Alternative and Renewable Fuel and Vehicle Technology Program

Advisory Committee Meeting

December 4, 2012

California Energy Commission
Hearing Room A
Meeting Agenda

10:00  Introductions and Opening Remarks
10:15  Program Status Update
10:45  2013-2014 Investment Plan Update
11:15  Advisory Committee Discussion
12:00  Lunch
1:00   Advisory Committee Discussion, cont.
2:00   Public Comment
Program Status Update

Jim McKinney
Program Manager
Program Status Update

• Now in 5th year of 7.5-year duration

• To date, Energy Commission has allocated more than $450 million to funding categories, and awarded more than $300 million among 150 projects

• Current emphases:
  – Overseeing invoices from previous awards
  – Developing agreements based on recent solicitations
  – Developing next set of solicitations
Summary of Major Award Types

• Alternative Fuel Production ($70.5 million)
  – Biomethane production: 9 projects ($41.3 million)
  – Diesel substitutes production: 9 projects ($12.4 million)
  – Gasoline substitutes production: 8 projects ($16.8 million)

• Alternative Fuel Infrastructure ($66.8 million)
  – E85: 205 stations ($15.1 million)
  – Biodiesel infrastructure: 5 sites ($4.5 million)
  – Electric vehicles: 5,211 charging points ($20.6 million)
  – Hydrogen: 11 stations ($18.7 million)
  – Natural gas: 30 stations ($7.9 million)
Summary of Major Award Types, cont.

- **Alternative Fuel Vehicles** ($77.4 million)
  - Advanced medium- and heavy-duty vehicle technology demonstrations: 22 individual projects ($39.3 million)
  - Light-duty electric vehicles: 430 vehicles ($2.6 million)
  - Medium- and heavy-duty electric vehicles: 155 vehicles ($4 million)
  - Natural gas vehicles: 1,214 vehicles ($29.9 million)
  - Propane vehicles: 167 vehicles ($1.5 million)

- **Manufacturing** ($39.9 million)
  - Vehicles and components: 15 projects
Summary of Major Award Types, cont.

- **Emerging Opportunities** ($6 million)
  - Federal cost sharing: 2 projects

- **Workforce Training** ($18.5 million)
  - Interagency agreements: 5,746 trainees (so far)

- **Market and Program Support** ($24.9 million)
  - Electric vehicle readiness: 9 communities ($2.0 million)
  - Fuel standards ($4 million)
  - Biofuel sustainability studies ($1.9 million)
  - Other technical assistance ($17.0 million)
Summary of Major Award Types, cont.

- 3 major technical support contracts executed
- NREL Technical Support
  - Technology and market assessments
  - PEV planning support
  - Benefits Report support
- UC Davis NEXT Steps
  - PEV consumer behavior
  - Biofuels investment strategies and California case studies
  - Natural gas fuel for goods movement sector
- RAND Corporation
  - Comprehensive ARFVTP assessment
## ARFVT Progress - UPDATE
(Funded through September 2012)

<table>
<thead>
<tr>
<th>Fuel Area</th>
<th>Existing 2009-2010 Baseline Levels</th>
<th>Additions from ARFVT Program Funding</th>
<th>Percent Increase</th>
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<tbody>
<tr>
<td><strong>Alternative Fueling Infrastructure</strong></td>
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<tr>
<td>Electric</td>
<td>1,270 charging stations</td>
<td>5,211 charging stations</td>
<td>310%</td>
</tr>
<tr>
<td>E85</td>
<td>39 fueling stations</td>
<td>205 fueling stations</td>
<td>425%</td>
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<tr>
<td>Natural Gas</td>
<td>443 fueling stations</td>
<td>30 stations</td>
<td>7%</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>6 public fueling stations</td>
<td>11 fueling stations</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Alternative Fuel Vehicles</strong></td>
<td></td>
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<tr>
<td>Electric Cars</td>
<td>13,268</td>
<td>379</td>
<td>3%</td>
</tr>
<tr>
<td>Electric Trucks</td>
<td>1,409</td>
<td>155</td>
<td>11%</td>
</tr>
<tr>
<td>Natural Gas Trucks</td>
<td>13,995</td>
<td>1,214</td>
<td>9%</td>
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</tbody>
</table>
Recent Events

• PON-10-603
  – Advanced Medium- and Heavy-Duty Vehicle Technologies
  – Most recently revised NOPA released November 1
  – Three additional projects funded (all drayage trucks)
  – All proposals with passing scores are now funded

• PON-12-606
  – Hydrogen fuel Infrastructure
  – Released November 19, with proposals due January 17
  – $28.6 million available, with up to $1.5 million per station
  – 25 approved regions are reflective of anticipated early markets
  – Special consideration for renewable hydrogen and co-location with non-road applications
## Future Funding Opportunities

<table>
<thead>
<tr>
<th>Description</th>
<th>$ Available</th>
<th>Release</th>
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<tbody>
<tr>
<td>Hydrogen Fueling Infrastructure</td>
<td>$28.6 Million</td>
<td>(Due January 17)</td>
</tr>
<tr>
<td>Natural Gas Infrastructure</td>
<td>$3.9 Million</td>
<td>December</td>
</tr>
<tr>
<td>Electric Truck Retrofit Demonstration</td>
<td>~$2.4 Million</td>
<td>January/February</td>
</tr>
<tr>
<td>Charging Infrastructure</td>
<td>$6.6 Million</td>
<td>January/February</td>
</tr>
<tr>
<td>Commercial Scale Biofuels Production</td>
<td>$9.3 Million</td>
<td>Spring</td>
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<tr>
<td>Regional Planning</td>
<td>$2.7 Million</td>
<td>Spring</td>
</tr>
<tr>
<td>Centers for Alternative Fuels</td>
<td>$2.7 Million</td>
<td>Spring</td>
</tr>
<tr>
<td>Natural Gas and Propane Vehicle Deployment</td>
<td>$12.6 Million</td>
<td>Ongoing/Spring</td>
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Other Important Updates

• Vision for Clean Air
  – Initial draft released in June
  – Joint effort between CARB, SCAQMD, San Joaquin APCD
  – Potential scenario for meeting air quality goals for 2023 and 2032 as well as greenhouse gas emission goal for 2050

• ZEV Action Plan
  – Draft released in September
  – Coordinated by Governor’s Office of Planning and Research
  – Targets: 1 million PEVs by 2020, 1.5 million PEVs by 2025
  – Identifies strategies and actions to support these targets
Other Important Updates, cont.

- **LCFS Credit Discounting**
  - Rulemaking proceeding approved on November 14
  - Commission will review Section 3103 (Title 20), related to funding prohibitions and credit discounting requirements
  - Workshops to begin early 2013

- **Biofuels Workshop**
  - Anticipated January 2013
  - Collect information for next biofuel production PON
Other Important Updates, cont.

- Natural Gas and ZEV Truck Workshop
  - Date TBD (Winter/Spring 2013)
  - What is the technological and market status of new vehicle technologies?
  - How can the ARFVTP maximize its impact on the medium- and heavy-duty sector?

- Preparation for Benefits Report
  - Still in initial phases
  - Must be included as part of 2013 IEPR in Fall 2013
Questions on Program Status?
Staff Draft 2013-14 Investment Plan

Charles Smith
Project Manager
Role and Purpose

• First draft of Investment Plan Update, covering FY 2013-2014

• Basis for FY 2013-2014 solicitations, agreements and other funding opportunities

• $100 million funding allocation for a portfolio of fuels, technologies, and supporting elements
Schedule

- Post Staff Draft: November 20
- First Advisory Committee Meeting: December 4
  Comments requested by December 11
- Post and Submit Revised Draft: January 10
- Second Advisory Committee Meeting: February
- Post Lead Commissioner Report: March
- Adoption by Energy Commission: April/May
Foundations for Funding Recommendations

- Analyses from previous Investment Plans
- Results from recent solicitations
- September Advisory Committee meeting
- Input from industry stakeholders
- Other federal, state, and private investments in this sector
- New analysis and strategy documents
  - Vision for Clean Air
  - Governor’s ZEV Action Plan
Biofuel Production and Supply

- $23 million allocation
  - Large market potential, but production is still far from LCFS and other policy targets
  - Broad supplier interest

- Priorities
  - Open to variety of fuel types
  - Utilize existing infrastructure and vehicle stock
  - Waste-based feedstocks; not edible corn feedstocks (AB 523, Valadao)
  - Low lifecycle carbon emissions

- Questions for consideration
  - Mix of focus on commercial production and pre-commercial projects?
  - How to ensure market viability?
PEV Charging Infrastructure

• $7 million allocation
  – Reflects need for new infrastructure to keep pace with increase PEV sales

• Priorities
  – Avoid duplication with NRG settlement
  – Expand charging opportunities in workplaces, multi-unit dwellings, and fleet applications
  – Resolve other charging infrastructure issues, such as interoperability
  – Identify and develop new opportunities, in coordination with state and federal research programs
Hypergen Fueling Infrastructure

- $20 million allocation
  - Reflects need for new stations to keep pace with automakers’ FCV deployment schedules

- Priorities
  - Continue development of stations in early adopter locations
  - Support continued operation and maintenance of new stations
  - Support higher station capacity
Natural Gas Infrastructure

• $1.5 million allocation
  – Focus of natural gas funding is in vehicle deployment and engine demonstration
  – Private market stepping in to develop private CNG/LNG fueling infrastructure

• Priorities
  – Support natural gas infrastructure for entities that may have difficulty obtaining other financing, such as school districts and public transit entities
Infrastructure Not Proposed for Funding

- Propane fueling infrastructure
- E85 fueling infrastructure
- Biodiesel infrastructure
- Continue to track and evaluate these areas
Natural Gas Vehicles

• $12 million allocation
  – Continuing demand for incentives is visible via buydown program
  – Strong interest in natural gas trucks due to substantial fuel cost savings

• Priorities
  – Expand fleets’ interest in natural gas trucks
  – Avoid providing vehicle incentives if/when they are not needed
  – Link natural gas vehicles’ expansion with biomethane development

• Questions for consideration
  – Whether/how to adjust incentive levels and type eligibility?
  – Continue buydown program, or develop a new approach?
Light-Duty Plug-in Electric Vehicles

• $5 million allocation

• Priorities
  – Backup funding for Clean Vehicle Rebate Project in the event of oversubscription
  – Expand consumer interest beyond the “early adopters”
  – Support early market introduction of multiple PEV models
Medium- and Heavy-Duty Demonstration

• $15 million allocation
  – Technology costs still too high for widespread commercial deployment
  – Vision for Clean Air identifies aggressive 2050 scenarios for hybrid, battery electric and fuel cell technologies in this sector
  – Low and near-zero NOx natural gas engines may play a larger role in freight trucks, and can leverage low natural gas prices

• Priorities
  – Demonstrate vehicle technologies that can contribute to long-term GHG emission reductions, air quality improvements, and petroleum displacement
  – Open to multiple fuels and technologies
Vehicles Not Proposed for Funding

• Propane vehicles
  – Funds remain from previous fiscal years

• Electric trucks
  – Previously, the Energy Commission provided added funding as a supplement to HVIP
  – HVIP now includes its own higher incentive for all-electric trucks

• Continue to track and evaluate these areas
Emerging Opportunities (Federal Cost-Sharing)

• $3 million allocation

• Priorities
  – Prioritize funding to federal cost-sharing opportunities
  – Leverage federal investments
  – Projects that do not fall into any of the other funding allocations
Manufacturing

• $10 million allocation
  – Continuing need to translate California’s venture capital and patent development into sustained economic growth

• Priorities
  – Support in-state economic development, in conjunction with other program goals
  – Open to assembly of vehicles, manufacture of vehicle components, and manufacture of related components
Workforce Training and Development

• $2.5 million allocation

• Priorities
  – Continue training programs through Employment Training Panel and Employment Development Department
  – Assess need for additional programs (e.g. workforce analysis, apprenticeship programs, career pathways programs)
  – Identify new opportunities to benefit military veterans

• Questions for consideration
  – How to address needs and opportunities of veterans?
Regional Readiness and Planning

• $1 million allocation

• Priorities
  – Build on and expand PEV regional readiness grants
  – Support statewide PEV regional readiness
  – Expand regional planning into additional alternative fuels
Market and Program Development

• Centers for Alternative Fuels
  – Funded by $2.7 million in FY 2012-2013
  – Several projects have expressed interest
  – How to objectively solicit and select proposals?
  – No additional funding proposed at this time

• Sustainability Studies
  – On-going area of interest, but no specific needs for the coming year have been identified
  – If needed, funding for sustainability studies may be pulled from the most relevant allocation (e.g. biofuels, manufacturing)
<table>
<thead>
<tr>
<th>Project/Activity</th>
<th>Proposed Funding Allocation for FY 2013-2014</th>
</tr>
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<tbody>
<tr>
<td>Alternative Fuel Production</td>
<td>Biofuel Production and Supply $23 Million</td>
</tr>
<tr>
<td>Alternative Fuel Infrastructure</td>
<td>Electric Charging Infrastructure $7 Million</td>
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<tr>
<td></td>
<td>Hydrogen Fueling Infrastructure $20 Million</td>
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<td></td>
<td>Natural Gas Fueling Infrastructure $1.5 Million</td>
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<tr>
<td>Alternative Fuel and Advanced Technology Vehicles</td>
<td>Natural Gas Vehicle Incentives $12 Million</td>
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<tr>
<td></td>
<td>Light-Duty Plug-in Electric Vehicles $5 Million</td>
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<td></td>
<td>Medium- and Heavy-Duty Advanced Vehicle Technology Demonstration $15 Million</td>
</tr>
<tr>
<td>Emerging Opportunities</td>
<td>Emerging Opportunities (Federal Cost Sharing) $3 Million</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Manufacturing Facilities, Equipment and Working Capital $10 Million</td>
</tr>
<tr>
<td>Workforce Training and Development</td>
<td>Workforce Training and Development $2.5 Million</td>
</tr>
<tr>
<td>Market and Program Development</td>
<td>Regional Alternative Fuel Readiness and Planning $1 Million</td>
</tr>
<tr>
<td><strong>Total Available</strong></td>
<td><strong>$100 Million</strong></td>
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