VIII.7 Supporting the Consensus-Based Process for Hydrogen Codes and Standards

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Subcontractors:

- American National Standards Institute (ANSI), New York, NY
- ASME International (ASME), New York, NY
- Compressed Gas Association, Inc. (CGA), Chantilly, VA
- CSA America, Cleveland, OH
- GWS Solutions of Tolland, Tolland, CT
- United States Fuel Cell Council, Washington, D.C.
- International Code Council, Inc. (ICC), Country Club Hills, IL
- Kelvin Hecht, Avon, CT
- National Hydrogen Association (NHA), Washington, D.C.
- National Fire Protection Agency (NFPA), Quincy, MA
- SAE Internatiional (SAE), Troy, MI

Project Start Date: December 5, 2006
Project End Date: September 30, 2011

Objectives

- Develop a robust supporting research and development program to provide critical hydrogen behavior data and a detailed understanding of hydrogen combustion and safety across a range of scenarios, needed to establish setback distances in building codes and minimize the overall data gaps in code development.
- Support and facilitate the completion of technical specifications by the International Organization for Standardization (ISO) for gaseous hydrogen refueling (TS 20012) and standards for on-board liquid- (ISO 13985) and gaseous- or gaseous blend- (ISO 15869) hydrogen storage by 2007.
- Support and facilitate the effort, led by the NFPA, to complete the draft Hydrogen Technologies Code (NFPA 2) by 2008.
- With experimental data and input from the Technology Validation Hydrogen Program activities, support and facilitate the completion of standards for bulk hydrogen storage (e.g., NFPA 55) by 2008.
- Facilitate the adoption of the most recently available model codes (e.g., from the ICC) in key regions.
- Complete preliminary research and development on hydrogen release scenarios to support the establishment of setback distances in building codes and provide a sound basis for model code development and adoption.
- Support and facilitate the development of global technical regulations by 2010 for hydrogen vehicle systems under the United Nations Economic Commission for Europe, World Forum for Harmonization of Vehicle Regulations and Working Party on Pollution and Energy Program (ECE-WP29/GRPE).
- Support and facilitate the completion by 2012 of necessary codes and standards needed for the early commercialization and market entry of hydrogen energy technologies.

Technical Barriers

This project addresses the following technical barriers from the Codes & Standards section of the Hydrogen, Fuel Cells and Infrastructure 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 (approximately 44,000).
(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) Jurisdictional Legacy Issues
(N) Insufficient Technical Data to Revise Standards
(O) Affordable Insurance is Not Available
(P) Large Footprint Requirements for Hydrogen Refueling Stations
(Q) Parking and Other Access Restrictions

Accomplishments In 2008

- Completed first year transition to the cost share model of funding the code development and standard development organizations (CDOs and SDOs) as Codes & Standards sub-awardees, in close collaboration with DOE, with extensions and modifications as appropriate for second year.
- Ensured requested funding provided for critical participation in International forums by U.S. industry and association representatives.
- Continued development of increased user-friendliness of ANSI Web portal for hydrogen standards available at http://hcsp.ansi.org/, and the additional hydrogen information provided at the hydrogen matrix web site available at http://www.fuelcellstandards.com/Matrix.htm.
- Continued support of cooperation between ICC and NFPA continued through Hydrogen Industry Panel On Codes activities.

Introduction

As suggested by the list of barriers above, the codes and standards area is unusual for a DOE program in that the ultimate goals and objectives cannot be achieved directly by DOE or its contractors, but rather, must be met indirectly, as the necessary process of consensus-based codes and standards development is carried out. Virtually all relevant hydrogen-related codes and standards work rests on a voluntary, consensus-based process, in contrast to the direct development of government based rules and regulations.

Thus, in addressing the barriers, this project relies on the strategic value of targeted resources and support aimed at identified "log-jams" in the process, and the provision of supported resources where the voluntary process would otherwise succumb to the delays inherent in such processes. This approach is thus able to ensure or enhance the free flow of important and credible information, including supporting necessary research where necessary to develop or adapt new codes and standards, and always supporting the optimum participation by U.S. industry and related industry associations.

Approach

This project utilizes close collaboration between DOE program leadership, National Laboratory technical experts, and the individual and SDO and CDO sub-awardees to identify the highest value contributions that are available for improving the timeliness of the consensus-based standard process for the successful commercialization of hydrogen in stationary and mobile applications.

Results

Results for this second year of the five year contract period have primarily focused on the smooth extensions of the multi-year contractual relationships with the 11 designated sub-awardees, and the review and modification where appropriate of the two to five-year Tasks in the relevant Statements of Work. The retirement of the two National Renewable Energy Laboratory-based technical monitors, along with the replacement of the DOE contract monitor has also required special efforts in order to keep the momentum of the project results.

Conclusions and Future Directions

With the completion of the remaining sub-awardee contracts in the first year of contracting, the second round of annual updates, revisions, and extensions has gone more smoothly. Regulatory Logic LLC has been able to increasingly participate in industry and agency conferences and other efforts regarding the dissemination of the Program's Codes & Standards work as deemed appropriate by DOE. Regulatory Logic's close collaboration with DOE, and the technical experts of the National Laboratories, continues the funding announcement prescription of the awardees' working in close collaboration with DOE in fulfilling the objectives of the project.

FY 2008 Publications/Presentations

1. Regulatory Logic LLC presented a poster at the 2008 Annual Merit Review, held June 9-13, 2008 in Arlington, VA.