

## V.E Vehicle Demonstrations

### V.E.1 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (New Project)

This demonstration will be the first effort of its kind to bring together, at a national level, nearly every major automobile and energy company in a hydrogen fuel and vehicle demonstration project. The project will be a learning demonstration that will help DOE focus its research and development efforts, provide insight into vehicle and infrastructure interface issues, and help address codes, standards and safety issues. The project will develop complete system solutions to address hydrogen infrastructure and vehicle development in parallel to validate that a commercialization decision by 2015 is on schedule.

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*Fleet Demonstration Lead Contractors:*

*Air Products and Chemicals, Inc., Allentown, PA*

*ChevronTexaco Technology Ventures, LLC, Houston, TX*

*DaimlerChrysler Corp., Auburn Hills, MI*

*Ford Motor Co., Dearborn, MI*

*General Motors Corp., Warren, MI*

#### Objectives

- Validate 2009 Performance Targets
  - Fuel Cell Stack Durability: 2000 hours
  - Vehicle Range: 250+ miles
  - Hydrogen Cost at the Station: \$3.00/gge
- Validate 2015 Performance Targets
  - Fuel Cell Stack Durability: 5000 hours
  - Vehicle Range: 300+ miles
  - Hydrogen Cost at the Station: \$1.50/gge

#### Technical Barriers

This project addresses the following technical barriers from the Technology Validation section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- A. Vehicles
- B. Storage
- C. Hydrogen Refueling Infrastructure
- D. Maintenance and Training Facilities
- E. Codes and Standards

## Approach

The Technology Validation activity is focusing on conducting learning demonstrations that emphasize co-development of hydrogen infrastructure in parallel with hydrogen fuel cell-powered vehicles to allow a commercialization decision by 2015. Technology Validation will test, demonstrate, and validate optimum system solutions and use the results to refocus the Hydrogen R&D Program as appropriate.

Five demonstrations have been selected to operate from October 2004 through September 2009. Each of these demonstrations will provide the following deliverables:

- Two generations of vehicles will be provided by vehicle manufacturers, with engineering improvements incorporated in the second generation.
- Hydrogen fueling stations will be installed in at least three geographic regions of the country to allow vehicle data to be collected in cold, hot/arid and moderate climates in urban and rural areas.
- Chassis dynamometer testing or equivalent will be conducted on fuel cell vehicles from each geographic region at least twice a year to collect fuel cell efficiency, fuel cell durability and vehicle fuel economy data.

The following are brief summaries of each controlled fleet demonstration.

## Air Products and Chemicals, Inc.

*David E. Guro*

*7201 Hamilton Blvd.*

*Allentown, PA 18195-1501*

*Phone: (610) 481-4625; E-mail: [gurode@airproducts.com](mailto:gurode@airproducts.com)*

### *Subcontractors:*

*Toyota Motor Sales, Torrance, CA*

*Nissan North America, Gardena, CA*

*American Honda Motors, Marysville, OH*

*ConocoPhillips, Bartlesville, OK*

*UTC Fuel Cells, South Windsor, CT*

*Proton Energy Systems, Wallingford, CT*

*BMW, Woodcliff Lake, NJ*

*University of California, Davis, Davis, CA*

*University of California, Irvine, Irvine, CA*

*South Coast Air Quality Management District, Diamond Bar, CA*

Vehicles: TBD

Fueling Stations: Potential fueling station locations include several sites in northern and southern California; Las Vegas, NV; Lake Tahoe, CA; and State College, PA.

*(Note: This award is still under negotiation.)*

## **ChevronTexaco Technology Ventures, LLC**

*John M. Brady*

*ChevronTexaco Technology Ventures, LLC*

*3901 Briarpark*

*Houston, TX 77042*

*Phone: (713) 954-6069; E-mail: JohnBrady@ChevronTexaco.com*

### *Subcontractors:*

*Hyundai Motor Co., S. Korea*

*UTC Fuel Cells, South Windsor, CT*

*Hyundai Kia America Technical Center, Inc. Chino, CA*

*University of California, Davis, Davis, CA*

*AC Transit, Oakland, CA*

*Southern California Edison, Rosemead, CA*

Vehicles: 32 fuel cell vehicles (SUVs)

Fueling Stations: A variety of hydrogen generation, storage and dispensing methodologies will be utilized within the project. Potential fueling station locations include Chino, Rosemead, Palm Desert, Davis, and Oakland, CA, as well as a cold weather site which is to be named in the future.

## **DaimlerChrysler Corporation**

*Andreas Schell, Senior Manager*

*Fuel Cell Systems*

*Advanced Vehicle Engineering*

*CIMS 483 00 08*

*800 Chrysler Drive*

*Auburn Hills, MI 48326-2757*

*Phone: (248) 512-3642; Fax: (248) 512-0679; E-mail: as675@daimlerchrysler.com*

### *Subcontractors:*

*DaimlerChrysler AG, Stuttgart, Germany*

*BP America, Warrenville, IL*

*Mercedes Benz USA LLC*

*DTE Energy, Detroit, MI*

*NextEnergy, Detroit, MI*

*Ballard, Vancouver, BC*

Vehicles: 33 fuel cell vehicles

(A-Class "F-Cells" and Sprinter delivery van Generation 1 vehicles)

Fueling Stations: Nine potential fueling station locations include Sacramento and Los Angeles, CA, and Michigan.

## **Ford Motor Company**

*Frank Balog, Chief Product Analyst*

*Sustainable Mobility Technologies Lab I Room 1027*

*15050 Commerce Drive North*

*Dearborn, MI 48120-1261*

*Phone: (313) 594-0845; Fax: (313) 390-1903; E-mail: fbalog@ford.com*

### *Subcontractors:*

*BP America, Warrenville, IL*

*NextEnergy, Detroit, MI*

### *Fleet Operators:*

*California Department of General Services, Sacramento, CA*

*Sacramento Municipal Utility District, Sacramento, CA*

*Florida Department of Environmental Protection, Orlando, FL*

*Progress Energy, Orlando, FL*

*City of Taylor, Taylor, MI*

*City of Ann Arbor, Ann Arbor, MI*

Vehicles: 26 fuel cell vehicles

(Ford Focus Fuel Cell Generation 1 vehicles)

Fueling Stations: Potential fueling station locations include Orlando, FL; Sacramento, CA; and Taylor, MI.

## **General Motors Corporation**

*Roz Sell, Manager, Fleet Mobility Solutions*

*General Motors Fuel Cell Activities*

*30500 Mound Road*

*Warren, MI 48090*

*Phone: (586) 986-7676; E-mail: roz.sell@gm.com*

### *Subcontractors:*

*Shell Hydrogen, LLC*

*Quantum Technologies, Inc., CA*

*NextEnergy, Detroit, MI*

*Viewpoint Systems, Inc., NY*

*U.S. Army, Ft. Belvoir, VA*

*State of Maryland, Annapolis, MD*

Vehicles: 40 fuel cell vehicles

(Opel Zafira Generation 1 vehicles)

Fueling Stations: Potential fueling station locations include Washington, DC; Ft. Belvoir, VA; Southern and Northern, CA; Detroit, MI; and New York City Metropolitan area, NY.