



CALIFORNIA ENERGY COMMISSION

Alternative and Renewable Fuel and Vehicle Technology Program

2010 Annual West Coast Collaborative Partners Meeting

**Peter Ward
California Energy Commission
Fuels and Transportation Division
September 30, 2010**



California Fuels and Transportation Background

- The transportation sector represents about half of all energy consumed and is 95% dependent on petroleum.
- In 2008, California's transportation sector consumed 15 billion gallons of gasoline and more than 3 billion gallons of diesel fuel, representing 40% of the state's greenhouse gas emissions (largest of any sector).



State Policies, Regulations and Incentives

- The State Alternative Fuels Plan
- Global Warming Solutions Act of 2006 (Assembly Bill 32)
- “Zero Emission Vehicle” regulations
- Low Carbon Fuel Standard
- Bioenergy Action Plan
- Renewable Portfolio Standard
- San Pedro Bay Ports Clean Air Action Plan



Key Policy Objectives

| Objectives | Goals and Milestones |
|------------------------------------|---|
| GHG Reduction | Reduce GHG emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050 |
| Petroleum Reduction | Reduce petroleum fuel use to 15% below 2003 levels by 2020 |
| Alternative and Renewable Fuel Use | Increase alternative and renewable fuel use to 11% of on-road and off-road fuel demand by 2012, 13% by 2017 and 26% by 2022 |
| In-State Biofuels Production | Produce in California 20% of biofuels used in state by 2010, 40% by 2020, and 75% by 2050 |



Alternative and Renewable Fuel and Vehicle Technology Program

- Established by Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), and administered by the Energy Commission.
- Subsequently amended by AB 109 (Núñez, Chapter 313, Statutes of 2008).
- “The emphasis of this program is to develop and deploy innovative technologies that transform California’s fuels and vehicle types to help attain the state’s climate change policies.”
- Program has a sunset date of January 1, 2016 (\$75 million for FY 08-09; \$101 million for FY 09-10). For FY 2010-11, the Energy Commission approved an allocation of \$108 million.
- Complements the Air Resources Board AB 118 Air Quality Improvement Plan (AQIP) funded at up to \$50 million per year.



Investment Plan

- The Energy Commission is required to develop and adopt the Investment Plan and to update it annually.
- The Investment Plan determines the priorities and opportunities for the Program.
- The Energy Commission must consult with an Advisory Committee as it develops its Investment Plan.
- Recently approved the Investment Plan which will guide our investments for 2010-2011.



Program Funding and Objectives

- Develop, produce, manufacture, and deploy alternative and renewable fuels, advanced vehicles, vehicle efficiency improvements for on-road and non-road applications.
- Emphasize workforce training and job creation.
- Foster education, promotion and technology centers.
- Prepare environmental, market and technology assessments.



Program Funding Summary for Fiscal Year (FY) 2008-2010

- ARRA Cost-Sharing - \$36.52 million
Received federal contributions of \$105.3 million and \$113.3 million in private funds
- Additional Program Opportunity Notices (PONs) and agreements- \$124.4 million
- Upcoming solicitations- \$14.65 million



ARRA Cost-Sharing - \$36.52 million

- Install 3,891 electric vehicle charging sites
- Demonstrate over 800 medium- and heavy-duty natural gas and hybrid-electric trucks.
- Develop high energy density lithium-ion batteries
- Provide public outreach and education to promote the deployment of heavy-duty natural gas vehicles



Closed PONs- \$124.4 million

- Biomethane production (\$21.5 million)
- Alternative and renewable fuel infrastructure (\$9.5 million)
- Medium- and heavy-duty vehicles (\$13.8 million)
- Manufacturing facilities for electric vehicles, alternative vehicles, vehicle components and batteries (\$19 million)
- Biofuel production plants (\$15 million)
- Hydrogen fueling infrastructure (\$19 million)
- Ethanol production incentive programs (\$6 million)
- Hydrogen dispensing equipment certification (\$4 million)
- Workforce training and development programs (\$15 million)
- Conversion of state-owned hybrid-electric vehicles to plug-in electric vehicles (\$600,000)
- Technical assistance for Program administration (\$1 million)



Anticipated Future Funding

- Goods movement Center of Excellence (\$ 7 million)
- Hydrogen fueling infrastructure for transit (\$ 3 million)
- Medium-duty propane school buses and other vehicles (\$2 million)
- Sustainability studies and certification programs (\$2 million)
- Technical analysis with National Renewable Energy Laboratory (\$1.2 million)
- Fuel/charging infrastructure spatial analysis with U.C. Irvine (\$.25 million)



Funding Allocation Summary for FY 2010-2011 Investment Plan

| | |
|--|----------------|
| • Battery Electric Drive | \$24.5 million |
| • Hydrogen Electric Drive | \$13 million |
| • Gasoline Substitutes | \$16.5 million |
| • Diesel Substitutes | \$9 million |
| • Natural Gas | \$22 million |
| • Propane | \$3 million |
| • Innovative Technologies/Advanced Fuels | \$8 million |
| • Market and Program Development | \$12 million |
| | ----- |
| Total | \$108 million |



Funding Allocation for Electric Drive

- Develop and demonstrate advanced on-road and non-road medium-and heavy duty technology - *\$14 million*
- Infrastructure and related activities - *\$3 million*
- Manufacturing facilities and equipment - *\$7.5 million*



Funding Allocation for Hydrogen

- Fueling infrastructure - *\$13 million*
 - The CEC will closely monitor the results from its Spring 2010 solicitation, and provide funding for FY 2010-11 accordingly.



Funding Allocation for Gasoline Substitutes

- Expansion of E-85 dispensers and retail outlets - *\$6.5 million*
- Gasoline substitutes production - *\$10 million*



Funding Allocation for Diesel Substitutes

- Diesel substitutes production - *\$5 million*
- Bulk terminal storage and blending facilities - *\$4 million*



Funding Allocation for Natural Gas

- Medium- and heavy-duty vehicles - *\$13 million*
- Upgrades to fueling stations - *\$2 million*
- Biomethane production plants and quality testing - *\$7 million*



Funding Allocation for Propane

- Light- and medium-duty vehicles - *\$3 Million*
- School Buses- *\$2 Million (from 2008-10)*



Funding Allocation for Innovative Technologies and Advanced Fuels (\$8 million)

Innovative Technologies and Advanced Fuels (\$3 million)

- Optimize alternative and renewable fuels, control systems and vehicle/fuel integrations systems
- Advanced internal combustion engines resulting in at least 40% efficiency improvements
- Lightweight materials
- Energy storage
- Battery recycling and reuse
- Electronic and electrified components
- Idle management technology
- Aerodynamic retrofits that decrease fuel consumption

Federal Cost Sharing- \$5 million



Funding Allocation for Market and Program Development

- Workforce Development and Training - *\$1 million*
- Program marketing and public education and outreach - *\$2.5 million*
- Sustainability studies - *\$2.5 million*
- Technical assistance and environmental / market / technology analyses - *\$6 million*



Next Steps

- Solicitations for the 2010-2011 Investment Plan to be developed over next several months.
- Development of the 2011-2012 Investment Plan is under way.



Thank You

Peter Ward

Program Manager

Fuels and Transportation Division

California Energy Commission

916-654-4639

pward@energy.state.ca.us



Questions?