
U.S. Department of Energy Hydrogen Program

EDUCATION SESSION DOE Overview

Christy Cooper

2008 DOE Hydrogen Program Merit Review and Peer Evaluation Meeting

June 12, 2008





Goal and Objectives

GOAL: Educate key audiences about hydrogen and fuel cell technologies to facilitate near-term demonstration, commercialization, and long-term market acceptance

- By 2009: Increase knowledge of hydrogen and fuel cell technologies among key target populations (compared to a 2004 baseline)
 - Among state and local governments¹ and students (ages 12-17) by 10%
 - Among the public and potential end-users² by 15%
- By 2012, increase knowledge of hydrogen and fuel cell technologies among key target populations (compared to a 2004 baseline)
 - Among state and local governments¹ and students (ages 12-17) by 20%
 - Among the public and potential end-users² by 30%

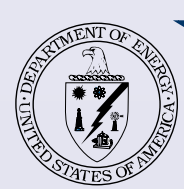
¹Defined as representatives of state energy offices, departments of transportation, and departments of environmental protection; and mayors and county supervisors of the 12 largest cities and counties in each of the four U.S. census regions

²Representing three categories – transportation, businesses needing uninterrupted power, and large power users

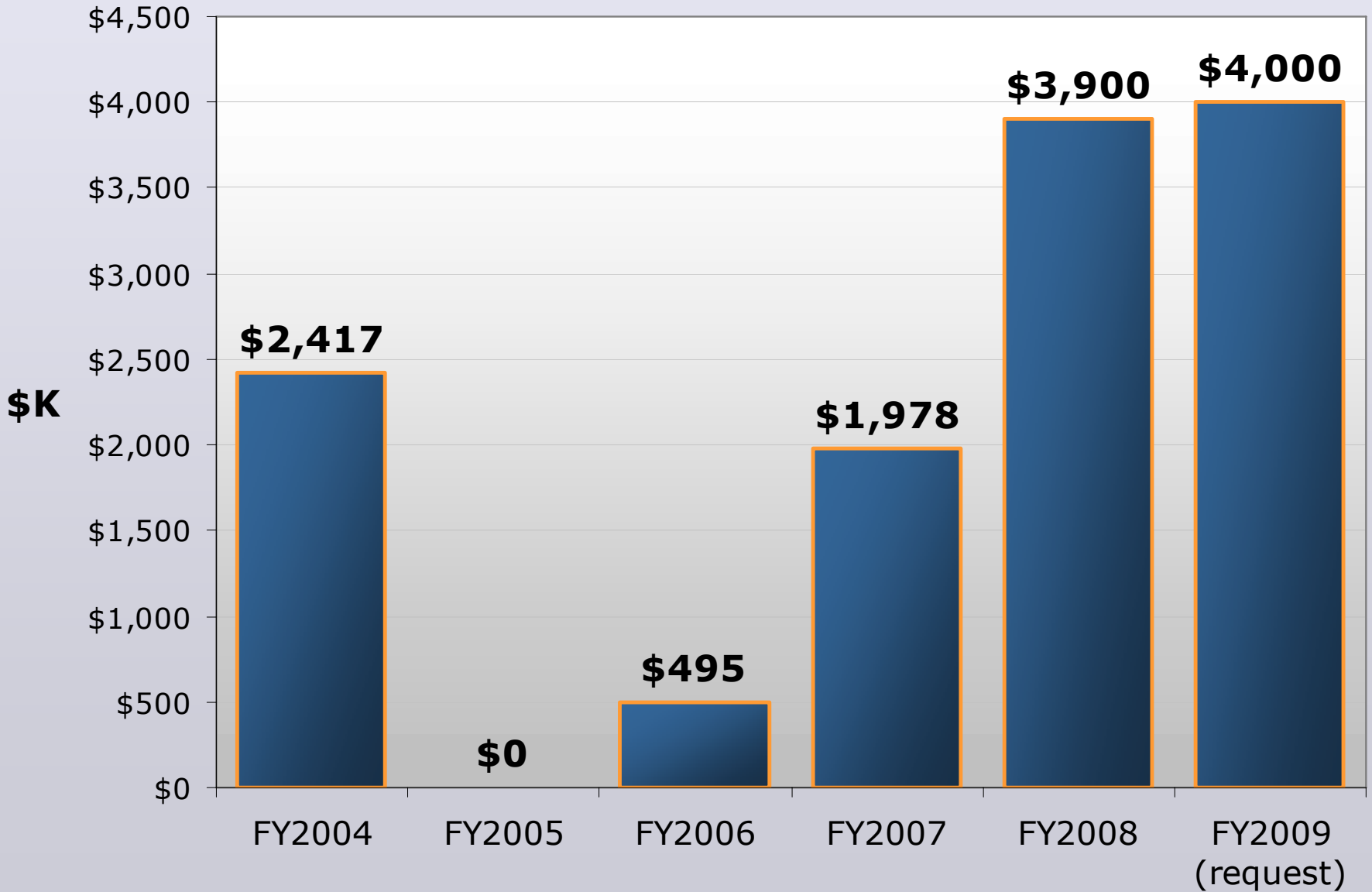


Program Scope

Audience	Rationale for DOE Hydrogen Education Activity
First Responders	Must know how to handle potential incidents; their understanding can also facilitate local project approval
Code Officials	Must be familiar with hydrogen to facilitate permit process and local project approval
Local Communities/ General Public	Will be more likely to welcome local demonstration projects when they are familiar with hydrogen
State and Local Government Representatives	A broad understanding of hydrogen supports decision-making on current opportunities and laying the foundation for long-term change
Potential End Users	Potential early adopters need information about near-term opportunities
University Faculty and Students	Current interest is high; graduates needed for research in government, industry, and academia
Other Teachers and Students	Current interest is high; teachers looking for technically accurate information and usable classroom activities



Budget History





Status and Priorities

- **Activities must contribute to Education targets – focus = increasing knowledge of hydrogen and fuel cells**
 - Targets based on results of 2004 knowledge and opinion survey
 - Targets are increases in a population’s average score on survey knowledge questions, compared to the 2004 baseline
- **Interim survey data collection is ongoing – report planned for FY09**

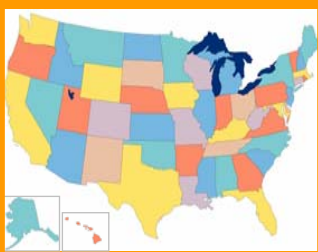
Safety and code officials

Public

State and local governments

Potential end users

Teachers and students



Target Increase

By 2009:

*

15%

10%

15%

10%

** Safety and code officials were grouped in the state and local government and end user surveys in 2004; they will be surveyed as a separate target audience in 2009*



Challenges and Opportunities

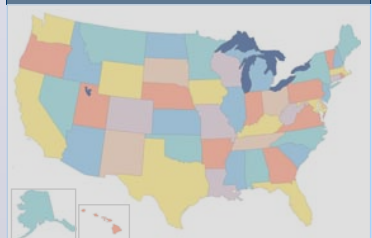
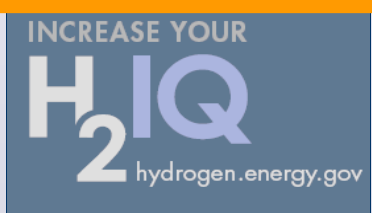
- **Resistance to change**
- **Lack of readily-available, objective, technically-accurate and “easily digestible” information**
- **Mixed messages**
- **Disconnect between hydrogen/fuel cell information and traditional dissemination networks**
- **Lack of educated trainers and training opportunities**

- **Energy is part of today’s daily public conversation**
- **Demonstration and deployment is ramping up, particularly in early markets**

- **Education is moving to the Vehicle Technologies Program in FY09**



Safety/Code Officials



2008 Progress

- Completed an upgrade of Introduction to Hydrogen Safety for First Responders; ~6200 users since Jan 2007 launch
- Completed participant and instructor materials for Hydrogen Safety and First Responder Training to be offered through UMT and WVU
- Began development of advanced-level first responder training that includes hands-on prop
- Completed draft of Introduction to Hydrogen for Code Officials



Ongoing Projects and Future Plans

- Complete and conduct advanced level first responders training course with prop
- Launch Introduction to Hydrogen for Code Officials



Local Communities Public



2008 Progress

- Deployed radio spots and podcasts
- Launched MySpace page
- Partnered with Orlando Magic
 - o Radio spots broadcast during games and coach's radio show
 - o Print ad in game day program
- Co-sponsored H2 & You to raise visibility in traditional media and blogosphere – 60-70% increase in on-line conversations about H2 since program launch

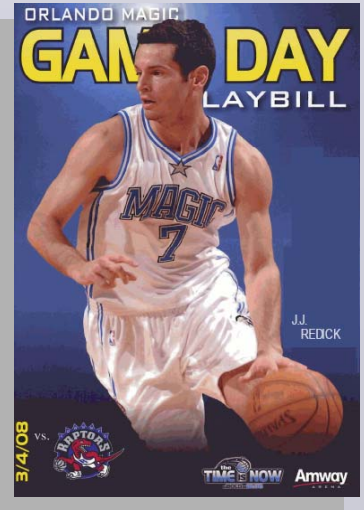


www.myspace.com/h2iq



Ongoing Projects and Future Plans

Ramp up the Increase Your H2IQ project with radio deployments in 3-4 additional markets

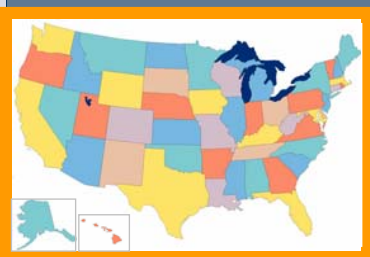
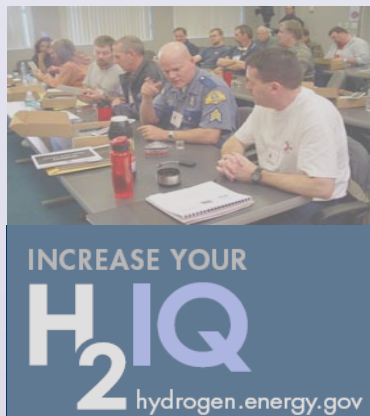




State and Local Governments

2008 Progress

- Continued State and Regional Initiative Bimonthly Call Series
 - Recent topic: “Taking advantage of fuel cell tax incentives and perspectives on innovative financing”
 - See www.hydrogenandfuelcell.energy.gov/states for more information
- Held in-person meeting at NHA Conference



Ongoing Projects and Future Plans

Launch new projects for state and local government outreach

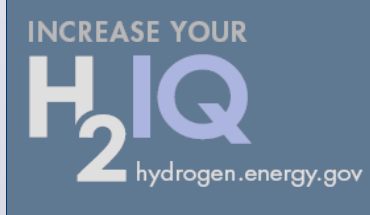
- *Virginia Department of Mines, Minerals, and Energy*
- *Connecticut Center for Advanced Technology/Connecticut Hydrogen and Fuel Cell Coalition*
- *Houston Advanced Research Center/Texas Hydrogen Coalition*
- *Ohio Fuel Cell Coalition*
- *South Carolina Hydrogen and Fuel Cell Alliance*
- *Clean Energy States Alliance*
- *Technology Transition Corporation*



End Users/Early Markets

2008 Progress

- Developed information resources on early market applications
 - o “Available Products and Early Market” podcast
 - o Early Market fact sheets – forklifts, emergency backup power (completed); wastewater treatment plants, data centers (soon)
- Outreach at events



Ongoing Projects and Future Plans

- Complete at least 4 end-user case studies on fuel cells for remote/backup power and material handling equipment
- Add new market transformation section to web site
- Launch new demonstration/outreach project
 - o *Carolina Tractor & Equipment Company, Inc.*



Schools/Universities

2008 Progress

- Updated textbook and university programs databases
- Reached 6,000 middle school teachers through 40 full day workshops, 30 conference sessions (cumulative)
- Completed two-week unit for national field testing in high school chemistry and environmental science classes
- Student Competitions/Events:
 - o Student Design Contest
 - o International Hydrogen and Fuel Cells Education Forum
 - o D.C. public school field trips to H2 station



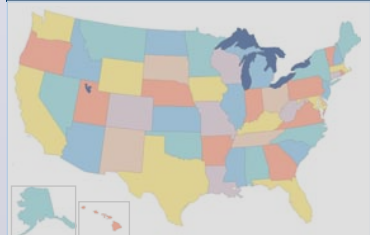
www.h2contest.org

Ongoing Projects and Future Plans

- Ramp up MS teacher workshops; begin HS materials pilot testing
- Launch new university education projects
 - o *Cal State – LA*
 - o *Humboldt State University*
 - o *Michigan Tech*
 - o *University of Central Florida*
 - o *University of North Dakota*



INCREASE YOUR
H₂IQ
hydrogen.energy.gov





Partnerships and Collaboration

- **International Partnership for the Hydrogen Economy (IPHE) Education Working Group**



- Co-chairs: U.S., Iceland, EU, Russia
- Key Activities: “Master Classes,” possible global student competition

- **Interagency Working Group** - Ad Hoc Committee with USDA

- **State and Regional Initiatives Call Group** - Co-organized with NHA and Clean Energy Group

- **Education Review Panel**

- Managed by NREL
- Provides another mechanism for feedback from industry and other stakeholders



For More Information

Education Team

Christy Cooper

(202) 586-1885

christy.cooper@ee.doe.gov

Andrea Chew (Sentech)

(202) 586-1145

andrea.chew@ee.doe.gov

Reg Tyler (Golden Field Office)

(303) 275-4929

reginald.tyler@go.doe.gov

The screenshot shows the Hydrogen Program website with a navigation menu (Home, About, DOE Participants, International, Library, News/Events) and a search bar. The main content area includes a sidebar with categories like Hydrogen Production, Delivery, Storage, Manufacturing, Fuel Cells, etc. The main body features several news items: 'DOE Seeks to Invest up to \$130 Million in Advanced Fuel Cell Technology' (May 27, 2008), 'H-Prize Funding Opportunity Announcement is Out for Prize Administrator' (May 20, 2008), 'Department of Defense Announces Funding Opportunity for Solid Hydrogen Storage' (April 16, 2008), and 'Hydrogen Storage Engineering Center of Excellence Funding Opportunity Announcement is Now Open' (February 27, 2008). A right sidebar contains a 'Features' section with a 'President's Hydrogen Fuel Initiative' link, an 'ADVANCED ENERGY INITIATIVE' banner, and a 'FreedomCAR Fuel Partnership' logo. An 'Information on' section at the bottom right lists links for 'Hydrogen Analyses & Models', 'Financial Opportunities', and 'Key Documents'.

www.hydrogen.energy.gov

Annual Merit Review Education Expo – Salon D

TODAY – All Day!



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.
- During the Q&A, reviewers have priority over the general audience.
- Reviewers should be seated in front of the room for convenient access to microphones 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.
- There will be a brief (5-15 minutes) reviewer feedback session following the last presentation.