A New Era for Transportation Fuels

*Governor Schwarzenegger’s Low Carbon Fuel Standard and Other Transportation Initiatives*

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California Energy Commission

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The Nation State Of California

- 5th largest economy in the world
- Population – expected to grow from 36 million now to 45 million by 2025
- Vehicle Miles Traveled: 1980-2000 increased 3.3% per year
- 5th largest consumer of energy in the world
- 2nd largest consumer of gasoline and diesel in the world – only the US consumes more
- Approximately 26 million registered vehicles
- $150 million for gasoline and diesel spent daily
The Heart of the Problem

Demand for Fuels: Gasoline, Diesel, and Jet

"Narrowing the Gap"

Projected Fuel Supply for California—With No Change in Imports

5.8 billion gallons

Billion Gallons

Transportation is a Major Source of Greenhouse Gas Emissions

- **U.S.**
  - Commercial: 40%
  - Residential: 32%
  - Industrial: 16%
  - Transportation: 7%
  - Other: 4%

- **California**
  - Commercial: 20%
  - Residential: 28%
  - Industrial: 41%
  - Transportation: 5%
  - Other: 6%

California is Overly Dependent on Petroleum for Transportation

2005 Demand for Petroleum and Alternative Fuels
(millions of gallons)

- Gasoline (excluding Ethanol): 14,963
- Jet Fuel: 2,960
- Diesel: 3,734
- Ethanol: 53.5
- Other Alternative Fuels: 955
Gasoline Prices are Volatile and Trending Upwards

Regular-Grade Gasoline Retail Prices
State Average vs. National Average

Cents/Gallon

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A statewide goal to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020.

Goal will be accomplished by establishing a **Low Carbon Fuel Standard** ("LCFS") for transportation fuels sold in California.
The Low Carbon Fuel Standard

- Requires fuel providers to decrease carbon intensity of average annual fuel sales
- Standard measured on a lifecycle basis
- **Performance-based**: allows averaging, banking and trading to achieve lowest cost and consumer-responsive solutions
- **Fuel-neutral**: Fuel providers will choose which fuels to sell and in what volumes
Alternative Fuels are Not Created Equal

Note: This illustration does not include all low carbon fuels, such as hydrogen or electricity.

Source: NRDC
Flexible Options for Compliance

Fuel providers will have different options by which to comply, including:

- Blending or selling increasing amounts of lower carbon fuels
- Using previously banked credits
- Purchasing credits from fuel providers who earned credits by exceeding the standard
Examples of Possible Low Carbon Fuel Strategies

- **E10** – Increase blending of ethanol from today’s E6
- **E85** – Sell high blend ethanol for use in Flex Fuel Vehicles
- **Low Carbon Ethanol** – “cellulosic” materials have 4 to 5 times lower GHGs than today’s corn
- Hydrogen, Natural Gas, Electricity…
Benefits

- **Less Gasoline Consumption:** Displace 20% of gasoline consumption

- **Larger renewable fuels market:** Expand California’s alternative fuels markets by 3 to 5 times, while reducing GHG emissions

- **More alternative fuel and hybrid vehicles:** 7 million advanced technology vehicles, more than 20 times current level
Rationale for the Low Carbon Fuel Standard

- A statewide cap-and-trade system alone unlikely to create a large enough price signal to induce sufficient, timely investments in new fuel and vehicle technologies
- LCFS creates a substantial, certain market for low carbon fuels and a stable investment environment

Benefits versus Renewable Fuel Standard

- **More flexible** since it includes electricity, hydrogen, natural gas, etc, rather than just biofuels
- Ensures greenhouse gas reductions
- Penalizes the use of high carbon, fossil fuels (coal to liquids)
Other Transportation Initiatives

- Reduces vehicular GHG emissions ~30% by 2016 (California’s GHG Tailpipe Standard)
- Possible automaker responses: engine valve technologies, transmissions, integrated starter-generator, efficient A/C, alternative refrigerants (HFC-152a), diesel, hybrids
- Alternative compliance mechanism includes alternative fuels
California’s Reduction Strategy for Transportation-related GHGs

Passenger Vehicles CO2 Emissions, End-Use Only

- Baseline
- 1493 Vehicle Stds
- VMT Reduction
- Low-Carbon Fuel Std
Confronting Global Climate Change requires a comprehensive approach, using a combination of market-based programs and performance-based standards.

Transportation must contribute its fair share and the three key strategies are: cleaner cars, low-carbon fuels, and reduce travel demand.

Low Carbon Fuel Standard ensures we can meet twin goals of reducing petroleum dependency and GHG emissions.