

X.8 Education Materials: Understanding the Hydrogen Economy

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Subcontractors:

Breakthrough Technologies Institute, Washington, DC

H2Nation, Tulelake, CA

Start Date: September 1, 2004

Projected End Date: August 31, 2006

Objectives

- Develop hydrogen technology education materials to help audiences understand:
 - General concept and value of a hydrogen economy
 - The “basics” of hydrogen production, delivery, and storage technologies, as well as potential applications
 - Near term challenges and opportunities for hydrogen and fuel cell technologies
 - Hydrogen safety issues
 - Transition steps and challenges for a hydrogen economy
- Prepare materials to serve the education needs of the following target audiences:
 - Public (energy consumers)
 - State and local government officials
 - Safety and code officials unfamiliar with hydrogen technologies
 - Other potential end-users

Technical Barriers

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

- A. Lack of Awareness
- C. Institutional Barriers and Access to Audiences

Approach

- Use relevant material from existing sources to develop draft "hydrogen overview book" titled, *Education Materials: Understanding the Hydrogen Economy*
 - Present benefits and challenges of moving to a hydrogen economy
 - Include individual chapters on key components of hydrogen infrastructure
 - Use appealing high quality graphical layout to effectively communicate message
 - Expected length of 25-30 pages
- Create other targeted education outreach materials using *Education Materials: Understanding the Hydrogen Economy* and other resources

Accomplishments

- Held project kickoff meeting (Sep 04)
- Reviewed DOE and industry publications on hydrogen production, delivery, storage, end-use, and safety (Oct-Dec 04)
- Prepared three drafts of *Education Materials: Understanding the Hydrogen Economy* (Jan-Jun 05)
 - First draft submitted in January
 - Addressed comments on first draft and submitted second draft in April
 - Addressed comments on second draft and submitted third draft in June
- Prepared preliminary designs for graphical layout of *Education Materials: Understanding the Hydrogen Economy* (Jan-Jun 05)

Future Directions

- Remainder of FY05 (Jul-Sep)
 - Obtain comments from DOE and designated reviewers on latest draft of *Education Materials: Understanding the Hydrogen Economy*
 - Address comments and finalize document (both text and graphical layout)
 - Deliver document to DOE
- FY06 (subject to congressional appropriations)
 - Prepare technology fact sheets (topics to be determined based on discussions and guidance from DOE)
 - Develop educational presentation (content to be determined based on discussions and guidance from DOE)
 - Prepare insert and distribute in H₂Nation magazine
 - Expected insert length of four pages
 - Insert will be condensed version of *Education Materials: Understanding the Hydrogen Economy*

Introduction

The goal of this project is to develop high quality materials to educate key target audiences and raise awareness of the concept and value of a hydrogen economy, hydrogen technologies, and challenges to achieving the hydrogen vision. The target audiences for these materials include the public (energy consumers), state and local government officials,

safety and code officials, and other potential end-users. The materials are designed to address the following education barriers that have been identified in the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- A. Lack of Awareness
- C. Institutional Barriers and Access to Audiences

Approach

The approach is to first develop a hydrogen overview document titled *Education Materials: Understanding the Hydrogen Economy*, that will introduce the vision of a hydrogen economy and present a detailed overview of hydrogen technologies, as well as the challenges to achieving the hydrogen vision. Specifically, the document will cover hydrogen production, delivery, storage, and end-use, for example, fuel cell vehicle technologies. The document will be 25-30 pages in length, and will include high quality graphics to illustrate important concepts.

Education Materials: Understanding the Hydrogen Economy will be used as a centerpiece document to develop spin-off outreach materials. These spin-off materials are expected to include technology fact sheets, an educational slide presentation, and an insert for H2Nation magazine.

Results

Three drafts of *Education Materials: Understanding the Hydrogen Economy* were prepared in 2004-2005. The primary effort was on developing and editing text, although graphics selection and development was also completed. The document currently contains 11 sections as shown in Table 1.

The first draft of *Education Materials: Understanding the Hydrogen Economy* was submitted in January 2005. DOE provided comments and the draft was extensively revised and re-submitted in April. Additional comments were received and a third draft was submitted in June and is under review at DOE.

Table 1. Contents of *Education Materials: Understanding the Hydrogen Economy*

Chapter	Title
1	Introduction
2	Hydrogen Economy
3	Production
4	Delivery
5	Storage
6	Applications
7	Safety, Codes, & Standards
8	Key Challenges
9	Timeline
--	Resources (references)
--	Glossary

FY 2005 Publications/Presentations

1. Tidball, Richard, "Hydrogen Education Materials," Progress Report submitted to DOE, January 2005.
2. Tidball, Richard, "Understanding the Hydrogen Economy," Presentation at the 2005 DOE Hydrogen Program Review, May 2005.