
VIII.8 Fuel Cell & Hydrogen Energy Association Codes and Standards Support

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

Overall Objectives

- Support and facilitate development and promulgation of essential codes and standards by 2015 to enable widespread deployment and market entry of hydrogen and fuel cell technologies and completion of all essential domestic and international regulations, codes, and standards (RCS) by 2020
- Ensure that best safety practices underlie research, technology development, and market deployment activities supported through DOE-funded projects
- Conduct research and development (R&D) to provide critical data and information needed to define requirements in developing codes and standards
- Develop and enable widespread sharing of safety-related information resources and lessons learned with first responders, authorities having jurisdiction (AHJs), and other key stakeholders

Fiscal Year (FY) 2015 Objectives

- Participates directly in key domestic and international RCS technical committees and encourage members to participate directly in appropriate technical committees, working groups or discussions
- Optimize information-sharing of precompetitive safety information
 - Hold open discussions during FCHEA Working Group and Task Force meetings between codes and

standards development organizations, researchers, government and industry to aid harmonization of requirements and enhance collaboration

- Identify and schedule Topical Discussions during monthly meetings of the National Hydrogen and Fuel Cell Codes & Standards Coordinating Committee (NHFCCSCC) which FCHEA administers
 - Enables industry priorities to be discussed and synergistic activities to be coordinated
- Post and/or link data, workshop proceedings, and other informational resources online at www.hydrogenandfuelcellsafety.info
- Conduct forums to identify R&D needs, and engage in dialog with DOE providing a mechanism for input and feedback into DOE R&D plans and activities
- Publish six bimonthly issues of *The Hydrogen and Fuel Cell Safety Report* – a free online newsletter which is read by thousands of interested parties all over the world

Technical Barriers

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

- (F) Enabling National and International Markets Requires Consistent RCS
- (H) Insufficient Synchronization of National Codes and Standards
- (J) Limited Participation of Business in the Code Development Process

Contribution to Achievement of DOE Safety, Codes & Standards Milestones

This project contributes to the achievement of the following DOE milestones from the Safety, Codes and Standards section of the Fuel Cell Technologies Office MYRDD Plan:

- Milestone 4: Development and Harmonization of RCS
- Milestone 5: Dissemination of Data, Safety Knowledge, and Information

FY 2015 Accomplishments

Accomplishments for each working group or task are provided below.

- The Portable Power Working Group
 - Provided United States manufacturers technical input on standards and regulations for micro fuel cells
 - Worked to ensure international standards are inclusive of all fuel types
 - Conducted broad outreach to support International Electrotechnical Commission (IEC) 62282-6-101 Edition 2, and associated “fuel specific” Part 2 documents
 - Provided comment on HM-215L, notice of proposed rulemaking on “Hazardous Materials: Harmonization with International Standards,” to ensure harmonization with international standards for fuel cells as carry on and checked baggage
 - Supported objective from the MYRDD, “Enabling National and International Markets Requires Consistent RCS,” by ensuring national and international standards for micro fuel cell applications are harmonized, then adopted by international regulations
- The Transportation Working Group
 - Reviewed infrastructure RCS
 - Administers Hydrogen Codes Task Force to review and develop public input for NFPA 2
 - Initiated new task forces for strategic planning to begin to develop comments for next round of model codes
 - Provided and tracked public inputs through the latest National Fire Protection Association (NFPA) 2 development cycle. The public inputs all address harmonizing requirements with other industry accepted standards and codes
 - Supported objective from the Multi-Year Program Plan (MYPP) – Provide consistent RCS and synchronization of national codes and standards
- The Stationary Power Working Group (SPWG)
 - Provided technical input to a fuel cell focus group that was created by the Telecommunications Industry Association (TIA). FCHEA’s SPWG provided support and fuel cell experts, and assisted in populating a new draft guideline with relevant

information from existing codes, standards, and guides

- Reviewed and developed input on issues relating to greenhouse gas emissions accounting
- Supported objective from the MYPP – Develop and enable widespread sharing of safety-related information resources and lessons learned with first responders, AHJs, and other key stakeholders
 - Provides consistency in requirements and reduces duplication of effort
- Coordination
 - NHFCCSCC – facilitated monthly discussion of new key topics of broad interest, such as “Facilitating Deployment”
 - Progress in the development of RCS was reported and captured for the FCHEA Regulatory Matrix, providing an up-to-date overview of current industry priorities and recent progress in RCS
 - Hydrogen and Fuel Cell Safety Report – published every two months, keeping readers informed of the progress and issues encountered in the development of RCS
 - Has introduced industry to the many new working groups in ISO/TC 197 and the call for participation in the United States standards committees
 - Calendar of events aids in scheduling meetings
 - Contributed to DOE goal to develop and enable widespread sharing of safety-related information resources and lessons learned with first responders, AHJs, and other key stakeholders
 - Increases participation of stakeholders in development of harmonized RCS



INTRODUCTION

FCHEA participates directly in key domestic and international RCS technical committees and encourages members to participate directly in appropriate technical committees, working groups or discussions. Member companies can therefore participate directly or indirectly as appropriate.

FCHEA builds relationships and works directly with stakeholders to identify and address issues in order to ensure

consistency in RCS and facilitate deployment of hydrogen and fuel cell technologies.

APPROACH

FCHEA working groups provide regular opportunities to engage industry in developing RCS. Working groups engage manufacturers, codes and standards developers, users, researchers, and other stakeholders as appropriate, to identify and discuss issues pertinent to transportation, stationary power, and portable power applications for fuel cell technologies and hydrogen infrastructure.

Monthly stakeholder coordination calls provide opportunities for even broader engagement and facilitate coordination of activities to reduce duplication of effort and increase harmonization of technical requirements. Further outreach is accomplished through bimonthly publication of a free, online newsletter, the *Hydrogen and Fuel Cell Safety Report*.

RESULTS

FCHEA's Portable Power Working Group provided United States manufacturers technical input on standards and regulations for micro fuel cells. The working group conducted broad outreach to support IEC 62282-6-101 Edition 2, and associated "fuel specific" Part 2 documents to ensure developing international standards are inclusive of all relevant fuel types. The working group also provided comment on HM-215L, notice of proposed rulemaking on "Hazardous Materials: Harmonization with International Standards," to ensure harmonization with international standards for fuel cells as carry on and checked baggage. This activity supported the objective from the MYRDD, "Enabling National and International Markets Requires Consistent RCS," by ensuring national and international standards for micro fuel cell applications are harmonized, then adopted by international regulations.

FCHEA's Transportation Working Group focused on infrastructure RCS review. The Hydrogen Codes Task Force reviewed and developed public input for NFPA 2. New task forces were initiated for strategic planning to begin to develop comments for the next round of model codes. The task group provided and tracked public inputs through the latest NFPA 2 development cycle. The public inputs all address harmonizing requirements with other industry accepted standards and codes. This activity supported the objective from the MYRDD, provide consistent RCS and synchronization of national codes and standards.

FCHEA's Stationary Power Working Group provided technical input to a fuel cell focus group that was created by the TIA. FCHEA's SPWG provided support and fuel cell experts, and assisted in populating a new draft guideline with relevant information from existing codes, standards,

and guides. This activity supported the objective from the MYRDD, develop and enable widespread sharing of safety-related information resources and lessons learned with first responders, AHJs, and other key stakeholders. This provides consistency in requirements and reduces duplication of effort.

FCHEA's coordination activities include facilitation of the NHFCCSCC and publication of the *Hydrogen and Fuel Cell Safety Report*.

In facilitating the NHFCCSCC, FCHEA led monthly discussion of new key topics of broad interest, such as "Facilitating Deployment." Progress in the development of RCS was reported and captured for the FCHEA Regulatory Matrix, providing an up-to-date overview of current industry priorities and recent progress in RCS.

The Hydrogen and Fuel Cell Safety Report is published every two months, keeping readers informed of the progress and issues encountered in the development of RCS. This newsletter has introduced industry to the many new working groups in ISO/TC 197 and the call for participation in United States standards committees. It also includes a calendar of events to aid in scheduling meetings.

FCHEA's coordination activities increase participation of stakeholders in development of harmonized RCS and contribute to the DOE goal to develop and enable widespread sharing of safety-related information resources and lessons learned with first responders, AHJs, and other key stakeholders.

CONCLUSIONS AND FUTURE DIRECTIONS

- The Portable Power Working Group will work to ensure harmonization with international standards for fuel cells as carry on and checked baggage. The Department of Transportation (DOT) continues to not be harmonized with inclusion of division 2.1 and 4.3 fuel cartridges for checked baggage (micro fuel cell applications). FCHEA is pursuing inquiry within the US DOT Pipeline and Hazardous Materials Safety Administration to determine options to have these regulations harmonized.
- The Transportation Working Group: Special Task Force for Strategic Planning will predict potential needs (e.g., low grade storage at a station) in advance of the next round of code revisions. This will be a small task force who can think outside of the box for future needs, as well as come up with proposals for the existing code language and see what other changes/improvements need to be made. The working group will continue dialog with component manufacturers to resolve issues in advance of infrastructure roll-out.
- The Stationary Power Working Group will work with the TIA to complete the guideline for fuel cells in the telecommunications industry. The working group will continue to review United States and international

standards as well as state regulations to ensure consistency with accepted United States requirements and best practices.

- Coordination
 - NHFCCSCC
 - Continue to administer, identify key issues, and document discussions and outcomes
 - Provide industry feedback and other input to the DOE Safety, Codes and Standards subprogram on RCS development needs and priorities; outreach needs and priorities; R&D needs and priorities to support RSC development activities
 - Safety Report
 - Continue to report on the developing RCS to improve coordination of activities and improve information transfer

FY 2015 PUBLICATIONS/PRESENTATIONS

1. Hydrogen and Fuel Cell Safety Report, issues published at www.hydrogenandfuelcellsafety.info for November 2014, January 2015, March 2015, May 2015, and July 2015. Another issue is scheduled for September 2015.

2. 2015 DOE Hydrogen and Fuel Cells Program Annual Merit Review presentation.