



## National Hydrogen and Fuel Cell Codes and Standards Coordinating Committee (NHFCCSCC)

Wednesday, September 5, 2018  
TIME: 3:00 – 4:00 pm (Eastern Standard Time)

### Minutes

### Attendees

Anthony Belvin  
Connor Dolan  
Cristina Daniels  
Heath Dehn  
Jay Keller  
Jeff Cambeis

Jennifer Hamilton  
Juana Williams  
Kelvin Hecht  
Laura Hill  
Mike Steele  
Norm Newhouse

Rob Early  
Sara Marxen  
Scott Lindsay  
Stella Papisavva  
Morry Markowitz

### I. Welcome and Housekeeping Items

- Review FCHEA's anti-trust guidelines - Available on FCHEA's members only website and a copy can be provided to you on request.
- Approve the meeting agenda
- Approve the previous meeting minutes

### II. DOE/HQ Update

Laura Hill – Anthony Belvin has joined DOE on a detail.

Anthony Belvin – I am on detail from the Office of Nuclear Energy. Supporting Laura and the team on Safety, Codes, and Standards.

### III. C&S Events and Fuel Cell Safety Information

<http://www.hydrogenandfuelcellsafety.info/events/>

**Karen Quackenbush**

**Request:** technical resource updates for the Hydrogen and Fuel Cell Safety website. Any committee members who have materials they would like hosted on the website can send them to Karen Quackenbush ([khall@fchea.org](mailto:khall@fchea.org)) or Connor Dolan ([cdolan@fchea.org](mailto:cdolan@fchea.org)).

A Research Priorities workshop by HySAFE will be held September 17-20 in Buxton, UK. There will be a focus IPHE-RCSWG / HySafe workshop on Tunnels on the 18<sup>th</sup> of Sept. This is the first IPHE-RCSWG / HySafe MOU branded workshop.

October 16-18 will be a GTR phase II Meeting in Brussels.

A Hydrogen Energy Ministerial Meeting is to be held in Tokyo, Japan on October 23<sup>rd</sup>.

September 12 – 14 – California Global Climate Summit in San Francisco, CA  
Hydrogen Council will be meeting during that time as well.

## [Hydrogen Safety Panel](#) (HSP)

### Training Sessions and Stakeholder Meetings

- **Connecticut:** Sept 12, 2018 (training session and stakeholder meeting – [230 Ella T Grasso Blvd, New Haven, CT 06519](#)) 9:00 am training session; 11:00 am stakeholder meeting; coordinated with the City of New Haven, Connecticut Hydrogen Fuel Cell Coalition, and the Greater New Haven Clean Cities Coalition
- **Rhode Island:** Sept 13, 2018 (training session – [1 Dixon St, Westerly, RI 02891](#)) 1:00 PM training session; coordinated with the New England Association of Fire Marshals
- **New Jersey:** Sept 14, 2018 (training session and stakeholder meeting – [71 Dudley Rd, New Brunswick, NJ 08901](#)) 11:30 AM training session and 2:30 PM stakeholder meeting; coordinated with the NJ Fuel Cell Coalition and NJ Clean Cities
- **Massachusetts:** Oct 1, 2018 (training session – Murray D. Lincoln Campus Center, [1 Campus Center Way, Amherst, MA 01003](#)) 8:30 AM training session; coordinated with the New England Building Officials Education Association
- **Massachusetts:** Oct 4, 2018 (stakeholder meeting – [281 Albany St, Cambridge, MA 02139](#)) Stakeholder meeting; coordinated with the Massachusetts Hydrogen Coalition

## IV. Global Technical Regulations

Nha Nguyen

GTR meeting coming up this Fall in Brussels (October 16-18).

## V. Codes and Standards Organization Updates

### IEC TC 105

Kelvin Hecht

A Working Group has been very active this summer trying to adopt the International Standard for Fuel Cell Modules and adopt it as a US Standard that required a very close review of the international standard. Several US modifications were identified. There was a similar activity with Canada, so there was coordination. Identified several areas of inconsistencies. There was a vote on the next edition, the US was the only country to vote against the standard. That is okay as we have identified issues that will be addressed in the next edition.

There will be a plenary in Milan in November. The major activity that I hope to take away from that is to understand how international fuel cells when they are adopted by member countries, how they work. A country can announce that they have adopted a fuel cell standard and brought it into their country, but no one has heard of it in their country. Will discuss who handles standards, how they implement them, etc.

### ISO/TC 197

Karen Quackenbush/ Glenn Scheffler/Jay Keller

Upcoming plenary meeting in December.

WG 24 is pushing forward. Working back comments from DIS. Hope to have them ready for the Plenary in December. Hope to get this to IS by 2019. WG 24 is the lynchpin of all the component standards that will fall in line.

Because it is the lynchpin, the other WGs have been stalled to some extent while this document solidifies. Now we can expect those to move forward again.

Spencer Quong – WG 27 and 28 are meeting on October 8<sup>th</sup> in Paris.

## **NFPA 2**

**Carl Rivkin**

Karen Quackenbush - Second draft meeting was held last month in Massachusetts. Were able to address all of the comments. We are awaiting the ballot so that we can vote formally. A couple of Task Groups were formed. A key activity taking place will be a permitting guide that when it is ready may become annex material for NFPA 2. In the meantime, there will be a note to H2Tools and NFPA for more permitting material.

Kelvin Hecht – When the H2Tools showed up in the discussion, I tried to access the website today and it was not available yet. Karen agreed this group will be notified when it has been posted for review and feedback.

Jay Keller – Have liquid separation distances been taken care of?

Karen – It remains a Task Force, but there has been some revision to the text to clean it up. There is some reorganization to be much clearer.

NFPA 55 and NFPA 2 are on the same schedule. We are working with NFPA staff to ensure we keep in line and as up to date as possible.

## **ICC**

**Spencer Quong**

Public comments just came out and the agenda for the upcoming meeting in Richmond were also posted. They can be downloaded from the ICC website.

## **CSA**

**Sara Marxen**

- **CSA HGV 4.3** (hydrogen fueling parameters) is an active project to develop the next edition. Industry review has closed for the draft document, and the TSC will meet to discuss comments.
- **CHMC 2** (chemical compatibility for non-metals) is an active project to develop the first edition. The Technical Subcommittee plans to send the draft standard for Industry/Public Review in early October, with the goal of publishing in late 2018/early 2019.
- **HGV 4.1** (stations) is a new project to develop the next edition. The TSC will be meeting on September 26 and October 3 via WebEx, and then in person in October in San Antonio.
- **HGV 4.9** (dispensars) is a new project to develop the next edition. The TSC will be meeting on September 19 via WebEx, and then in person in October in San Antonio.
- **CSA Group U.S. Committee Week** is planned for San Antonio, Texas, with the Hydrogen Transportation Technical Committee meeting on the afternoon of October 16, HGV 4.9 (stations) TSC meeting on October 18 and HGV 4.1 (dispensars) TSC meeting on October 17.
- **ISO TC 197 Plenary (and WG Meetings)** will be co-hosted by CSA and SCC in Vancouver – December 3 - 7, 2018. Working Groups -19 (dispensars), -21 (compressors) & -24 (stations) are tentatively scheduled to meet.

- CSA FC 6 is the International adoption of IEC 62282-2-100 IEC, fuel cell module standard, and is expected to be at ballot in October.
- CSA hosted a **North American Hydrogen Codes, Standards and Regulatory Forum** in Sacramento, CA on August 9. The forum focused on road-mapping codes and standards activity. A final report will be published by Natural Resources Canada, however the interim recommendations include:
  - Code comparison (IFC, NFPA 1, NFPA 2, CHIC, etc.) to identify the differences and requirements that would be better suited for component standards, rather than the code documents.
  - Analyze standards landscape for duplication (and update/streamline, as necessary)

## **SAE**

**Mike Steele**

We are planning on meeting the 11<sup>th</sup> and 12<sup>th</sup> of September.

SAE has other meetings planned for November 5<sup>th</sup> and 6<sup>th</sup> and will discuss participation / conflicts with other meetings and events.

## **CGA**

**Rob Early**

CGA continues to work on its task force to update the standard for gas and liquid hydrogen. Planning on doing some testing this fall on doing some venting from a hydrogen vent stack, along with some radiation. Some calculated radiation in the G55 standard may be too restrictive. Hopefully will be able to reduce some set back distances for these systems.

Jay Keller – Suggest the concern now and this activity is centered around liquid releases. The international community has put to rest jet flames with respect to understanding behavior. We have modeling that handles this. When we discuss this, I caution us to be specific on what we are trying to do to avoid confusion. This current activity focuses on liquid and very cold hydrogen unintended release behavior.

## **ASTM**

**Jennifer Hamilton**

FTIR – ASTM D7653

Working with Air Gas and ASTM for a bottle to go to Brazil. We are working on getting that sample shipped, but there is progress. One negative comment for the FTIR method, one of the two methods in the two inter laboratory studies (ILS) that the samples are for. It has to be reaffirmed by December of this year or it falls off. Working with the technical contact to get it back to ballot before the end of the year.

## **ASME**

**John Bendo**

No update at this time.

## **VI. Discussion Topics**

### **Facilitating Deployment**

**Carl Rivkin**

No update at this time.

## **H<sub>2</sub>USA Activities**

**Karen Quackenbush**

Safety, Codes, and Standards work has been on hold.

Jay Keller - DOE and Will James specifically are working on the bridge and tunnel effort. If you are working on this, stress that you be coordinated with Will.

## **H2@Scale**

R&D consortium kick off in August in Chicago. The agenda and presentations are posted on the DOE website.

<https://www.energy.gov/eere/fuelcells/h2-scale-rd-consortium-kick-meeting>

## **Regulatory Matrix Review and Comment**

**Karen Quackenbush**

<http://www.fchea.org/s/FCHEA-Regulatory-Matrix-markup-June-30-2018.pdf>

## **Permitting and Installation of Hydrogen Fueling Stations**

### **CA Station Implementation**

**Jennifer Hamilton**

We are still at 35 hydrogen stations in California. Several more stations are close to being open.

Scheduling a train the trainer program with the Sacramento Fire Department.

Shell confirmed with Go-Biz that they are moving up the date on the tracking sheet to Q1 2019 for their stations.

HyStep continues to go to the stations and conduct the testing.

### **CA DMS Fuel Quality / Metrology**

**Kevin Schnepf**

Submitted comments to the open handbook 44.

### **Legal Metrology Standards Hydrogen Fuel Quality and Measurement**

**Juana Williams/Ralph Richter**

OIML Recommendation (R) 139 has passed its preliminary ballot and will be presented for final approval at the October 8-12, 2018-53<sup>rd</sup> CIML Meeting in Hamburg, Germany. A copy of the most recent draft is available. Please send your requests for a copy to Ralph Richter at [ralph.richter@nist.gov](mailto:ralph.richter@nist.gov)."

The CA Division of Measurement Standards has put forward a proposal to update NIST Handbook 44 Section 3.39 Hydrogen Gas-Measuring Devices - Tentative Code making it a permanent code with several modifications. The deadline for submission to start the revision process was September 1st. The proposal is on the agenda for the four regional weights

and measures associations, once approved there it moves to the January 2019 Interim Meeting of the National Conference on Weights and Measures.

The last of the four regions meets October 15-17, 2018. There are a couple of areas where the test draft size may affect testing of the minimum measured quantity delivery, along with a few other areas where California differs. There is time between now and January to reach a compromise on any differences in the published and proposed standards. The Northeast corridor is supporting development of a hydrogen highway; however, it is recognized that although California is enforcing its own permanent hydrogen code, other jurisdictions will need a handbook code that no longer has experimental or trial status.

## **VII. Open Discussion & Other Issues**

## **VIII. Next Meeting – Wednesday, October 3, 2018 at 3:00 PM Eastern**