California’s Proposed Strategy to Reduce Emissions from On-Road Diesel Vehicles

December 11, 2008
California Environmental Protection Agency
Air Resources Board
Today’s Presentation

- Introduction and overview
- Truck and Bus Regulation
- Truck and Trailer Efficiency Regulation
- Integration of the proposed regulations
- Availability of incentive funding
- Recap and closing
We Cannot Afford to Wait to Cleanup Exhaust Emissions

- Largest source of emissions
- State Implementation Plan (SIP)
  - Majority of reductions from trucks
- Cancer risk from diesel PM is high
- Thousands of lives lost each year
- No equivalent federal programs
- California leadership is critical
We Cannot Afford to Wait to Reduce Greenhouse Gas Emissions

- Discrete early action measure in Scoping Plan
- Progress towards meeting AB32 commitment
- Demonstrates California’s leadership
- Substantial cost savings
- Benefits environment and economy
Timing is Challenging but the Need is Great

- Cost of inaction outweighs costs of clean-up
- Actions not required for several years
- Significant flexibility provided
- Minimizes costs and meets air quality goals
- Minimizes potential overlap of costs
Staff’s Proposals

• Shaped by input from stakeholders
• Provisions to reduce costs
• Savings from improved efficiency
• Incentives
• No barriers to technology
Proposed Truck and Bus Regulation
Truck and Bus Regulation Overview

- Need for emissions reductions
- Proposed requirements
- Emissions benefits and costs
- Alternatives considered
Significant Contributors to Statewide Emissions: 2005

**NOx**
- Off-Road, 22%
- Other On-Road, 25%
- Marine, 6%
- Locomotives, 5%
- Trucks and Buses, 28%
- Stationary and Other, 15%

**Diesel PM**
- Off-Road, 37%
- Locomotives, 5%
- Marine, 16%
- Other On-Road, 2%
- Stationary and Other, 3%
- Trucks and Buses, 37%
Diesel Particulate Matter Exposure

- Trucks and buses largest source of diesel PM
- 70% of known cancer risk from all air toxics
- Diesel Risk Reduction Plan adopted in 2000
  - Risk reduction goals by 2010 and 2020
Area Designations for National Ambient Air Quality Standards for Ozone and PM2.5

8-Hour Ozone

15 areas violate the standard

PM2.5 Annual

2 areas violate the standard
State Implementation Plan

• Approved in September 2007
• Trucks largest component of SIP
  – Most significant measure
• Critical to attaining ozone and PM standards
  – South Coast: 2014 and 2023
## Significant Health Impacts from Trucks and Buses (2008)

<table>
<thead>
<tr>
<th>Effect</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premature deaths</td>
<td>4,500</td>
</tr>
<tr>
<td>Asthma related and lower respiratory symptoms</td>
<td>71,000</td>
</tr>
<tr>
<td>Work loss days</td>
<td>450,000</td>
</tr>
<tr>
<td>Restricted activity days</td>
<td>2,600,000</td>
</tr>
</tbody>
</table>
Truck and Bus Regulation: Proposed Requirements
Proposed Truck and Bus Regulation

- Diesel vehicles operating in California
  - Interstate, intrastate, international, and other
- Vehicles over 14,000 GVWR and shuttle buses
- Any person, business, or government agency who owns, leases, rents, or sells a vehicle in California
- Excludes certain vehicles
Diverse Vehicle Types Covered

Concrete Mixer
Water Truck
Reefer Van
Dump Truck
Hay Squeeze
Fuel Tank Truck
Drill Rig
Tow Truck
Passenger Bus
Overview of Proposed Regulation

• Phase-in most PM requirements 2011-2014
  – No action if not available or not safe
• Phase-in NOx requirements 2013-2023
  – New vehicles never required
• Certain special provisions
• Three compliance options
Compliance Options

• Best available control technology (BACT) schedule
• Percentage limits
• Fleet averaging
# Only Older Vehicles Replaced

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Engine Age To Be Replaced (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>14-19</td>
</tr>
<tr>
<td>2014</td>
<td>12-14</td>
</tr>
<tr>
<td>2015</td>
<td>21+</td>
</tr>
<tr>
<td>2016</td>
<td>12-13</td>
</tr>
<tr>
<td>2017</td>
<td>11-12</td>
</tr>
<tr>
<td>2018</td>
<td>No replacement requirements</td>
</tr>
<tr>
<td>2019</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>14</td>
</tr>
<tr>
<td>2022</td>
<td>14</td>
</tr>
<tr>
<td>2023</td>
<td>14</td>
</tr>
</tbody>
</table>
Accelerated Replacement Not Required for Every Truck

Number of Different Trucks Operating in California in 2008 = 941,000
How Emissions Change with Engine Model Year

<table>
<thead>
<tr>
<th>Engine Model Year</th>
<th>NOx Emission Factors (g/mile)</th>
<th>PM Emission Factors (g/mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-2004</td>
<td>22.0</td>
<td>3.36</td>
</tr>
<tr>
<td>2004-2006</td>
<td>12.0</td>
<td>1.25</td>
</tr>
<tr>
<td>2007-2009</td>
<td>7.0</td>
<td>0.81</td>
</tr>
<tr>
<td>2010</td>
<td>1.6</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Note: For Heavy Heavy-Duty Vehicles (GVWR >33,000 lbs)
Percentage of California Trucks by Fleet Size

- > 100 Trucks: 16%
- 1 Truck: 32%
- 51 ~ 100 Trucks: 4%
- 2 Trucks: 10%
- 21 ~ 50 Trucks: 8%
- 3 Trucks: 6%
- 4 Trucks: 4%
- 4 Trucks: 4%
- 5 Trucks: 3%
- 6 ~ 10 Trucks: 9%
- 11 ~ 20 Trucks: 8%
- > 100 Trucks: 16%

2006 DMV DATA: Heavy Heavy-Duty & Medium Heavy-Duty vehicle population
Optional Small Fleet Provisions

- Additional time for fleets up to 3 vehicles
- No clean up requirements before 2013
  - First vehicle with 2004 model year engine and filter until 2018
- Remaining vehicles upgraded 2014-2016
- Cleanest engines by 2023
Provisions to Delay Replacement Requirements

- Unique vehicles
- Cab-over engine truck tractors
- Early credit for filters
- Lower usage vehicles
- Attainment area operation

Attainment Area Counties - Alpine, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Monterey, Plumas, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Shasta, Sierra, Siskiyou, Trinity, Tehama, and Yuba
Other Key Provisions

- Very low use vehicles exempt from clean-up
- Credits for hybrid and alternative fueled vehicles
- Retrofit safety
- Manufacturer delays
- Three day pass for out-of-state trucks
Agricultural Vehicle Provisions

- Used exclusively in agricultural operations
- Exempt below mileage thresholds
  - 15,000/20,000/25,000 annual miles until 2017
  - 10,000 miles starting 2017
- Specialty farm vehicles exempt until 2023
- All trucks cleaned up by 2023
Screening Evaluation of Localized Risk

- Analysis of first processing center
- Potential for localized risk
  - Dependent on uncontrolled truck activity
- Further analysis and report to Board

Risk greater than 10 in 1 million

Assumes 80 trips per day

280 meters
School Buses

• PM requirements necessary
  – Pre-1977 bus replacements

• $200 million in Lower-Emission School Bus Program funding
  – Sufficient for 95% of costs

• Staff will monitor implementation
Technology Already Exists

• PM control technology
  – New engines equipped with filters nationwide
  – Thousands of retrofit filters in use
• NOx control technology
  – 2010 model year engines on schedule
  – SCR retrofit systems being demonstrated
• Sufficient new and used trucks available
Changes to Existing Regulations

- Improve enforceability and clarity
- Includes:
  - Drayage truck regulation
  - Public fleet and utility regulation
  - Off-road vehicle regulation
  - Cargo handling regulation
  - Idling provisions
  - Portable Engine Registration Program
  - Portable engine regulation
Truck and Bus Regulation: Emissions Benefits and Cost
Updated Truck and Bus Emissions

• Builds on EMFAC2007
• Reflects multiple new data sources
• More detailed truck and bus categories
• Category-specific population, age distribution, and mileage accrual
Statewide NOx Emissions

- Without Regulation: 124 tpd
- With Proposed Regulation: 98 tpd
Statewide PM2.5 Emissions

PM2.5 Emissions (tpd)


Without Regulation

With Proposed Regulation

12.8 tpd

5.2 tpd
Overall Health Benefits

• Provides major health benefits
  – About 9,400 fewer premature deaths
  – 150,000 fewer lower respiratory and asthma-related symptoms
  – 950,000 fewer lost work days
• Value estimated to range from $48 to $68 billion
• Meets combined PM and NOx SIP targets for all years
• No other measures can provide same benefits
Statewide Costs

• Estimate at $5.5 billion (2010-2025)
  – $4.5 billion for California registered vehicles
  – $1.0 billion for out-of-state vehicles

• Cost effective compared to other regulations
Vehicle Prices Vary by Age

Conventional Truck Without Sleeper

Price (thousands of $)

Vehicle Age
## PM Retrofit Costs

<table>
<thead>
<tr>
<th>PM Retrofits</th>
<th>Installed Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994 and newer</td>
<td>$12,000*</td>
</tr>
<tr>
<td>Pre-1994</td>
<td>$15,000</td>
</tr>
</tbody>
</table>

* $11,000 for medium heavy-duty vehicles

### Wall Flow Filter

![Wall Flow Filter Diagram]

- Inlet Section
- Filter Section
- Catalyzed Wall-flow Filter
- Outlet Section
Potential Cumulative Costs

• Evaluated impact with other rules
  – Transportation Refrigeration Units
  – Off-Road Regulation
• Evaluated several individual fleets
• Impacts relatively small
• Little overlap with Truck GHG regulation
• Lowered costs
  – Sweepers
  – Cranes
Impact on California’s Economy is Small

- California is a $3.1 trillion economy
  - Could reduce GDP by 0.014 percent
  - May slow job growth in some sectors, increase others
- Impact on consumers not noticeable
  - $0.01-$0.02 per pair of shoes
  - $3 to $10 for new car
Compliance Example: Actual Trucking Company

- Regional haul trucking fleet
  - Average age of vehicles 11 years
  - Normally replaces 2-3 per year
  - Normally buys 4 year old used
  - Annual revenue $3,500,000

<table>
<thead>
<tr>
<th>Truck Engine Age</th>
<th>Number of Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>
What Actions Would be Needed?

The graph shows the number of replacements or retrofits from 2009 to 2022. The bars represent different categories:

- **PM Retrofit**
- **Replacement with Regulation**
- **Normal Replacements**

The x-axis represents the calendar year, and the y-axis shows the number of replacements or retrofits. The graph indicates the trend and distribution of replacements and retrofits over the years.
Capital Investments

Calendar Year

Capital Costs (Current Year Dollars)

PM Retrofit
Replacement with Regulation
Normal Replacement Costs
Implementation, Outreach, and Education

• Committed to work with industry
• Extensive outreach and education
• Compliance assistance
• Planning tools
Truck and Bus Regulation: Alternatives Considered
Fewer Benefits with Industry Proposal

- Baseline
- Proposed Regulation
- DTCC Proposal

NOx (tpd)
Impact of Recession on Emissions

• Recession has resulted in fewer miles driven, lower diesel fuel sales, and reduced new truck sales
• Fewer miles driven lowers emissions
• But reduced truck sales means older higher-emitting trucks stay on the road
• Higher emission rates associated with older trucks may offset lower emissions due to less driving
Staff Recommended Modifications
Proposed 15-Day Changes

• Add retirement credit provisions
• More operating time for back-up sweepers
• Delay replacements for motor coaches
• Other clarifying and corrective changes
Proposed Truck and Trailer Efficiency Regulation
California GHG Emissions
2002-2004 Average

CA GHG Emissions
(469 MMTCO2E\(^1\))

- Transportation: 38%
- Electricity: 23%
- Commercial & Residential: 9%
- Industrial: 20%
- Recycling & Waste: 1%
- Agriculture: 6%
- High GWP: 3%

\(^1\)MMTCO2E = million metric tons carbon dioxide equivalent emissions
California GHG Emissions
2002-2004 Average

Transportation
(179 MMTCO2E)

- Passenger Cars: 75%
- Heavy-Duty Trucks: 19%
- Ships: 2%
- Rail: 2%
- Aviation (Intrastate Only): 2%

1MMTCO2E = million metric tons carbon dioxide equivalent emissions
Goals of Proposed Regulation

• Reduce GHG emissions from long haul tractors by reducing
  – Tractor and trailer aerodynamic drag
  – Tire rolling resistance
• Tractor aerodynamics
  – Streamlined hood, sleeper cab roof fairings, gap fairings, fuel tank fairings, aerodynamic bumper, and mirrors
• Trailer aerodynamics
  – 53-foot or longer box-type trailers
  – Side skirts, front gap fairings, rear trailer fairings
• Low rolling resistance tires
Goals of Proposed Regulation (continued)

• U.S. EPA SmartWay Program
  – Voluntary partnership
  – Test protocols and guidelines
  – Certifies fuel efficient tractors, trailers, and technologies

• Staff proposal establishes a California mandatory program based on SmartWay Program
## Impacted Tractors and Trailers

<table>
<thead>
<tr>
<th></th>
<th>CA</th>
<th>Out-of-State</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractors</td>
<td>37,000</td>
<td>399,000</td>
<td>436,000</td>
</tr>
<tr>
<td>Trailers</td>
<td>93,000</td>
<td>997,000</td>
<td>1,089,000</td>
</tr>
</tbody>
</table>

Calendar Year 2010
Available Technology (New)

New SmartWay Certified Tractors

- Fully aerodynamic tractor with low rolling resistance tires
- Manufacturers:
  - Freightliner, International, Kenworth, Mack, Peterbilt, Volvo
- Fuel efficiency improvement 3% - 4.5% - resulting in annual fuel cost savings of $1,800
- Average incremental cost: $2,100
Available Technology (New)

**NEW SmartWay Certified Trailers**

- Purchased directly from trailer manufacturer/dealer:
  - Great Dane, Hyundai Translead, Manac, Stoughton Trailers, Strick Corp., Trailmobile Canada, Utility Trailer Manufacturing, Wabash National Corp.
- Fuel efficiency improvement of 6.5% minimum - resulting in annual fuel cost savings of $1,300 to $3,300
- Trailer incremental cost: $2,900
- Refrigerated-van certification coming soon
Available Technology (In-Use Retrofit)

SmartWay Verified

Aerodynamic Technologies

• Side skirts
  – 4% or greater fuel efficiency improvement
  – Fleets have experienced positive results
  – Average cost: $1,900
Available Technology (In-Use Retrofit)

**SmartWay Verified**

**Aerodynamic Technologies**

(continued)

- **Front gap fairings**
  - 1% or greater fuel efficiency improvement
  - Average cost: $870

- **Rear trailer fairings**
  - 1% or greater fuel efficiency improvement
  - Average cost: $2,800
Available Technology (New and In-Use Retrofit)

**SmartWay Verified Low Rolling Resistance Tires**

- Dual or single wide tires
  - 3% or greater fuel efficiency improvement (tractor-trailer combination)
  - Incremental cost: $0 to $50 per tire ($0 to $900 per tractor-trailer)
Emerging Technologies

- Manufacturers continuously developing & improving product functionality & durability
  - Retractable skirts
  - Flexible skirts
  - Double channel skirts
  - Flow control devices
Scope of Regulation

• Tractors that pull box-type trailers that are 53-foot or longer
  – Greater than 26,000 pounds (Class 7 and 8)
  – Operate in California
• 53-foot or longer box-type trailers
  – Dry van and Refrigerated van
• California and out-of-state registered
• Primary responsible parties: Owners
• Other responsible parties: drivers, motor carriers/ CA-based brokers, and CA-based shippers
Proposed Requirements

Tractors

• 2011+ model year (MY) sleeper cab tractors
  – SmartWay certified
  – January 1, 2010

• 2011+ MY day cab tractors
  – SmartWay verified low rolling resistance tires
  – January 1, 2010

• All pre-2011 MY tractors
  – SmartWay verified low rolling resistance tires
  – January 1, 2012
Proposed Requirements

Trailers

• 2011+ MY 53-foot or longer box-type
  – SmartWay certified or
  – Retrofitted with SmartWay Technologies:
    • Low rolling resistance tires
      – Minimum of 1.5% fuel efficiency improvement
    • Aerodynamic devices
      – Minimum of 5% fuel efficiency improvement for a dry van, and
      – Minimum of 4% fuel efficiency improvement for a refrigerated van
Proposed Requirements

Trailers
(continued)

• Pre-2011 MY 53-foot or longer box-type
  – Same requirements as 2011+ MY trailers
  – Delayed compliance until January 1, 2013
  – Three Optional Plans
    • Small Fleet Compliance Plan
    • Large Fleet Compliance Plan
    • Reefer Van Compliance Plan
Proposed Requirements

Optional Compliance Schedule
- 2010 and Older MY Trailers -

• Small fleet – 20 or less trailers
• Large Fleet – 21 or more trailers
  – Phase-in: 2010 - 2015
  – Early compliance credit
• Refrigerated van – 2003-2008 MY
  – Phase-in: 2017 - 2019
Proposed Requirements

Exemptions

- Short haul tractors and trailers
  - 100 mile radius or less than 50,000 miles per year
- Drayage tractors and trailers
  - Operate 100 mile radius of port or intermodal rail yard
- Container chassis
- Drop frame vans
- Curtain side vans
- Authorized emergency vehicles
- Military tactical vehicles
GHG Emission Benefits
(MMTCO2E)

2020 GHG Emission Benefits

- California: 1 MMTCO2E
- Nationwide: 6.7 MMTCO2E

Cumulative GHG Benefits 2010-2020

- California: 7.8 MMTCO2E
- Nationwide: 52.1 MMTCO2E
Additional Benefits

• NOx reductions in California
  – 2014 = 4.3 tons per day
  – 2020 = 1.4 tons per day

• Contribute towards SIP commitments

• Cumulative fuel savings (2010-2020)
  – California = 750 million gallons diesel fuel
  – Nationwide = 5 billion gallons diesel fuel
## Costs and Benefits

<table>
<thead>
<tr>
<th></th>
<th>Tractor-Trailer Combination</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New SmartWay Certified</td>
<td>In-Use Retrofitted</td>
</tr>
<tr>
<td>Fuel Savings (%)</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>Tractor incremental cost</td>
<td>$2,100</td>
<td>$250</td>
</tr>
<tr>
<td>Trailer incremental cost</td>
<td>$2,900</td>
<td>$2,900</td>
</tr>
<tr>
<td>Fuel savings (gallons/year)</td>
<td>1293</td>
<td>1034</td>
</tr>
<tr>
<td>Annual Savings @ $3.14/gallon</td>
<td>$4,060</td>
<td>$3,250</td>
</tr>
<tr>
<td><strong>Payback period in years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Trailer : Tractor = 1:1)</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>(Trailer : Tractor = 2.5:1)</td>
<td>2.3</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Assume: baseline fuel economy of 5.8 miles per gallon, and an average long haul annual mileage accrual rate of 100,000 miles.
Economic Impacts

• Initial capital cost to businesses significant
  – But so are the fuel savings
• Costs and savings to businesses 2010-2020
  – Costs $8.5 billion
  – Savings $17.1 billion
• Net savings (2010-2020) $8.6 billion
Proposed 15-Day Changes

- Remove 100-mile operating range exemption for tire requirement
- Remove reporting requirements for refrigerated van compliance provision
- Exempt solid waste trailers
- Other minor modifications
Integration of Proposed Regulations
Each Regulation Targets Different Fleets

- Truck and Trailer GHG Regulation
  - Newer long haul fleets
- Truck and Bus Regulation
  - Older in-state fleets
- Different compliance timelines
- Incentives available for both
Potential Overlap is Minimal
In-State and Out-of-State Tractors

- Efficiency Only
- Potential Overlap
- Ahead of Regulation
- Exhaust Clean-up Only

Truck Tractor Age (Years)

Population of Truck Tractors

50,000 Miles

More
Less

-1 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29

Truck Tractor Age
Few Trucks Have Overlapping Costs

- No Impacts: 24%
- Truck and Trailer GHG Only: 40%
- Potentially Affected by Both: 5%
- Truck and Bus Only: 31%
Enforcement to Ensure Equity

- Expand existing inspection efforts
  - Weigh stations, random roadside, and fleet
- Web based database for vehicle records
- Crosscheck other programs
- Record audits
- Additional resources requested
Availability of Incentive Funds
Incentive Funding Will Play An Important Role

- Economic challenges
- Obtaining traditional credit difficult
- Substantial grants available
- Couple with loan guarantees
- Funding provides critical role
Incentives Portfolio

- **Carl Moyer Program**
  - About $140 million per year
  - Funds available for grants and vouchers

- **Proposition 1B**
  - $1 billion over several years
  - Funds available for grants and loan guarantees

- **Assembly Bill (AB) 118**
  - $350+ million for low interest loans

- **Lower Emission School Bus Program**
  - About $200 million for replacements and retrofits
Selected 2009 Changes to Carl Moyer Guidelines

• Facilitate funding for small fleets

• Add three years of model year eligibility

• Add additional flexibility for minimum project life

• Add “Two Vehicles to One” option

• Grantees: use BACT Compliance Schedule during contract
Carl Moyer Program: Vouchers

• New grant option beginning in 2009
• Provides approx. $30,000 - $35,000 per truck
• Simplified requirements
  – Quick turn around (1 week)
  – Voucher good at participating truck dealers
  – Available statewide
• Can be combined with loan guarantee
AB118 Loan Guarantee Program

- Priority for small fleets and those with “financial hardship”
- Target “nearly bankable” small businesses

\[
\text{bankable} \quad \text{target} \quad \text{unbankable}
\]

- Loans available by Spring 2009
- Loans for used trucks, new trucks, SmartWay products and exhaust retrofits
Proposition 1B Funding

- $1 billion over several years
  - First installment of $250 million in 2007-2008
  - Second installment of $250 million in 2008-2009
- Replacement funds available for 2003 and older trucks
- Available for large and small fleets
- Grants competitive: cost-effectiveness & reductions
- Loan guarantee program for small fleets in development
- Guideline revisions scheduled for February 2009
  - Add funding options for Class 7 trucks (over 31,000 GVWR)
  - Fund small fleets 2 years before compliance deadline
Funding Options for Small Fleets
(1-3 trucks)

- **Fleet Modernization Grants (old truck 1993 or older)**
  - Up to $50,000 for 2007-2009 replacement truck
  - Up to $75,000 for 2010+ replacement truck
  - Exhaust retrofits (up to 100% of cost)

- **Voucher Program (old truck 1993 or older)**
  - Approx. $30,000 - $35,000 for replacement truck
  - Focus on quick turn-around (one week)

- **Truck Replacement Grants (old truck 2003 or older)**
  - Up to $35,000 for 2007-2009 used replacement truck
  - Up to $45,000 for 2007-2009 new replacement truck
  - Up to $50,000 for 2010+ replacement truck
  - Funding also available for retrofits and repowers

- **Loan Guarantees**
  - Lower interest rates and qualification criteria
  - Loans for new & used trucks and SmartWay products
Funding Options for Large Fleets
(4 or more trucks)

• Truck Replacement Grants (old truck 2003 or older)
  – Up to $35,000 for 2007-2009 used replacement truck
  – Up to $45,000 for 2007-2009 new replacement truck
  – Up to $50,000 for 2010+ replacement truck
  – Funding also available for retrofits and repowers

• Loan Guarantees
  – Potential funding for fleets in “financial hardship”

• Retrofits
  – Limited funding for Level 3 exhaust retrofits
  – Future funding opportunities for NOx retrofits that bring used trucks into compliance
Funding Options for Other Fleets

- **Agricultural Vehicles**
  - Limited use vehicles: through 2013
  - Low use & specialty vehicles: through 2019

- **School Buses**
  - $200 million Lower Emission School Bus Program
    - At least 3,500 exhaust retrofits
    - Funding could retrofit every eligible public school bus
  - Additional local and state funds
Program Provides Multiple Access Points

- Air Resources Board
- Truck Dealerships
- Air Districts
- Truck Owner
- Truck Stops
- Banks

Diagram shows connections between these entities, indicating access points for the program.
## Incentives Portfolio Summary

<table>
<thead>
<tr>
<th>Fleet Type</th>
<th>Programs</th>
<th>For What</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small fleet (1-3 trucks)</td>
<td>Grants; Vouchers; Loan guarantee</td>
<td>Replacement of 1993 or older truck with 2007 or newer truck; Replacement of 1993 or older truck with 2010 or newer truck; Exhaust retrofit</td>
<td>Carl Moyer AB 118</td>
</tr>
<tr>
<td>Fleets moving goods in a trade corridor</td>
<td>Grants</td>
<td>Replacement of 2003 or older truck with 2007 or newer truck; Exhaust retrofit;</td>
<td>Proposition 1B</td>
</tr>
<tr>
<td>1-10 trucks (financial hardship)</td>
<td>Loan guarantee</td>
<td>2007 or newer truck; Exhaust retrofit; GHG Efficiency</td>
<td>AB 118</td>
</tr>
</tbody>
</table>
Tying it all Together

• Many funding options, significant aid
• Coordinated programs: grant programs as down-payment, loans can complement
• Integrated outreach to best assist affected fleets
• Coordinated approach can get new truck ~ $800 per month
Recap and Closing
Importance of Proposed Truck and Bus Regulation

- Largest component of SIP reductions
  - Cannot attain PM and ozone standards
- Billions in transportation funding at risk
- Thousands of lives at stake
- Benefits outweigh costs
- State’s obligations cannot be delayed
  - Industry alternatives do not meet SIP targets
Importance of Proposed Truck GHG Regulation

• Key early action measure in Scoping Plan
• Investment pays for itself
• Environmental benefits
Needed Technology is Available Now

- Numerous retrofits verified
- New trucks already have filters
- 2010 engines on track
- Low-rolling resistance tires common
- Smartway tractors available
- Trailer retrofits now in use
Minimizes Economic Impacts

- No actions required until 2010
- Significant flexibility provided
- Small fleets have additional time
- Newer trucks ahead of exhaust requirements
- Little overlap from both regulations
Incentives Will Play an Important Role

- Over $1 billion is available
- Will target those most in need...small fleets
- Numerous ARB programs being coordinated
- Private lenders will be key partners
Recommendation

• Adopt staff proposal with 15-day changes
• Direct staff to:
  – Evaluate and report on localized impacts from agricultural provisions by end of 2009
  – Monitor potential impacts on pupil transportation