
U.S. Department of Energy Hydrogen Program

EDUCATION SESSION DOE Overview

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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

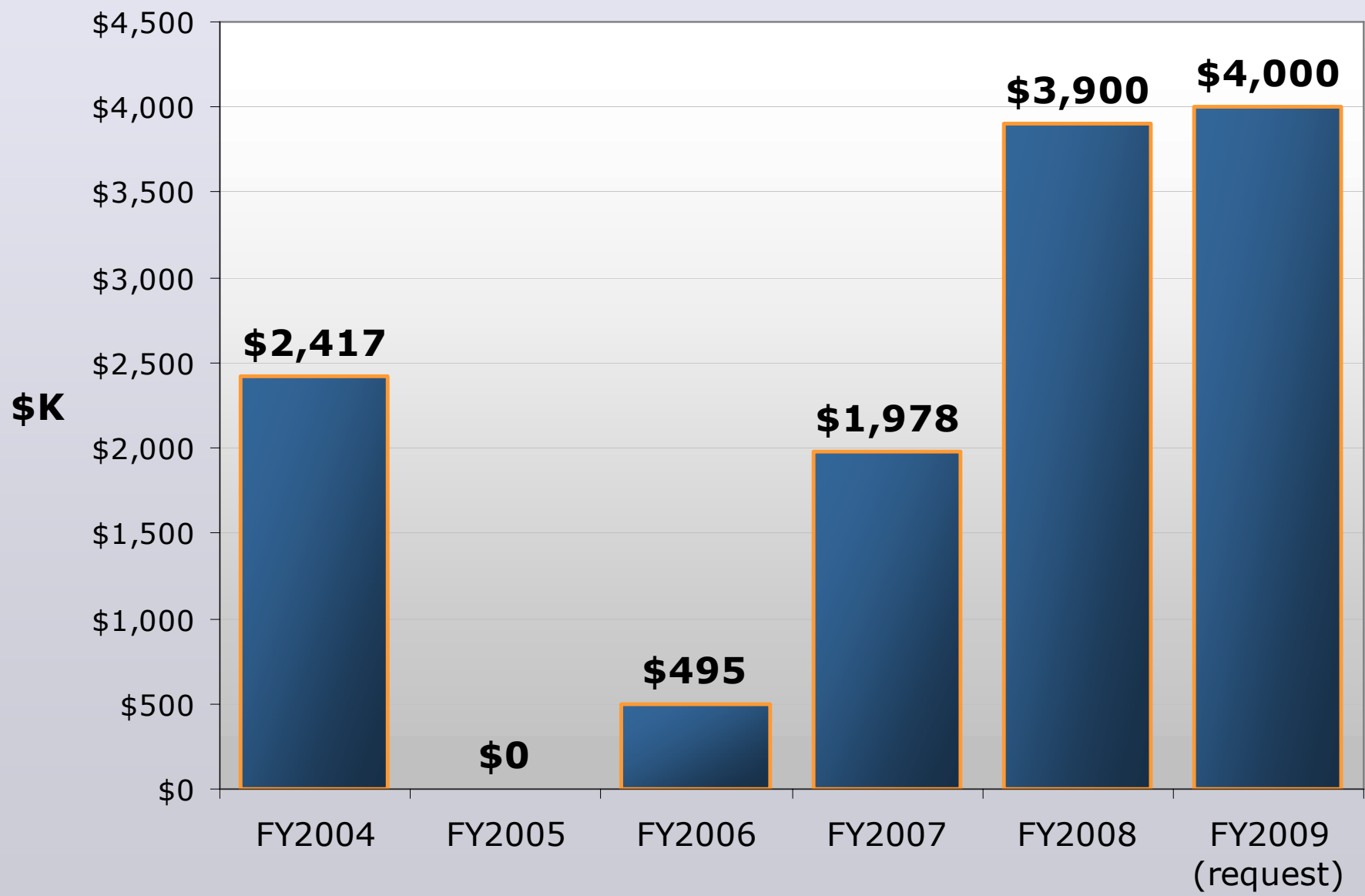


Program Scope

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**

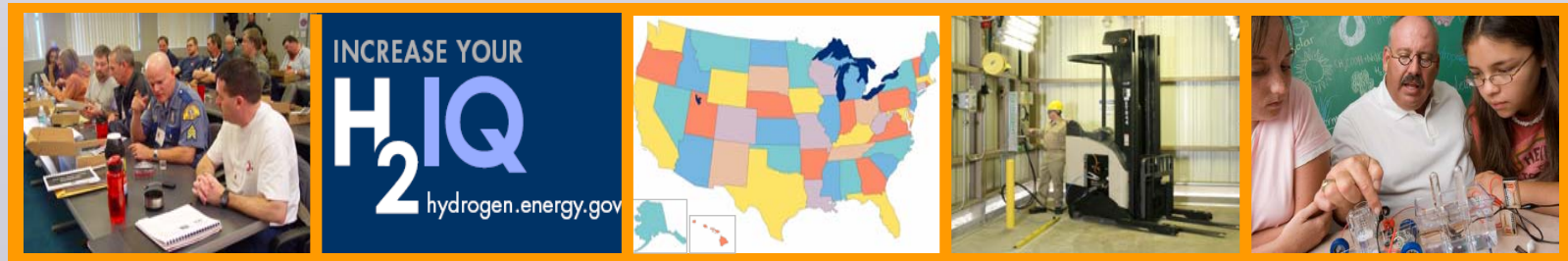
Safety and code officials

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

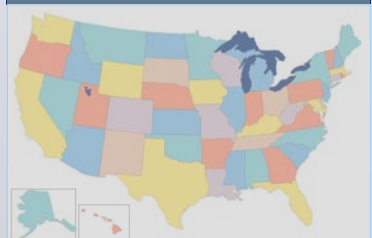
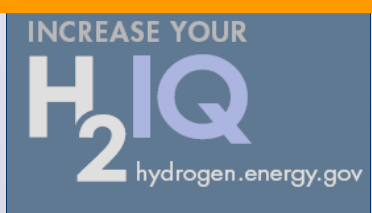
- **Resistance to change**
- **Lack of readily-available, objective, technically-accurate and “easily digestible” information**
- **Mixed messages**
- **Disconnect between hydrogen/fuel cell information and traditional dissemination networks**
- **Lack of educated trainers and training opportunities**

- **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

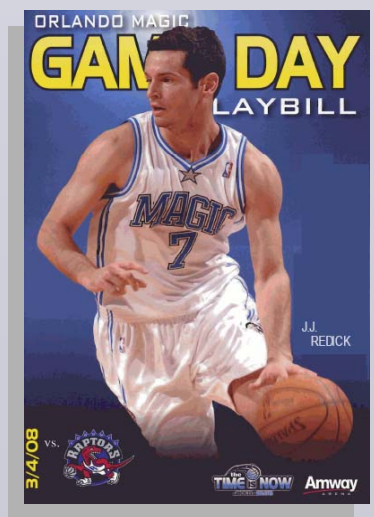


www.myspace.com/h2iq



Ongoing Projects and Future Plans

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

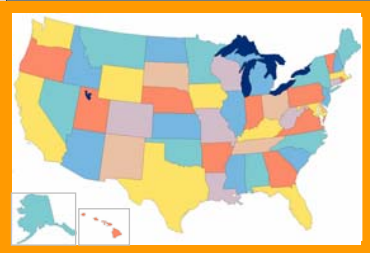
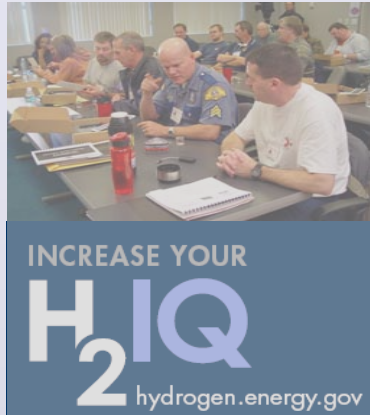




State and Local Governments

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



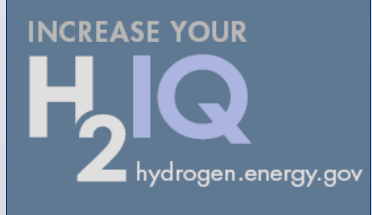
Ongoing Projects and Future Plans

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
 - “Available Products and Early Market” podcast
 - Early Market fact sheets – forklifts, emergency backup power (completed); wastewater treatment plants, data centers (soon)
- Outreach at events

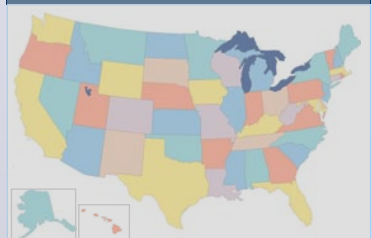
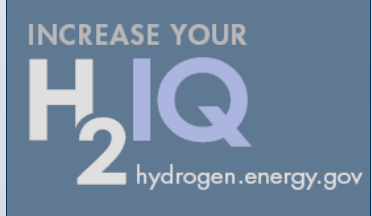


Ongoing Projects and Future Plans

- 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
 - *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 *Michigan Tech*
 - o *University of North Dakota*
 - o *Humboldt State University*
 - o *University of Central Florida*



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

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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 features several news items: 'INCREASE YOUR H₂IQ' with announcements for the 2008 Annual Merit Review; 'DOE Seeks to Invest up to \$130 Million in Advanced Fuel Cell Technology' dated May 27, 2008; 'H-Prize Funding Opportunity Announcement is Out for Prize Administrator' dated May 20, 2008; 'Department of Defense Announces Funding Opportunity for Solid Hydrogen Storage' dated April 16, 2008; and 'Hydrogen Storage Engineering Center of Excellence Funding Opportunity Announcement is Now Open' dated February 27, 2008. The right sidebar includes a 'Search Help' box, a 'DOE Hydrogen Program' logo, a 'Features' section with a 'President's Hydrogen Fuel Initiative' photo, an 'ADVANCED ENERGY INITIATIVE' banner, a 'Hydrogen.gov' link, a 'FreedomCAR Fuel Partnership' logo, and an 'Information on' section with links to '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.