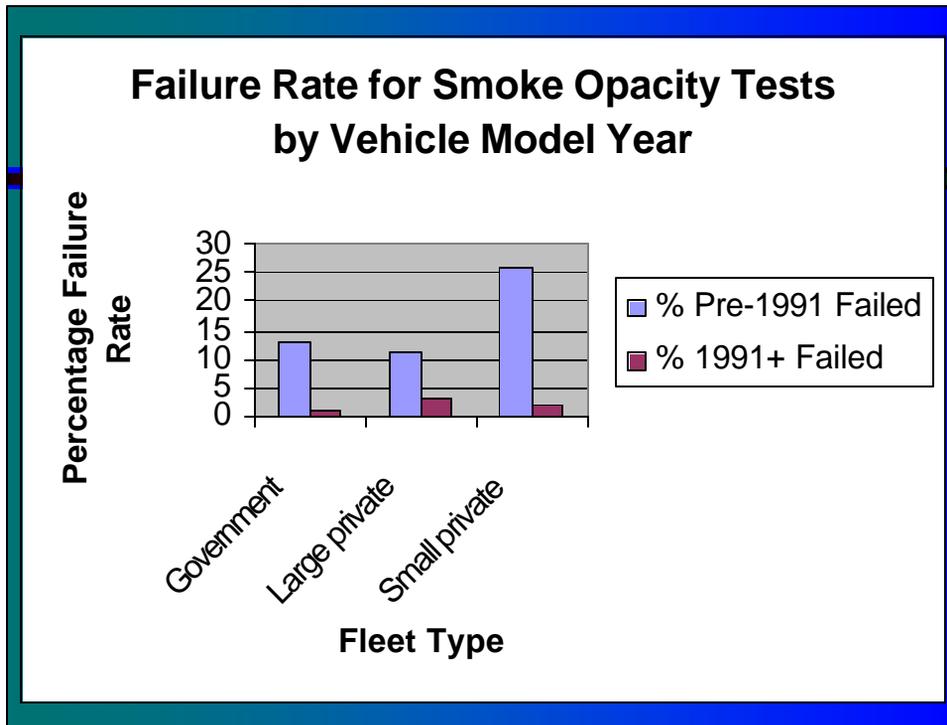
Test Vehicle Type	Total Vehicles	% Met 225°C 50%	% Met 270° 40%
Side Loader	22	77%	50%
Front Loader	15	73%	47%
Rear Loader	6	17%	0%
Rolloff	6	0%	0%
<b>TOTAL</b>	<b>49</b>	<b>69%</b>	<b>37%</b>

## Fleet Maintenance Survey

- ◆ 60 Fleets Analyzed for Fleet Maintenance
  - ◆ Stratified Random Sample
  - ◆ Public and Private Fleets
- ◆ Parameters Measured
  - ◆ Smoke Opacity
  - ◆ Mechanics per Vehicles
  - ◆ Mechanic Training
  - ◆ Shop Organization
  - ◆ Shop Cleanliness

## Fleet Maintenance Survey – Preliminary Smoke Opacity Results

Test Fleet Type	Number of Vehicles	% Failed
Public	102	3%
Private, #SWCV > 10	97	6%
Private, #SWCV ≤ 10	92	12%
TOTAL	289	7%



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## Proposed Rule - Comments

- ◆ Comments due by December 19, 2002
- ◆ Send Comments to:
  - Crystal Reul-Chen
  - 9480 Telstar Ave., Ste. 4
  - El Monte, CA 91731
  - creul@arb.ca.gov
  - (626) 350-6543
- ◆ For additional information:  
<http://www.arb.ca.gov/msprog/swcv/swcv.htm>

## Next Steps

- ◆ Proposed Schedule
  - ◆ 45-day Review Period for Proposed Regulation and Staff Report begins April 2003
  - ◆ Board Hearing May 2003