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Investment Plan
for the
**Alternative and Renewable Fuel and
Vehicle Technology Program**

**AB 118 Advisory Committee
Meeting**
July 9, 2008



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Program Goal

The goal of the Alternative and Renewable Fuel and Vehicle Technology Program is to "...develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies."

(Health and Safety Code Section 44272(a))

Introduction State Policy Initiatives

- Global Warming Solutions Act (AB 32): reduce GHG emissions to 1990 levels by 2020.
- Reducing California's Petroleum Dependence: first recommended state alternative fuels goals in 2003.
- Bioenergy Action Plan: sets aggressive goals for instate biofuels production.
- Low Carbon Fuels Standard: reduce carbon intensity by 10 percent by 2010.
- State Alternative Fuels Plan (AB 1007): a "blue print" for advancing new fuels and vehicle technologies.
- Alternative and Renewable Fuels and Vehicle Technology Program (AB 118): transform the California's fuel and vehicle market

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The Global Climate Solutions Act of 2006

- Establishes first-in-the-world regulatory and market-based program to achieve real, quantifiable, cost-effective GHG reductions
- Creates a statewide GHG emission limit to reduce emissions to 1990 levels by 2020
- Designates ARB as state agency charged with monitoring and regulating sources of GHG emissions

State Bioenergy Goals

- Governor's Executive Order S-06-06 (April 2006) sets instate production and use targets.
- Established targets to increase the in-state production of bioenergy and biofuels
- Governor released the Bioenergy Action Plan in July 2006, committing state agencies to take a series of specific actions.
- The Bioenergy Interagency Working Group meets regularly to address and seek to remove barriers to sustainable bioenergy development.

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California's Low Carbon Fuel Standard

- On January 9, 2007, the Governor issued Executive Order S-1-07, establishing the world's first Low Carbon Fuel Standard for transportation fuels.
- Petroleum refiners, gasoline sellers and fuel suppliers must reduce the carbon content of their fuels by 10 percent by 2020.
- By regulating carbon fuel content, this standard will support the state's greenhouse gas reduction targets, while promoting the use of alternative fuels.
- Adding ethanol or other biofuels into gasoline is one option for meeting the Standard; advanced biofuels show promise.
- The California Air Resources Board expects to complete its rulemaking in late 2008.

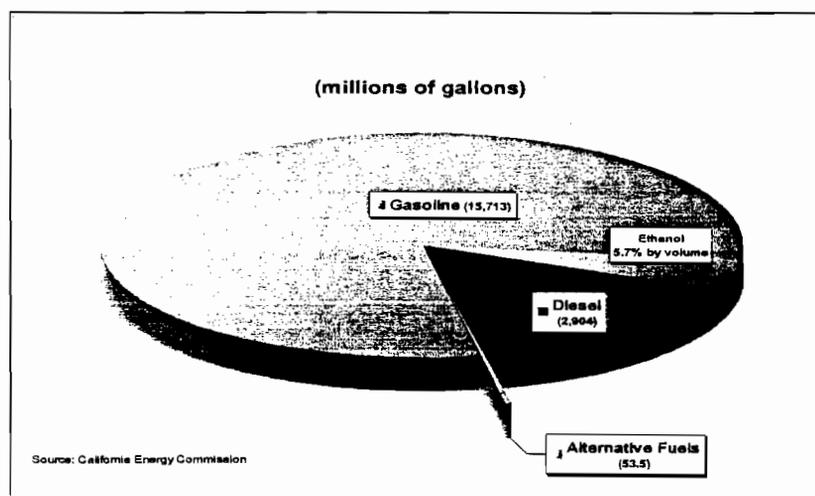
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State Alternative Fuels Plan

- December 2007 the Energy Commission and Air Resources Board adopted a joint plan to expand the use of alternative fuels in California (AB 1007).
- Low Carbon Fuel Standard alone cannot achieve all of the needed GHG reductions.
- A combination of regulations or standards, financial incentives, and advanced technology is needed to achieve policy goals.
- Substantial public and private investment is needed for vehicles, fueling infrastructure and advanced technology.
- A three-part strategy—advanced technology, alternative fuels, and travel reduction—is recommended.

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California's Petroleum and Alternative Fuels Demand



Alternative Fuel Use Goals

- 26% Alternative Fuels Use By 2022 is:
 - 24.2 Billion gallon demand in 2020; 4.84 Billion gallons of Alternative Fuels
 - Equates to an additional 400 million gallons production/use of Alternative Fuels, annually, for the next 12 years
- Enables 15% Petroleum Fuel Reduction by 2022
 - Improved Vehicle Efficiency
 - Reduced Vehicle Miles Traveled (VMT)

Plan Conclusions

- Sizable Investment is Needed for Alt Fuels Commercialization- \$100-200 Million per/year
- Under the Moderate Development Case, we can Meet 2020 and 2030 Alternative Fuels Goals
- *Nearly* All Alternative Fuels are 10% Lower Carbon, and Lower in Criteria Emissions, Now.

Table 1: Moderate Case-Maximum Feasible Fuel Results

Source: State Alternative Fuels Plan, Adopted December 5, 2007.

Mile Stone Year	2012		2017		2022	
	Fuel Use	GHG avoided	Fuel Use	GHG avoided	Fuel Use	GHG avoided
Propane	47.7	-0.1	173	0.1	282	0.2
Natural Gas	306.1	1.5	518	2.5	885	4.4
E-10 CCGE (MW Corn)	1394	3.8	1354	3.8	1327	3.6
E-85 CCGE (CA Poplar)	83	0.7	434	3.9	738	6.6
Hydrogen	40	0.3	80	0.6	440	4.4
Electricity	86	2.1	187	5.1	376	6.7
XTLs	320	0	530	0	630	0
Renewable Diesel	130	1	310	2.4	530	4.2
Dimethyl Ether	13	0	62	0	101	0
Total	2360	10	3565	18	5220	30

Fuel Use is measured in million gasoline gallon equivalent (GGE).
 GHG is measured in million metric tons per year.

Alternative Fuels Incentive Program (AFIP)

- \$ 25 Million for alternative fuels incentives, co-planned by ARB and CEC- in 2006/2007
- The most current, similar incentive program- useful for this Program planning
- Proposals totaling over \$ 150 million received for the \$25 Million available
- Many of the funding categories for that program will be considered for this one

Multiple Policy Goals

Under the Moderate Development Case, it is possible to:

- Reduce GHG emissions, earlier and as surplus to regulations;
- Reduce Petroleum Consumption, Increase Supply and Use of Alternative Fuels;
- Achieve Bio-energy goals for transportation;
- Reduce Criteria Emissions with no 'backsliding';
- Provide economic development; Jobs/job-training, businesses, and an efficient and competitive transportation fuels market

Overall Program

- Reduce GHG emissions on a well-to wheels basis.
- Bring fuel and vehicle choice and competition to the one-source Transportation fuel market without adopting one preferred fuel or technology.
- Avoid, and lessen, environmental impacts and maintain the sustainability of California's natural resources.
- Leverage existing government programs and private investment.
- California Develop Fuel Supplies from ALL Non-Petroleum, Non-Conventional Sources
- Increased Incentives for "Enhanced Attribute" Alternative Fuels

Eligible Projects and Activities

- Alternative and Low Carbon Fuels
- Infrastructure
- Vehicle Technology
- Commercialization
- Transit Projects
- Workforce Training
- Public Outreach
- Fleet Retrofits

Leveraging Funds and Creating Partnerships

- Establish Financing program through State Treasurer's Office (CAEATFA) for in-state vehicle manufacturing and fuel production
- Seek and Establish partnerships with Federal Agencies (DOE, USEPA, DOT, USDA)
- Develop partnerships with other state and local agencies, Clean Cities Coalitions, alternative fuel and vehicle associations

Provide Consumer Choice

- Increase Public education and outreach on fuel and vehicle choice to consumers (like "Flex Your *Fuel* Power")
- Continue and expand AFV purchase incentives (from ARB's AFI Program)
- Establish alternative fueling stations, retail and fleet, near groupings of vehicles
- Encourage Auto manufacturers to certify alternative fuel vehicles in several models, fuels and technologies
- Demonstrate pre-commercial and commercial fuel and vehicle technologies with auto journals, consumer groups and high-profile individuals and organizations

Increase Economic Development

- In-State Fuel Production - Develop Waste Stream Feedstocks- and Vehicle Manufacturing
- Attract new businesses and expand existing companies for alternative fuels production, vehicle, fuel storage and other vehicle components manufacturing.
- Foster "clean energy enterprise zones" and workforce development for 'green collar' professionals

Initial Funding Opportunities

- Refurbish and expand existing state/private funded 'assets'; fueling stations for retail and private, state and local fleets
- State, Local and Private Fleet AFV purchase Incentives-Light, medium and heavy-duty vehicles
- Assist establishment of alternative fuel stations for AFV 'Groupings', and other strategic locations
- Establish Medium-Duty & Heavy-Duty "Centers of Excellence for pre-commercial and commercial deployment

Program Implementation

- Investment Plan will form the basis for funding decisions.
- Continued public process for planning and developing funding mechanisms.
- Develop strong information base on fuels and vehicle technologies including environmental impacts, sustainable production and use, market potential and economic impact on State.