
U.S. Department of Energy Hydrogen Program

Technology Validation

John Garbak

**2008 DOE Hydrogen Program
Merit Review and Peer Evaluation Meeting**

June 10, 2008





Goal and Objectives

Goal: Validate complete systems of integrated hydrogen and fuel cell technologies for transportation, infrastructure and electricity generation applications under real-world operating conditions

Objectives:

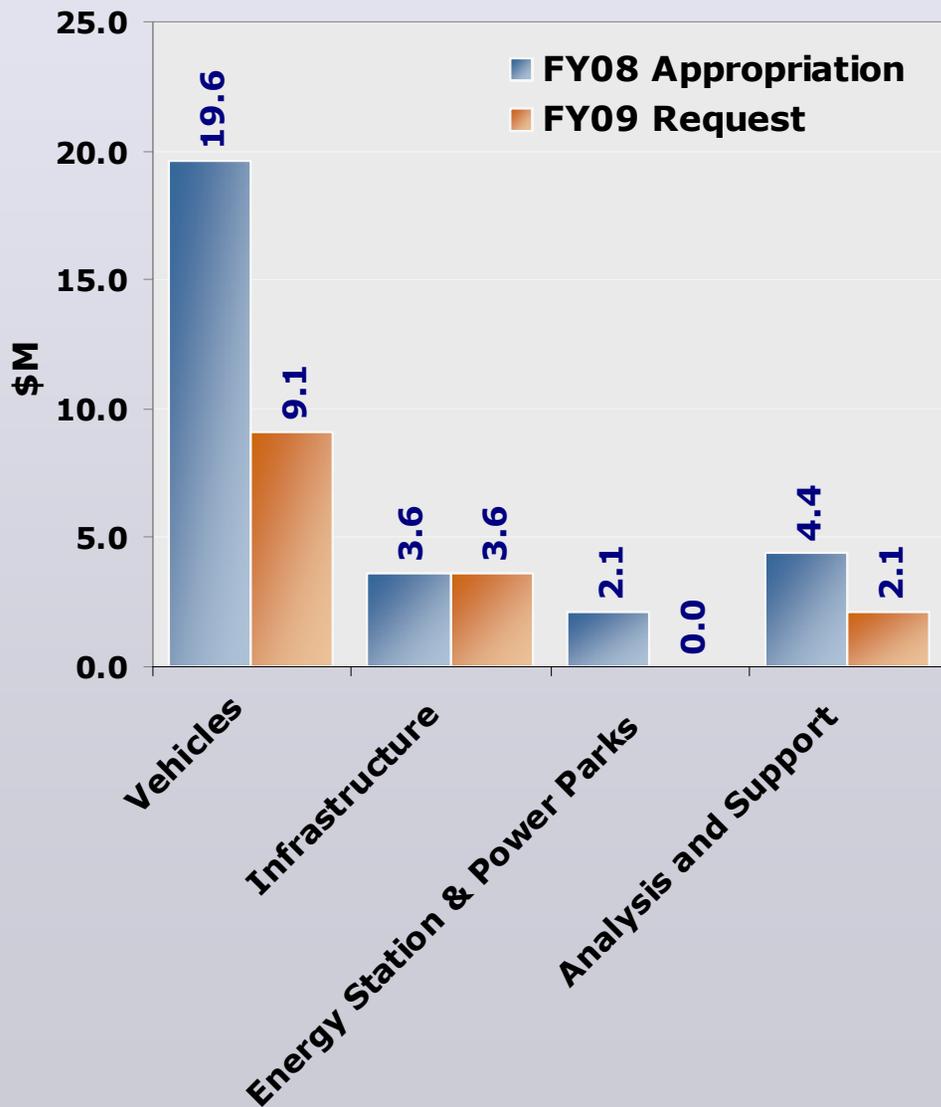
- Validate H₂ FC Vehicles and Infrastructure in Parallel
- Identify Current Status of the Technology
 - Assess Progress Toward Technology Readiness
 - Provide Feedback to H₂ Research and Development

Key Targets

Performance Measure	2009	2015
Fuel Cell Stack Durability	2000 hours	5000 hours
Vehicle Range	250+ miles	300+ miles
Hydrogen Cost at Station	\$3/gge	\$2-3/gge



Budget



FY2009 Budget Request = \$14.8M

FY2008 Budget = \$29.7M

FY09 Emphasis

- Gen 2 vehicles and fueling stations in operation using advanced technology hardware to meet program objectives
- Verify 2,000 hour fuel cell durability target by 2009
- Collect vehicle operational and maintenance data and conduct dynamometer testing to evaluate fuel cell performance and range
- Begin planning for phase 2 of the learning demonstration, subject to appropriations



2008 Progress & Accomplishments



- 92 fuel cell vehicles and 15 hydrogen fueling stations in operation
- Gen 2 vehicles in operation now
- Total of 130 vehicles to be in the project
- Fuel cell durability
 - 1200 hours actual (36k miles)
 - 1,900 hours projected (57K miles)
- Over 1.1 million miles traveled
- Over 52K total vehicle hours driven
- Fuel cell efficiency 53- 58%
- Over 44,000 kg of hydrogen produced or dispensed
- 2 hydrogen stations at 700 bar



Future Plans

- Continue testing and operation of generation 1 and 2 fuel cell vehicles
- Verify
 - 2,000 hour fuel cell durability
 - \$3.00/gasoline gallon equivalent
- Build and operate a power park in Hawaii
- Develop plans for Phase 2 of the Learning Demonstration



Session Schedule

- Analysis of the data from the Learning Demonstration Project – NREL
- Learning Demonstration Projects
 - Chrysler, Daimler and BP
 - Ford and BP
 - Chevron and Hyundai-Kia
 - GM and Shell
- Hydrogen Energy Station – APCI
- California Hydrogen Infrastructure Project – APCI
- Hawaii Hydrogen Center – Hawaii Natural Energy Institute
- Automotive cryogenic capable storage - LLNL



Session Instructions

- Presentations will begin precisely at the scheduled times.
- If a review presentation ends early, there will be a short break before the next review.
- Talks will be <20 minutes, Q&A <10 minutes.



Session Instructions

- Reviewers have priority for questions over the general audience.
- Reviewers should be seated in front of the room for convenient access by the microphone attendants during the Q&A.



Reviewer Reminders

- Reviews should be submitted at the end of the day.
- Reviews must be submitted before departure from the Annual Merit Review & Peer Evaluation meeting.



Reviewer Reminders

- After the session today there will be a brief (5-15 minutes) reviewer feedback session.



For More Information

Technology Validation Team

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