Hydrogen Education for Code Officials

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Objective

Develop an introductory information (e-learning) package for code officials that specifically addresses safety, codes, and standards for hydrogen technologies and facilitates demonstration and deployment projects.

Overview

Timeline

- Start – Oct. 2007
- Finish – FY09
- 65% Complete

Budget

- Funding in FY08: $255K (100% DOE Funded)

Partners

- See partner page

Education Barriers

- Lack of Readily Available, Objective, and Technically Accurate Information (A)
- Disconnect Between Hydrogen Information and Dissemination Networks (C)
- Lack of Educated Trainers and Training Opportunities (D)

Partners

Battelle
The Business of Innovation

ECS
ECommerce Systems

NREL is working with Battelle, ECommerce Systems, e-learning experts, code officials, and codes and standards technical experts to produce a high quality, technically accurate educational tool and disseminate the information in a productive manner.

Approach

- Evaluate e-learning methods, tools, and software packages to determine the best way to present the information to code officials.
- Develop a detailed outline and content of each module.
- Work with codes and standards experts to ensure accuracy of the content.
- Attend workshops for code officials to determine what information they need.
  - March 2008, Santa Ynez, CA
  - May 2008, Mahwah, NJ

Approach (cont.)

- Design e-learning resources to maximize usability.
  - E-learning tools are most effective when the learner is engaged and interacting with the information on the screen.

Milestones

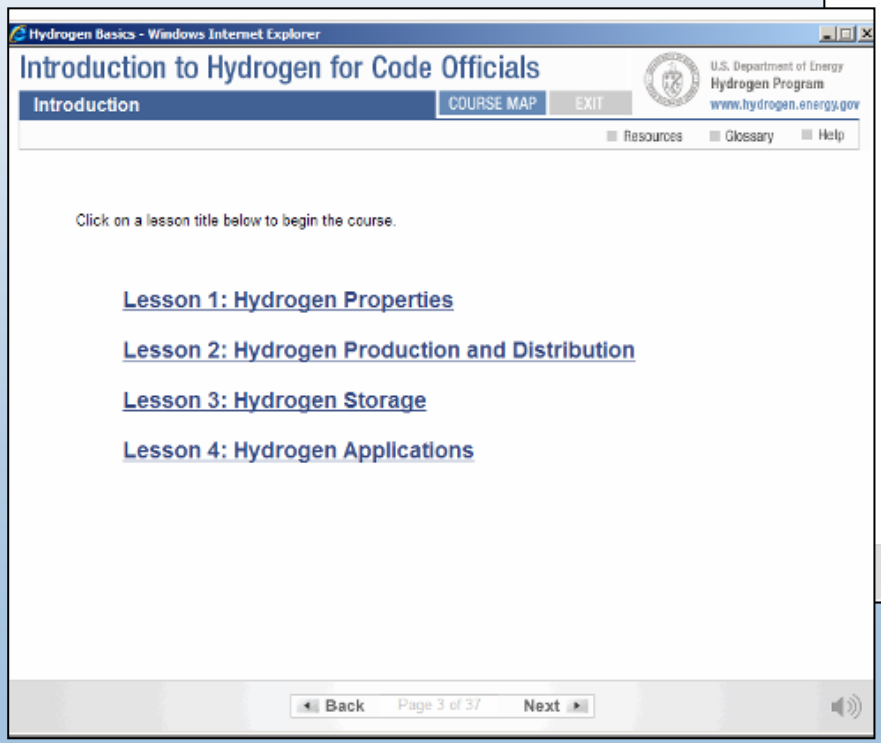
Oct. 07 Complete	Evaluate e-learning software, methods and tools. Determine the best application and method for presenting the information to code officials.
Nov. 07 Complete	Organize content information and graphics for the first module (Introduction to Hydrogen).
Dec. 07 Complete	Develop module 1 content and put into e-learning format. Submit for review.

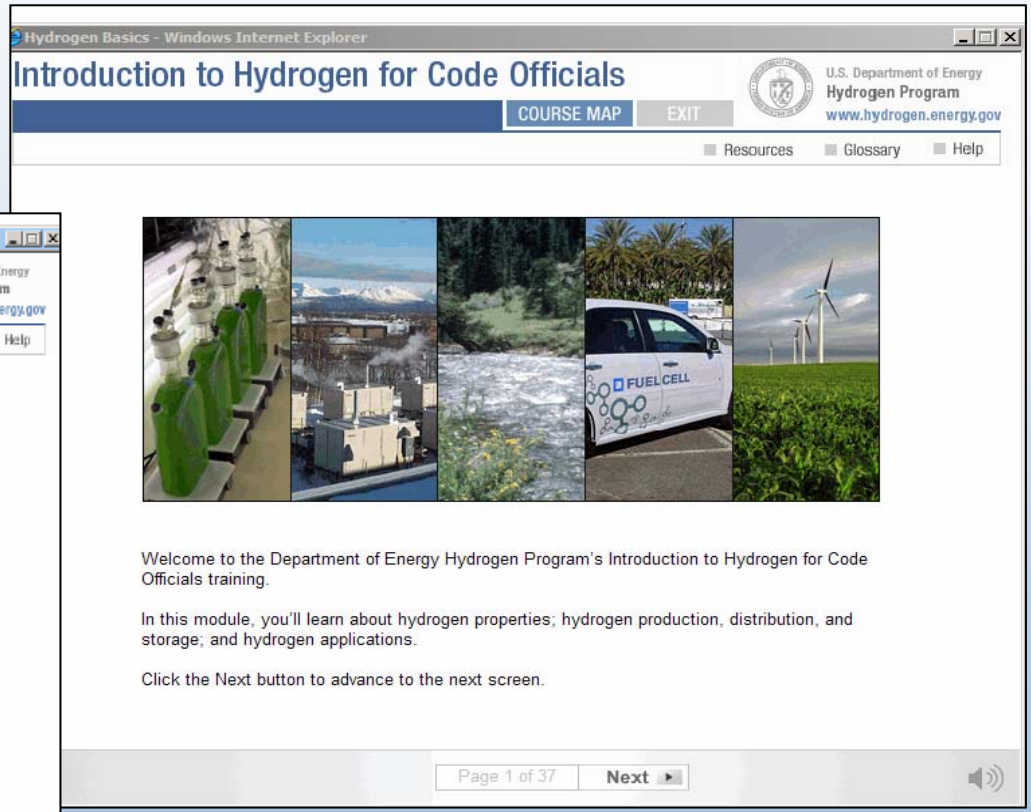
Milestone (cont.)

July 08	Complete first four e-learning modules: 1. Introduction to Hydrogen 2. Fuel Cell Applications 3. Hydrogen Codes and Standards 4. Permitting a Hydrogen Fueling Station
Sept. 08	Complete the fifth module, Permitting Stationary Hydrogen Facilities, in series.

Accomplishments

Module 1 - Introduction to Hydrogen
Includes hydrogen properties, production, storage, and applications.





Accomplishments (cont.)

- Module 2 - Fuel Cell Applications
  - Provides the learner with a detailed look at fuel cell applications and how they work.
- Module 3 – Hydrogen Codes and Standards
  - Educates the learner about codes and standards used for hydrogen systems and is linked to a codes and standards database.
- Module 4 - Permitting Hydrogen Fueling Stations
  - Walks the learner through the permitting process and provides examples of station designs.

Accomplishments (cont.)

- Module 5 – Permitting Stationary Hydrogen Facilities
  - Educates the learner on aspects of permitting a hydrogen stationary facility and provides examples of facility designs.

Future Work

Remainder of FY08

- Review the content and usability among the hydrogen and code official community.
- Complete the modules by adding audio and conducting beta testing.
- Disseminate web-based tools and other information to code officials through outreach activities and publications.
- Consolidate DOE's online hydrogen education resources to provide a single location where information can be accessed.

Future Work

FY09

- Continue to refine the e-learning module content and interactivity based on feedback received from the code official audience and reviewers.
- Update the information in each module as new codes and standards are established.

Summary

- Five e-learning modules are being developed targeting code officials. This work will be completed in FY09.
  - Module 1 – Introduction to Hydrogen
  - Module 2 – Fuel Cell Applications
  - Module 3 – Hydrogen Codes & Standards
  - Module 4 – Permitting Hydrogen Refueling Stations
  - Module 5 – Permitting Stationary Hydrogen Facilities
- Each module is a stand-alone course that can be used for educating other target audiences.