

Education Program Element Planning and Multi-Year R,D&D Plan Development

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Objectives

- Prioritize activities to reach the target audiences critical to realizing the hydrogen economy
- Identify key education actions that DOE should support
- Secure stakeholder involvement in DOE's newly established Hydrogen, Fuel Cells and Infrastructure Technologies (HFCIT) Education Program Element
- Begin a serious dialogue with stakeholders on the content of and issues related to an Education Program Element about hydrogen and fuel cells
- Develop an education chapter for the HFCIT Multi-Year R,D&D Plan

Technical Barriers

This project addresses the following technical barriers from the Education section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year R,D&D Plan:

- A. Lack of Awareness
- B. Lack of Demonstrations or Examples of Real World Use
- C. Institutional Barriers and Access to Audiences
- D. Regional Differences

Approach

- Draft a detailed education plan outline
- Conduct a workshop to obtain stakeholder input to and feedback on draft plan outline
- Publish education workshop proceedings to initiate additional stakeholder feedback
- Develop section 3.8 of the HFCIT Multi-Year R,D&D Plan, incorporating the draft education plan elements and iterative stakeholder input

Accomplishments

- Held successful workshop for stakeholder input to the education plan
- Published draft education workshop proceedings for comment
- Published finalized education workshop proceedings with stakeholder input incorporated
- Completed a draft education section of the HFCIT R,D&D Plan for stakeholder comment
- Completed a revised education section for the R,D&D Plan, with stakeholder input incorporated

Future Directions

- Finalize the education section of the R,D&D Plan in accordance with recommendations from the National Academy of Sciences and stakeholder comments
- Conduct education program activities during FY 2004 consistent with the goals, objectives, tasks, and milestones identified in the R,D&D Plan

Introduction

The *National Energy Policy* and the *National Hydrogen Energy Roadmap* (“*Roadmap*”), two guiding documents for DOE hydrogen activities, pay special attention to education. The *National Energy Policy* recommends that the Secretary of Energy develop an education campaign to communicate the benefits of alternative energy technologies, including hydrogen. The *Roadmap*, which lays the foundation for a national move toward the use of hydrogen energy, also establishes a priority for education activities and suggests that education is an appropriate activity for the federal government.

Following the *National Energy Policy* and *Roadmap* recommendations, the HFCIT Program established the Education Program Element to accomplish the overall objective of educating target audiences about the long-term benefits and near-term realities of hydrogen, fuel cell systems and related infrastructure. The Education Program Element will help audiences to do the following:

- Understand the concept and value of a hydrogen economy
- Recognize the near-term realities and opportunities of hydrogen and fuel cell technologies
- Develop an accurate picture of hydrogen safety issues
- Understand, where appropriate, their part in facilitating the transition to a hydrogen economy

Approach

In order to begin a serious dialogue with specialists on the content of, and issues related to, an educational program about hydrogen and fuel cells, a workshop was convened in Washington, DC, on December 4 and 5, 2002. More than 60 individuals participated in the meeting representing industry, government, non-governmental organizations, national laboratories and universities. Specific objectives of the meeting were to solicit inputs regarding the following:

- Goals and objectives for DOE's hydrogen and fuel cell-related education activities

- Identification of factors driving the need for educational activities
- Identification and prioritization of audiences
- Creative thinking on educational projects and activities that DOE could support
- Prioritization of activities to reach the target audiences.

Following the meeting, a proceedings record was drafted and circulated among the participants and other interested parties for feedback. The comments were incorporated into a finalized proceedings record that was made publicly available on the HFCIT website.

Subsequent to the workshop, the Education Program Element worked with other components of the HFCIT Program to develop a Multi-Year R,D&D Plan for the period FY 2004 - FY 2010. The outputs of the education workshop were considered during the development of the education segment of this draft plan. The incorporation of stakeholder consultations and inputs into the R,D&D Plan development process was crucial to establishing a dialogue on hydrogen and fuel cell education activities, and to securing stakeholder support for HFCIT Education Program Element activities.

Results

The results of these planning and program development activities include the following:

- Development of a comprehensive plan for hydrogen and fuel cell education activities for FY 2004 through FY 2010 that identifies key education activities for DOE involvement and prioritizes activities for near-term implementation
- Publication of section 3.8 of the HFCIT R,D&D Plan, on Education
- Development of a database of more than 60 hydrogen and fuel cell education groups and major stakeholders
- Establishment of a dialogue between and among the HFCIT Program, through the Education Program Element, and the hydrogen and fuel cell community on educational needs and activities

Conclusions

- The Education Program Element will focus initially on target audiences that can facilitate hydrogen and fuel cell demonstration and commercialization:
 - State and local governments
 - Large-scale end-users
 - Safety and code officials
 - Teachers and students
 - Interested public
- Educational activities will be coordinated with other HFCIT program element activities, particularly those for Technology Validation, Safety, and Codes and Standards, as well as with other DOE programs to extend the reach of educational activities.
- The educational potential of hydrogen and fuel cell demonstrations will be realized by leveraging existing information/education conduits to maximize visibility among the general public, state and local decision makers, and other target audiences and stakeholders.
- The Education Program Element will focus initial efforts to do the following:
 - Develop basic "groundwork" materials that provide program background and general

information about hydrogen and fuel cells, and establish a formal distribution mechanism for these materials

- Enhance the presence of hydrogen and fuel cells in K-12 and university education
- Facilitate educational activities for state and local governments and large-scale end-users
- Facilitate information exchange and partnerships among emerging local, state, regional, and national hydrogen, fuel cell, and clean energy efforts

FY 2003 Publications/Presentations

Presentations on the Education Program Element and the R,D&D Plan development process were made at the following events:

- Hydrogen, Fuel Cells, and Infrastructure Technologies Program Forum, October 2002
- HFCIT Education Plan Workshop, December 2002
- National Hydrogen Association Annual Meeting, March 2003
- National Clean Cities Conference, May 2003

Section 3.8 of the HFCIT R,D&D Plan, on Education, was published for comment in draft form in June 2003.