VIII.7 Codes and Standards Outreach for Emerging Fuel Cell Technologies

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Project Start Date: 1995
Project End Date: Project continuation and direction determined annually by DOE

Fiscal Year (FY) 2011 Objectives

- Facilitate the safe deployment of hydrogen and fuel cell technologies.
- Provide information on hydrogen and fuel cell technologies codes and standards to code officials, project developers, and other interested parties.
- Present workshops on hydrogen and fuel cell technologies codes and standards to code officials, project developers, and other interested parties in geographic areas where these technologies are being deployed.
- Develop tools to streamline the permitting process for fuel cell and hydrogen technology projects.
- Perform site visits to fuel cell and hydrogen technology project sites to obtain safety, codes and standards information for publication in technical reports.
- Present safety, codes and standards information on DOE websites and through webinars.

Technical Barriers

This project addresses the following technical barriers from the Safety, Codes and Standards section (3.7) of the Fuel Cells Technologies Program Multi-Year Research, Development and Demonstration Plan:

(A) Limited Government Influence on Model Codes
(B) Competition among SDOs and CDOs
(C) Limited State Funds for New Codes
(D) Large Number of Local Government Jurisdictions.
(E) Lack of Consistency in Training of Officials
(F) Limited DOE Role in the Development of International Standards
(G) Inadequate Representation at International Forums
(H) International Competitiveness
(I) Conflicts between Domestic and International Standards
(J) Lack of National Consensus on Codes and Standards
(K) Lack of Sustained Domestic Industry Support at International Technical Committees
(L) Competition in Sales of Published Standards
(M) Insufficient Technical Data to Revise Standards
(N) Affordable Insurance is Not Available
(O) Large Footprint Requirements for Hydrogen Refueling Stations
(P) Parking and Other Access

Technical Targets

Table 1 shows the NREL support for achieving DOE technical targets, specifically supporting the development of the codes and standards required to deploy hydrogen and fuel cell technologies. This technical target is described on pages 3.7-1 and 2 of the Codes and Standards – Technical Plan.

TABLE 1. Progress towards Meeting Technical Targets for Safety Codes and Standards

DOE/NREL Accomplishments in Support of the Development of Regulations, Codes and Standards for the Deployment of Hydrogen and Fuel Cell Technologies Outreach Activities		
Activity	Primary Impacted Groups	Progress Towards Meeting DOE Targets
Safety Codes and Standards Workshops	Code officials, project developers, and other interested parties	Workshops make information available to expedite process for developing and permitting fuel cell and hydrogen technology projects
Sensor Workshop	Sensor developers, project managers	Improve performance of sensors to increase project safety
Updating codes and standards citations on DOE websites	Code officials, project developers, and other interested parties	Web information make information available to expedite process for developing and permitting fuel cell and hydrogen technology projects
Permitting template for hydrogen dispensing stations	Code officials and project developers	Standardized permitting will streamline permitting for fuel cell and hydrogen technology projects
Hydrogen dispensing station site visit and technical report	Project developers	Improve fuel cell and hydrogen codes and standards by identifying safety issues that can be addressed by codes and standards modifications

Accomplishments

NREL accomplished the following in support of section 3.7 of the DOE Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan:

- Sensor Workshop: NREL conducted a Sensor Workshop in June 2011. The purpose of the workshop was to review the performance benchmarks set at the 2007 DOE Sensor Workshop and refine them based on defining performance criteria for specific applications. These applications include indoor hydrogen fueling, hydrogen storage, and residential fuel cells and fuel dispensing.
- Web Updates: NREL updated the codes and standards citations on the DOE website. Additionally, NREL streamlined the website by removing redundant material.
- Codes and Standards Workshops: NREL conducted a Codes and Standards Workshop on April 19, 2011 in collaboration with the California Fuel Cell Partnership and the Southern California Fire Protection Officers Association. Attendees at this workshop included fire service representatives from several of the key jurisdictions in the Los Angeles metropolitan area.
- Permit Template for Hydrogen Dispensing Stations: NREL developed a permitting template for hydrogen dispensing stations that contains the basic codes and standards requirements used across the United States (U.S.) jurisdictions can modify this template to create a standard permit for hydrogen dispensing stations.
- Hydrogen Dispensing Station Site Visit: NREL performed a site visit to a hydrogen dispensing station to evaluate code compliance and safety issues. The results of the visit will be documented in a NREL Technical Report.

Introduction

It is essential to develop and promulgate codes and standards in order to provide for the safe use of hydrogen and fuel cell technologies. With the help of key stakeholders, the DOE Fuel Cell Technologies Program and NREL are coordinating a collaborative national effort to prepare, review, and promulgate codes and standards for all hydrogen and fuel cell technologies. To complement this codes and standards development effort, NREL is conducting outreach activities to inform code officials, project developers, and other interested parties of these codes and standards requirements.

Approach

Domestic and international codes and standards must be established to enable the timely commercialization and safe use of hydrogen and fuel cell technologies. The lack of codes and standards applicable to hydrogen and fuel cell technologies is an institutional barrier to deploying these technologies. It is in the national interest to eliminate this potential barrier. As such, the sub-program works with domestic and international standards development organizations to facilitate the development of performance-based and prescriptive codes and standards. These standards are then referenced by building and other codes to expedite regulatory approval of hydrogen and fuel cell technologies. This approach ensures that U.S. consumers can purchase products that are safe and reliable, regardless of their country of origin, and that U.S. companies can compete internationally by having coordinated consistent requirements.

Results

The Safety Codes and Standards work is divided into three major areas:

1. Codes and Standards Coordination
2. Codes and Standards Research
3. Codes and Standards Training and Outreach

This report addresses the Outreach activities

Codes and Standards Outreach

In FY 2011 NREL continued outreach work in both in-person workshops and Web activities. The workshops and other outreach activities consisted of the following:

- Codes and Standards Workshop presented on April 19, 2011 in collaboration with the California Fuel Cell Partnership and the Southern California Fire Protection Officers Association.
- Sensor Workshop held June 8, 2011 in Rosemont, IL. This workshop was well attended and achieved the objective of collecting information to revise the performance criteria for safety sensors.
- Incident Workshop to be held September 2011.
- Codes and standards citations were updated for DOE website.
- Codes and standards permit template for hydrogen fueling stations completed.

Figure 1 shows the invitation for the April 2011 workshop. The invitation describes the material that was covered and workshop partners.

Conclusions and Future Direction

NREL will continue to support the development of codes and standards by:

- Working with DOE to implement a plan for identifying and supporting the development of the codes and

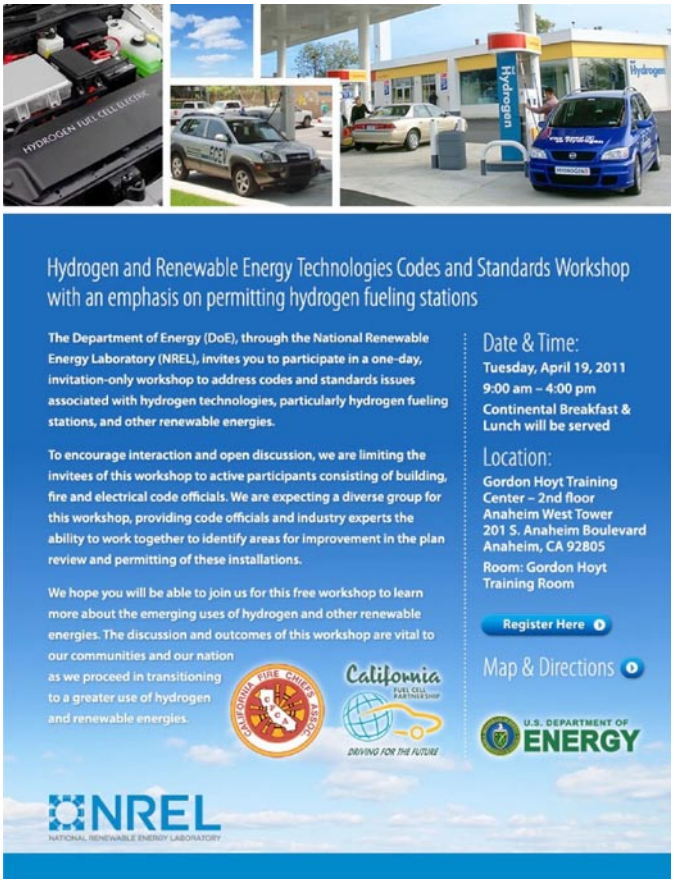

FIGURE 1. NREL Codes and Standards Workshop Invitation Anaheim, CA

standards required to deploy hydrogen and fuel cell technologies by the year 2020 (the 2020 Deployment Plan).

- Managing subcontracts required to support the 2020 Deployment Plan and outreach activities.
- Performing outreach work to distribute information on hydrogen and fuel cell technologies to code officials, project developers, and other interested parties.
- Collecting information from outreach activities to help identify gaps in codes and standards and research and testing projects that could fill these gaps.
- Performing site visits at fuel cell and hydrogen technology project sites to collect information to assist in the code development process and project permitting process.

FY 2011 Publications/Presentations

1. Codes and Standards Workshop, April 19, 2011, Anaheim, CA.
2. Sensor Workshop, June 8, 2011, Rosemont, IL.