AB 32 Implementation Update:
Transportation

California Air Resources Board

February 28, 2008
California 2004 GHG Emissions
(480 MMTCO$_2$E)

- Transportation: 38%
- Industrial: 20%
- Residential: 6%
- Agriculture: 6%
- Electricity Generation (Imports): 13%
- Electricity Generation (In State): 12%
- Commercial: 3%
Transportation Sector Emissions (MMTCO$_2$E)

*Preliminary Estimate

Year

- 1990
- 2004
- 2020 BAU*
- 2020 w/Early Actions*

Transportation GHG Emissions (MMTCO2E)
Increase in Vehicle Use

- Growth in Statewide Vehicle Miles Traveled (VMT)
  - Increased 35% between 1990 and 2007
  - Expect 20% increase between now and 2020
  - Expect 50% increase between now and 2040
- VMT increase due to population growth and more per capita driving
- VMT trend must be slowed, ultimately reversed
Overarching Strategies

- Vehicle Technology
  - GHG Mile
  - AB 1493 Regulation

- Fuels
  - GHG Gallon
  - Low-Carbon Fuel Standard

- Vehicle Use
  - VMT
  - Transp. & Land Use Strategies
Cars and Trucks—Biggest Source

- Heavy Duty** (gas & diesel) - 20%
- Airplanes (Intrastate only) - 2%
- Locomotives - 2%
- Ships (within 24 nm) - 2%
- Passenger Vehicles* (gas & diesel) - 74%

Scoping Plan Vehicle Measures

- Adopted measures
  - AB 1493 (Pavley)
- Early Actions
  - Strengthening the Pavley regulation
  - Cool Paints
  - Truck Efficiency
  - Additional Early Actions:
    - Tire Inflation, Enforcement, Hybridization of Urban Trucks, TRUs (electric standby)
• GHG standards adopted in 2004
  – Applicable to light duty vehicles beginning model year 2009; phased-in through 2016
• Adopted by 12 other states
• U.S. EPA denied waiver
  – U.S. EPA decision challenged in court by California and other states
Vehicle Technology Symposium

• April symposium to explore additional ways to reduce GHG emissions from passenger vehicles
  – Current technologies
  – Advanced technologies
  – Pricing mechanisms
  – Fuels
  – Driving behavior

• Focus on 2020 and 2050
Low Carbon Fuel Standard (LCFS)

- Achieve 10 percent reduction in carbon intensity by 2020
- Estimated reduction of 10–20 MMTCO$_2$E by 2020
- Reduce dependency on petroleum-based fuels
- Diversify CA’s options for transportation fuels
Reducing VMT

• Land Use Sub-Group of the Climate Action Team (LUSCAT)
  – Multi-agency planning effort
• Local leadership
• Topic of 2008 Haagen-Smit Symposium
• Topic of Board update in May
Summary

• Transportation Sector has opportunity for significant GHG reductions
  – Cleaner engines
  – Lower carbon fuels
  – Reduction in VMT
• Reductions from this sector are essential to meeting the GHG emission reduction targets
Comparison of GHG Reductions Achievable Under New Federal Fuel Economy Standards Versus Under CA’s GHG Standards
Recent Events

- CA GHG regulations
  - Adopted - 2004
  - Waiver request to EPA - 2005
  - Two auto industry lawsuits uphold CA’s regulation - 2007
- Federal energy bill signed – Dec 19, 2007
  - Sets 35 mpg fuel economy (CAFÉ) std. for 2020 models
  - NHTSA to decide interim standards, beginning with 2011 models
EPA Waiver Denial

• EPA Administrator Johnson stated:
  – CA does not have a “need to meet compelling and extraordinary conditions” (*condition to receive waiver*)
  – Climate change is a national problem
    • National solution (i.e. CAFÉ) more effective
  – New federal legislation more stringent than CA regulation
• No written support for his position
ARB Analysis

• Evaluated impact of federal fuel economy standards (CAFÉ) on GHG emissions
  – Compared to CA GHG standards
    • In California
    • In other States and Provinces
  – Compared by calendar year, and cumulatively from now to 2016 and 2020
Conclusion of ARB Analysis

• ARB GHG standards reduce more GHG emissions than new federal fuel economy standards
  – In CA, and other states
  – In short term, and in long term

• Results at:
  http://www.arb.ca.gov/cc/ccms/reports/pavleycafe_reportfeb25_08.pdf
## Comparison for California

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>GHG Emissions Reduced*</th>
<th>CA GHG standard</th>
<th>Fed. Fuel Economy Std.</th>
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<tbody>
<tr>
<td>2016</td>
<td>16.4</td>
<td></td>
<td>7.5</td>
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* MMT CO2E/year
Comparison for California

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* MMT CO2E/year
Cumulative GHG Reductions In California

![Graph showing cumulative GHG reductions in California with Pavley regulation and only CAFE standard. The graph includes a line for California with Pavley regulation and a dashed line for California with only CAFE standard. The years 2009 to 2020 are marked on the x-axis, and the cumulative reduction of CO₂E (MMT) is marked on the y-axis. The graph illustrates a significant increase in cumulative reductions with the Pavley regulation compared to the CAFE standard.]

Pavley

Only Fed. CAFÉ std.
Cumulative GHG Reductions in Other States*

* CA + 12 states that adopted Pavley stds.
CA GHG Standards
More Effective Nationally

Nationwide GHG cumulative reductions by 2020
### Comparison Based on Fuel Savings in Other States*

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<th>Model Year</th>
<th>CA GHG Standards**</th>
<th>Fed. CAFÉ Standards</th>
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<td>2016</td>
<td>32.3</td>
<td>29.7</td>
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* Assumes PC/LDT1 and LDT2 sales split 50%/50%

** Based on CO2 portion of GHG emissions reduced
## Comparison Based on Fuel Savings in Other States*

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<th>Ave. Fuel Economy, mpg New Vehicles</th>
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<td>2020</td>
<td>39.2</td>
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* Assumes PC/LDT1 and LDT2 sales split 50%/50%

** Based on CO2 portion of GHG emissions reduced
Why Are CA GHG Standards More Effective?

• Start earlier
• Ramp up quicker
• Address the problem – GHG – directly
• No loopholes (e.g. FFV credit)
• Will become more stringent post-2016
  – “Pavley 2”
Pavley 2 Standards

• Planned for adoption in 2010
  – Effective with 2017 models
• Based on technologies now becoming mainstream
  – HEVs, PHEVs, Diesel
• GHG reduction increase to 40+% (from 30% of Pavley 1)
  – 4 MMT CO2E additional benefit in 2020
  – Much more by 2030
CA GHG standards are more effective*
- In reducing GHG emissions
  - In any individual year
  - Cumulatively
- In saving fuel
- In CA alone
- In other 12 “Pavley” states
- Nationwide

Pavley 2 will put us on path to 2050 goal
- 80% reduction in GHG

* Compared to federal CAFE