
IX.1 Education Sub-Program Overview

Introduction

Expanding the use of hydrogen as an energy carrier requires a sustained education effort that begins in the near-term to support demonstration projects and lay the foundation for future commercial market introduction. While hydrogen and fuel cells are considered longer-term technologies, hydrogen fueling stations, fuel cell vehicles, and stationary fuel cells are entering the public space through demonstration projects in certain regions of the country. The Hydrogen Education Sub-Program seeks to support and facilitate those demonstrations by providing technically-accurate and objective information to key target audiences that are directly and indirectly involved in the use of hydrogen today (see Table 1).

The Education activity includes the development and dissemination of information resources as well as training. The activity considers a balanced message to help target audiences become familiar with hydrogen and how it fits in the portfolio of energy choices, develop an accurate understanding of hydrogen safety, recognize near-term opportunities, and understand their part in facilitating use of hydrogen and fuel cell technologies.

TABLE 1. Key Target Audiences for the Hydrogen Education Sub-Program

Target Audience	Rationale
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 the permitting 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 lays the foundation for long-term change
Potential End Users	Potential early adopters in niche applications 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

A 2004 national Hydrogen Knowledge Survey serves as a baseline for measuring changes in knowledge over time; program plans include repeating the survey in out-years. The baseline results also provide important information about current knowledge gaps, information needs, and opinions of hydrogen technologies that helps to inform the ongoing development of the Hydrogen Education Sub-Program.

Goal

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

Objectives

- By 2008, achieve specific increases in knowledge of hydrogen and fuel cell technologies among key target populations (compared to a 2004 baseline).
- By 2010, launch a comprehensive and coordinated public education campaign about hydrogen and fuel cell technologies.

FY 2006 Status

Data collected through the 2004 Hydrogen Baseline Knowledge Survey indicates that awareness of hydrogen and fuel cell technologies is low. For example, of the general public survey respondents, only 19% knew that when pure hydrogen is used, fuel cells generate electricity, water, and heat; less than 40% could identify sources of energy used to produce hydrogen; and more than 40% did not know hydrogen is lighter than air. The survey data also suggest a correlation between knowledge of hydrogen and opinions about hydrogen safety; for example, respondents with higher scores on the knowledge questions were more likely to say they'd feel "pleased" or "at ease" if their local gasoline station also sold hydrogen. The final survey report is available on the DOE Hydrogen Program web site, www.hydrogen.energy.gov. Ongoing hydrogen education activities will focus on increasing knowledge and raising awareness of hydrogen and fuel cell technologies.

- In close coordination with the Safety, Codes and Standards Sub-Program, the Education Sub-Program published an Introduction to Hydrogen Safety for First Responders at the end of FY 2006. This web-based information package is intended to help fire fighters as well as law enforcement, emergency medical, and other personnel become familiar with hydrogen as an energy carrier – its properties and use in vehicles and stationary facilities, as well as initial emergency response actions. In addition to the web, it will be made available in print and on a CD through the DOE Energy Efficiency and Renewable Energy (EERE) Information Center, 877-EERE-INF(O)). The material was developed in a collaboration involving DOE, the Pacific Northwest National Laboratory, and first responder training specialists at the Volpentest Hazardous Materials Management and Emergency Response Training and Education Center (HAMMER). The development process included a series of in-person pilot tests with first responders, followed by a broad review involving the Hydrogen Safety Panel and representatives of the hydrogen, fuel cell, and emergency responder communities.
- A new community information program called, "Increase Your H2IQ," was also launched in FY 2006. Focused on cities and regions with hydrogen demonstration projects (i.e., where the technology is publicly visible), "Increase Your H2IQ" will use various forms of media to raise public awareness of hydrogen and fuel cells, spark interest, and direct people to more information available on the DOE Hydrogen Program web site.
- Projects to develop hands-on classroom activities and conduct teacher training have been deferred to FY 2007, due to budget constraints. Project partners were able to leverage DOE funds with additional cost-share to complete "H2 Educate!" guides for middle school teachers and students and conduct an initial set of teacher training workshops. The Hydrogen Technology and Energy Curriculum Project for high schools completed the development and pilot testing of core activities and hands-on kit materials.

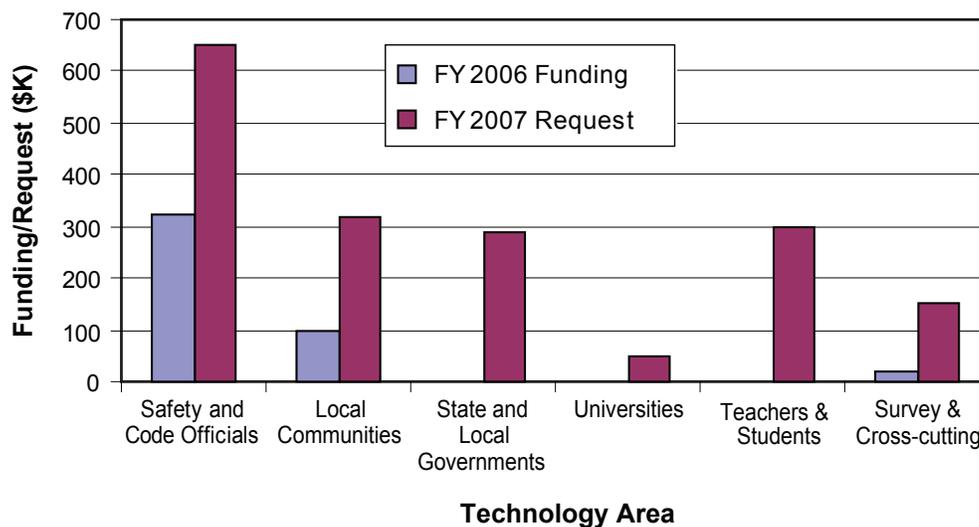
FY 2006 Accomplishments

- Completed the Introduction to Hydrogen Safety for First Responders, a web-based course available via the DOE Hydrogen Program web site (also to be made available in hard copy through the DOE EERE Information Center).
- Completed the planning and message development for "Increase Your H2IQ," a community information program to raise awareness of hydrogen as a form of energy; initial program components, including radio spots and podcasts were drafted and produced, and a new "Increase Your H2IQ" information toolbox was created on the DOE Hydrogen Program web site.

- Completed a new set of introductory fact sheets on the DOE Hydrogen Program, hydrogen production, hydrogen delivery, hydrogen storage, fuel cells, and technology validation; available via the DOE Hydrogen Program web site and EERE Information Center.
- Completed the development of teacher and student “H2 Educate!” guides, now available on via the DOE Hydrogen Program web site and www.need.org. Completed drafts and pilot tested core modules and hands-on kits for high school students.

Budget

Plans for FY 2006 were significantly curtailed due to budget constraints. The budget request for FY 2007 represents increased funding for all activities, allowing for the restart of state and local government education and projects focused on teachers and students.



2007 Plans

Pending Congressional appropriation, in FY 2007 the Hydrogen Education Sub-Program will build on its Introduction to Hydrogen Safety for First Responders with a second-level course oriented to more advanced levels of response. The course is envisioned to include interactive web-based delivery and in-person train-the-trainer opportunities. Also building on the Introduction to Hydrogen Safety and in close coordination with the Safety, Codes and Standards Sub-Program, information to support the specific needs of code officials will be developed and disseminated, with a particular emphasis on regions with planned or ongoing hydrogen demonstration projects.

Building on a series of pilot workshops held in FY 2004, a new “Hydrogen 101” seminar series will be developed and offered, as well as a more detailed “Hydrogen Energy Institute” training course for state and local government officials. The “Increase Your H2IQ” program also will continue with the development of additional media and expansion to include different demonstration project regions. The hydrogen education web site will also undergo a complete revision to provide easily accessible information to the variety of target audiences included in the scope of the Hydrogen Education Sub-Program.

FY 2007 plans also include support of the "H2 Educate!" and Hydrogen Technology and Energy Curriculum projects. The on-line database of university programs will also be updated, and support will be provided to the "H2U" design competition for university students, in cooperation with the National Hydrogen Association.

A handwritten signature in black ink, appearing to read "Christy Cooper". The signature is fluid and cursive, with the first name "Christy" written in a larger, more prominent script than the last name "Cooper".

Christy Cooper

Education Team Lead

Department of Energy

Hydrogen, Fuel Cells & Infrastructure Technologies, EE-2H 1000

Independence Ave., SW, Washington, D.C. 20585-0121

Office: (202) 586-1885