CALIFORNIA ENERGY COMMISSION

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

AB 118 Advisory Committee Meeting

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Program Purpose and Objectives

- AB 118 Program Purpose:

  "develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies"

- Creating a Framework for Sustainability:

  "establish sustainability goals to ensure that alternative and renewable fuel and vehicle development projects, on a full fuel-cycle assessment basis, will not adversely impact natural resources, especially state and federal lands"

- Investing in Clean Economic Development:

  Financial incentives and private investment

  Encourage market creation and consumer choice

  Leverage innovation and use renewable and waste resources

Agenda

- Advisory Committee Suggestions
- Analyses Performed
- Regulations Prepared and Submitted
- Draft Investment Plan Summary Review
- Proposed Funding Recommendations
- Advisory Committee Comments
- Stakeholder Presentations and Public Comments
- Investment Plan Workshops Schedule
- Program Implementation Schedule

Advisory Committee Suggestions

- Guided by FFCA - Commitment to Updating
- Goal Driven Methodology for Allocating Funds
- "Reverse Engineering" from 2050 Vision for GHG Reduction
- Perform "Gap Analysis"
- Continue Sustainability, Market, and Incentive Studies
- Coordination with PIER Alternative Fuels Roadmap
- Evaluate Capital Efficiency
- Emphasize Economic Development, Workforce Training

Analyses Performed

- Updating GREET Full Fuel Cycle Assessment
- "Back-casting" from the *2050 Vision (AB 1007)*
  - Initially Light-Duty Vehicles - Applied CALCARS Model
  - Evaluated Medium- and Heavy-Duty Vehicles
- Performed GAP Analysis - TIAX
- Evaluated Partner and Stakeholder Inputs

Regulations Prepared and Submitted

- Criteria For Project Funding
- Sustainability Goals and Evaluation Criteria
- Definitions
- Funding Restrictions
- Advisory Body, Member Selection, Duties
- Purpose of Investment Plan

Summary-Draft Investment Plan

- Determining Priorities and Opportunities
  - AB 32 goal to reduce GHG emissions back to 1990 levels by 2020
  - Governor's Executive Order S-03-05 goal to reduce GHG emissions 80 percent below 1990 levels by 2050
  - Use *2050 Vision* from *State Alternative Fuels Plan* to examine and set necessary "trajectory" to achieve state's climate change goals
  - Establish market mechanisms to complement existing and future regulations

Summary-Draft Investment Plan

- Step 1: Relative Greenhouse Gas Reductions
  - Use *2050 Vision* (light-duty vehicles only) as starting point, and expand to include medium- and heavy-duty vehicles
  - Establish relative contributions for each fuel and vehicle category - to meet 2020 and 2050 goals
  - Use of Energy Commission's fuel demand forecast; incorporating effects of: "Pavley" regulations, the Low-Carbon Fuel Standard and assumptions for the reduction in vehicle miles traveled

Summary-Draft Investment Plan

- Relative Greenhouse Gas Reductions
  - Evaluates potential scenario to meet “fair share” reduction targets for transportation targets for 2020 and on to 2050
  - Works backward from *2050 Vision*, and populates assumptions with CALCARS model, and extrapolates vehicle/fuel efficiencies expected in 2050
  - Estimates the necessary carbon intensity of 2050 fuels
  - Assumes 20 percent reduction in vehicle miles traveled in 2050
  - Establishes 3 Fuel/Vehicle categories; **Super-Ultra-Low-Carbon, Ultra-Low-Carbon and Low-Carbon**
  - Establishes **Additional Fuel Economy Improvements** category

Summary-Draft Investment Plan

- Step 2. Gap Analysis
  - Determine where existing public and private funding in in place and adequate
  - Determine where “gaps” of needed funding exist in the development and deployment of alternative and renewable fuels and advanced vehicle technologies
  - Determine which identified funding gaps are anticipated and assumable by industry and stakeholders, and where additional funding is not needed

Summary-Draft Investment Plan

- Super-Ultra-Low-Carbon needs:
  - Support for fleet and retail hydrogen fueling stations
  - Support for mixed-use hydrogen fueling infrastructure (with transit, CNG/hydrogen, light-duty fleets and forklifts)
  - Support for low-cost renewable hydrogen production
  - Coordinated support (with ARB's AQIP) for light-, medium-, and heavy-duty PHEVs and BEVs
  - Support for early conversions for PHEVs and BEVs, and charging infrastructure

Summary-Draft Investment Plan

- Ultra-Low Carbon needs
  - Facilitate transition from existing ethanol production to lower-carbon feedstock production facilities
  - Develop new ethanol, renewable diesel, and biomethane production for use as transportation fuels
  - Expand installation of E-85 based on geographic distribution of FFVs
  - Develop fuel storage and blending terminals for renewable diesel distribution in Northern and Southern California

Summary-Draft Investment Plan

- Low-Carbon needs
  - Provide purchase incentives for light-, medium-, and heavy-duty vehicles coordinated with ARB, local air districts and ports
  - Support development of advanced medium- and heavy- duty natural gas and propane engines, and fueling and fuel storage technologies
  - Support new and refurbished natural gas and propane fuel infrastructure, in proximity to existing and planned vehicle fleets and populations

Summary-Draft Investment Plan

- Improved Vehicle Efficiency needs
  - Develop and demonstrate new light-duty engine design and vehicle component efficiency improvements
  - Support coordinated (with ARB's AQIP) development and demonstration of medium- and heavy-duty hybrid technology with diesel and alternative and renewable fuel engines

Summary-Draft Investment Plan

- **Non-Greenhouse Gas Funding Categories**
  - Sustainability Studies
  - Analytical and Program Support
  - Workforce Training / Economic Development
  - Support for Standards and Certifications
  - Public Education
  - Outreach

Summary of Funding Recommendations

	Relative GHG %	08/09 Recommend	%	09/10 Recommend	%	Total Recommend	%
Low-Carbon	33	26M	35	36M	36	62M	35
Ultra-Low-Carbon	12	10M	13	12M	12	22M	13
Super-Ultra-Low-Carbon	16	18M	24	23M	23	41M	23
Efficiency Improvements	39	7M	9	15M	15	22M	13
Non-GHG Categories	--	9M	12	10M	10	19M	11
Manufacturing & Production	--	5M	7	5M	5	10M	6
	100	75m	100	101M	101	176M	101

Program Implementation Schedule

- January 8, 2009 - Fifth Advisory Committee Meeting
- January 2009 - Public Workshops on the Investment Plan and the AB 118 Program
- February 2009 - Energy Commission Adoption of Investment Plan
- February/March 2009 - Solicitation Preparation and Release
- March/April 2009 - Proposal Evaluation; Recommendations for Funding
- April/May 2009 - Energy Commission Business Meeting Approval
- May 27, 2009 - Target Effective Date for Program Regulations