



Hydrogen Funding and the AB 118 Investment Plan

Delivering Renewable Hydrogen
A Focus on Near-term Applications Workshop

Peter F. Ward
California Energy Commission
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AB 118 Key Provisions

- Provides CARB Funding For Two Programs (\$80 Million/Yr for 7 ½ Years)
 - Enhanced Fleet Modernization
 - Air Quality Improvement Program
- Provides CEC Funding For Alternative and Renewable Fuel and Vehicle Technology Program
 - \$100 Million/Yr For 7 ½ Years (\$75 Million in First Year)
 - Co-Fund Development and Deployment of Fueling Infrastructure, Vehicles, Engines and Other Vehicle Technology and Fuel Production Plants
 - Co-Fund Education, Outreach and Workforce Training



Program Objectives

- AB 118 Program Objectives:

“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



Eligible Projects

- Develop and Improve Alternative and Renewable Low Carbon Fuels
- Optimize Alternative and Renewable Fuels for Existing and Developing Engine Technologies
- Produce Alternative and Renewable Low Carbon Fuels in California
- Decrease the Overall Impact of an Alternative and Renewable Fuel's Lifecycle Carbon Footprint and Increase Sustainability to Meet 2020 and 2050 GHG Goals and Objectives



Eligible Projects

- Fuel Infrastructure, Fueling Stations and Equipment
- Improve Light-, Medium-, and Heavy Duty Vehicle Technologies
- Retrofit Medium-and Heavy Duty On-Road and Non-Road Vehicle Fleets
- Infrastructure Connected with Existing Fleets, Public Transit, and Transportation Corridors
- Workforce Training Programs
- Education, Promotion and Technology Centers



AB 118 Program Parallel Activities

1. Regulations to Guide Funding Disbursements
 - Sustainability Goals
 - Anti-Backsliding on Criteria Pollutants, Toxics and Multi-Media (CARB Regulations)
 - Existing Regulation Restrictions and Other Topics
2. Investment Plan
 - Identify Priorities and Co-funding Opportunities
 - Advisory Committee Insights
3. Strategic Alliances, Solicitations and Funding Mechanisms



Funding Recommendations

How recommendations were developed:

- **AB 118 and AB 109 direction and eligibility**
 - **Vehicles and Components**
 - **Fuel Infrastructure**
 - **Fuel Production**
 - **Manufacturing Incentives**
 - **Workforce Training**
- **GAP Analysis**
 - **Government and private sector investment**
 - **Relevance of other funding to California**
 - **Coordination with ARB**



Hydrogen Opportunities/Barriers

- **CEC Seeks Proposal Ideas that Increase and Accelerate Hydrogen Fuel and Vehicle Market Penetration in California**
- **Hydrogen Environmental Footprint is Smaller than Gasoline and Diesel and Could Achieve 40-50% GHG Emission Reductions (natural gas) 80%-90% (renewable sources)**
- **High Upfront Cost of Infrastructure Requires Reliance on Government Incentives and other mechanisms in near term**



Hydrogen Strategic Approaches

(Suggested in Early 2009 Investment Plan)

- Locate and Construct Hydrogen Fueling Stations in Regions that Emphasize “First Use” Market Applications (Mobile and Stationary)
 - Transit Buses, Shuttle Buses, Passenger Vehicles, CalTrans Rest Stops, Forklifts in Distribution Warehouses, Ferryboat Conversions and Displacement of Diesel Generators at Telecommunication Towers
 - Combine High-Volume Fuel Use by Multiple Users to Create Best Business Case and Stimulate Station Owner/Operators to Make Co-Investment
- Locate “Anchor” Stations in Proximity to Multiple Users (Fleets, Consumers, Government Agencies, etc) That Have Made Purchase Commitments
- Introduce Hydrogen as Blend with Natural Gas and Co-Locate Fueling Stations with Natural Gas Fueling Infrastructure



Adopted Investment Plan

(Approved April 22, 2009)

- **Funding for Hydrogen station establishment in Strategic Clusters, in accordance with automaker FCV introduction and deployment (OEM vehicle introduction survey now underway)**
- **Funding for development of Hydrogen fuel standards and “type approval” for a retail Hydrogen dispenser (\$4M Interagency Agreement with DMS)**
- **Collaborate with CARB to determine “Renewable Hydrogen” definitions, regulations and opportunities**
- **Collaboration with state and local agencies, academic institutions and laboratories**
- **Collaboration with energy companies and agencies for strategic infrastructure establishment**



AB 118 Activity Schedule

November 2009 – Energy Commission seeks OEM FCV commitments

November/December 2009 – Hydrogen Infrastructure Solicitation preparation and release

February/March 2010- Final Preparation and and Adoption of 2010-11 Investment Plan

February 2010– Proposal evaluation; Recommendations for funding

March/April 2010– Energy Commission Business Meeting approval



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