

**National Hydrogen and Fuel Cell Codes and Standards Coordinating Committee
(NHFCSCC)**

**Wednesday, September 8, 2021
TIME: 2:00 – 3:00 pm (Eastern Standard Time)**

Minutes

Attendees

**Amit Dhingra
Amy Ryan
Bob Boyd
Brian Ehrhart
Chris LaFleur
Christina Daniels
Christine Watson
Connor Dolan
Eric Prause**

**Ian MacIntire
Jay Keller
Juana Williams
Karen Quackenbush
Kevin Harris
Mike Steele
Norman Newhouse
Rangachary Mukundan
Rich King**

**Rob Early
Sara Marxen
Spencer Quong
Yuk Wong
Bill Chernicoff
Will James
Douglas Olenick**

I. Welcome and Housekeeping Items

FCHEA's anti-trust guidelines and agenda reviewed.

Previous meeting minutes were approved.

II. DOE/HQ Update

Brian Ehrhart

The DOE Hydrogen Shot Summit was held last week with many high-profile speakers including Secretary Granholm, Bill Gates, John Kerry, and many others. Approximately 3,000 individuals attended the plenary.

III. Codes & Standards 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) or Connor Dolan (cdolan@fchea.org).

IV. Global Technical Regulations

Ian MacIntire

Next GTR IWG meeting dates will be October 12, 13, and 15.

Task Forces are meeting on roughly a monthly basis.

Task Force 0 is meeting tomorrow and is working on another version of drafting before the IWG meeting.

V. Codes and Standards Organization Updates

Institute of Electrical and Electronics Engineers

Mark Siira

IEEE have met with FCHEA's Stationary Power WG again recently to discuss planned changes to IEEE 1547 documents and discuss potential concerns with new requirements that intermittent energy sources, fuel cells, and inverters have to work together to meet.

International Electrotechnical Commission IEC TC 105

Kelvin Hecht

The Committee reviewed the following written report provided in advance.

IEC 62282-6-401

Micro fuel cell power systems – Power data interchangeability and performance test methods for laptop computers
Committee Draft (CD) open for comments until 10/16/21

IEC 62282-3-100

Stationary fuel cell power systems – Safety
Notification of 3rd edition to commence

IEC 62282-4-101

Fuel cell power systems for industrial electric trucks – Safety
Committee Draft for Vote (CDV) open until 11/12/21

IEC 62282-4-600

Fuel cell/battery hybrid systems performance test methods for excavators
Committee Draft for Vote (CDV) open until 11/19/21

IEC 62282-7-2

Single cell/stack test methods for SOFC
Convenor change: Koseki to Kinoshita

Plenary to be held in Seoul, Korea and virtually October 27-28, 2021.

International Standards Organization ISO/TC 197

Karen Quackenbush/Jay Keller

ISO 19880-8 Fuel quality Control alignment with ISO 14687 has been published.

Couple of upcoming meetings. On the east coast at midnight on Thursday, September 9th for WG 24 and midnight on Friday, September 10th for a WG 5.

Working Group 28 working to schedule in October to discuss hydrogen quality

Working Group 23 meeting will be held on September 21 from 2 to 4 PM PDT on hydrogen quality sampling.

Subcommittee 1 is being developed. The focus will be to look at hydrogen activities in ISO that TC 197 typically does not look at with a focus on hydrogen at scale.

National Fire Protection Association NFPA 2

Chris LaFleur

Due to the NFPA error counting votes from the first draft meeting there was an extended public comment period which closed in July. We just found out recently that NFPA can not accommodate a second draft meeting in the Fall as it was originally planned. The expectation is that the meeting will now be held in early next year. We run the risk of now slipping a year in the cycle due to this delay. All new codes need to be approved in time for the vote at a June technical session and if that timing is missed then it would be pushed out one year for publication in Fall 2023 instead of Fall 2022.

International Codes Council (ICC)

Spencer Quong

Second draft meeting coming up in two weeks. There are no major hydrogen comments expected.

CSA Group

Sara Marxen/Brent Hartman

Technical Committee Meetings		
Hydrogen Transportation Technical Committee (WebEx) – October 6, 2021 from 1:00 - 3:30 PM Eastern.		
Fuel Cell Technical Committee (WebEx) – November 17, 2021 from 12:00 - 3:00 PM Eastern.		
Active / Recently Published Projects		
TSC	Designation/Title	Status
HGV 4.3	HGV 4.3, Test methods for hydrogen fueling parameter evaluation	This project is a revision of an existing standard and will include content related to MC formula. The TSC completed review of comments, and the draft document is being prepped for Technical Committee Ballot.
HGV 4.2	HGV 4.2, Hoses for dispensing compressed gaseous hydrogen	This project is a revision of an existing standard, and will update to align with current hose technology, and remove requirements for on-board vehicle hoses (content will be transferred to HGV 3.1). The TSC completed review of comments, and the draft document is being prepped for Technical Committee Ballot.
HGV 5.2	HGV 5.2, Compact hydrogen fueling systems	This project is to develop a NEW standard for Compact Hydrogen Fueling Systems (HGV 5.2). The TSC continues to meet for content development.
HGV 3.1	HGV 3.1, Onboard vehicle components for hydrogen gas vehicles	This project is a revision of an existing standard for technology updates, as well as inclusion of the on-board vehicle hose requirements (transferred from HGV 4.2). The TSC continues to meet for content development.
HGV 4.1	HGV 4.5, Priority and sequencing equipment for hydrogen vehicle fueling	This project is to develop a standard to REINSTATE an updated edition of a Priority and Sequencing standard. A seed document draft has been prepared and a kickoff meeting with the HGV 4.1 TSC is being scheduled for Summer 2021.
FC 5	Hydrogen generators	Published March 2021. This is a US only adoption of

	using fuel processing technologies — Part 1: Safety	ISO 16110-1:2007.
C22.2 No. 22734	Hydrogen generators using water electrolysis	This project is a binational adoption of ISO 22734. Project kicked off and the TSC is meeting for content development.

Society of Automotive Engineers (SAE)

Mike Steele

Interface task force meeting held two weeks ago. Request to reopen J2601 to deal with two specific issues. A survey has been circulated to reopen these topics.

J3219 on Fuel Quality is having a conference call today.

J2601-4 Ambient Fueling is having a call on the 13th.

Compressed Gas Association (CGA)

Rob Early

Standard	Current edition	Status
CGA G-5, <i>Hydrogen</i>	8 th (2017)	Deadline to submit proposed changes for next edition is 7/7/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-019
CGA G-5.3, <i>Commodity specification for hydrogen</i>	7 th (2017)	Deadline to submit proposed changes for next edition is 6/4/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-013
CGA G-5.4, <i>Standard for hydrogen piping systems at user locations</i>	6 th (2019)	Deadline to submit proposed changes for next edition is 12/22/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-54
CGA G-5.5, <i>Hydrogen vent systems</i>	3 rd (2014)	The 5 th edition has been published and can be found at https://portal.cganet.com/Publication/Details.aspx?id=G-5.5 Deadline to submit proposed changes for next edition is 03/04/2026. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=26-3 Heat radiation testing at Chart Industries in New Prague, MN date is planned for later this summer. The goal is for the task force to review test results this fall.
CGA G-5.6, <i>Hydrogen pipeline systems</i>	1 st (2005 – reaffirmed 2013)	Deadline to submit proposed changes for next edition is 8/1/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=19-018
CGA H-1, <i>Service conditions for portable,</i>	2 nd (2011)	Deadline to submit proposed changes for next edition is 2/3/2022.

Standard	Current edition	Status
<i>reversible metal hydride systems</i>		https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-033
CGA H-2, <i>Guideline for classification and labeling of hydrogen storage systems with hydrogen absorbed in reversible metal hydrides</i>	2 nd (2018)	Deadline to submit proposed changes for next edition is 6/4/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-012
CGA H-3, <i>Standard for cryogenic hydrogen storage</i>	3 rd (2019)	Deadline to submit proposed changes for next edition is 12/1/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-036
CGA H-4, <i>Terminology associated with hydrogen fuel technologies</i>	3 rd (2020)	Deadline to submit proposed changes for next edition is 12/1/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-59
ANSI/CGA H-5, <i>Standard for bulk hydrogen supply systems</i>	3 rd (2020)	The deadline to submit proposed changes for the next edition is 2/26/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-010
CGA H-10, <i>Combustion safety for steam reformer operation</i>	2 nd (2018)	Deadline to submit proposed changes for next edition is 12/1/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-038
CGA H-11, <i>Safe start-up and shutdown practices for steam reformers</i>	2 nd (2020)	Deadline to submit proposed changes for next edition is 8/11/2025. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-30
CGA H-12, <i>Mechanical integrity of syngas outlet systems</i>	1 st (2016)	Deadline to submit proposed changes for next edition is 3/1/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=21-016
CGA H-13, <i>Hydrogen pressure swing adsorber (PSA) mechanical integrity requirements</i>	1 st (2017)	Deadline to submit proposed changes for next edition is 8/1/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-027
CGA H-14, <i>HYCO plant gas leak detection and response practices</i>	1 st (2018)	Deadline to submit proposed changes for next edition is 12/8/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-045
CGA H-15, <i>Safe catalyst handling in HYCO plants</i>	1 st (2020)	Deadline to submit proposed changes for next edition is 9/1/2025. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-59
CGA H-XXX (TBD), <i>Small scale hydrogen production and delivery</i>	New publication not released yet	Task force is creating first draft that will then go to the CGA membership for review.
CGA P-28, <i>OSHA</i>	4 th (2014)	The draft of the 5 th edition is back for ad hoc

Standard	Current edition	Status
<i>process safety management and EPA risk management plan guidance document for bulk liquid hydrogen supply systems</i>		committee review on September 10 before going to Standards Council for final review.
CGA PS-31, <i>Position statement on cleanliness for proton exchange membranes hydrogen piping / components</i>	1 st (2007 – reaffirmed 2019)	Deadline to submit proposed changes for next edition is 6/12/2025. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-16
CGA PS-33, <i>Position statement on the use of LPG or propane tanks as compressed hydrogen storage buffers</i>	1 st (2008 – reaffirmed 2020)	Deadline to submit proposed changes for next edition is 12/10/2026. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-41
CGA PS-46, <i>Position statement on roofs over hydrogen storage systems</i>	1 st (2017)	Deadline to submit proposed changes for next edition is 3/6/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-012
CGA P-48, <i>Position statement on clarification of existing hydrogen setback distances and development of new hydrogen setback distances in NFPA 55</i>	1 st (2016)	Deadline to submit proposed changes for next edition is 2/12/2021. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=21-062
CGA work item 21-126, <i>Hydrogen system siting and personnel exposures distances</i>		Work to support updates to liquid hydrogen setback distances proposed to NFPA 2 and NFPA 55 by Sandia.
CGA work item 21-127, <i>Transfer and unloading of hydrogen at near-consumer use points</i>	New publication not released yet	Develop new standard to update traditional hydrogen delivery practices for industrial users to improve practices for retail applications.
CGA work item 21-128, <i>Noise from hydrogen venting and hydrogen systems operations</i>	New publication not released yet	Develop new standard to reduce the noise from hydrogen system operations, including venting, particularly at retail applications where hydrogen system noise is greater than ambient noise

American Society for Testing & Materials (ASTM)

Jennifer Hamilton

Two standards open for ballot at the subcommittee level.

D7941 test method closing September 20.

D7650 particulate sampling which closes October 1.

To access the drafts, you need to be a member of ASTM.

American Society of Mechanical Engineers (ASME)

Ray Rahaman

No update at this time.

VI. Discussion Topics

Facilitating Deployment

All

No update at this time.

Center for Hydrogen Safety

Nick Barilo

No update at this time.

Regulatory Matrix Review and Comment

Karen Quackenbush

A new version will be provided at the end of the month. New items will be added on hydrogen and unmanned aircraft systems and other aviation standards. ASME PTC 50, the Fuel Cell Power System Performance Testing Code will also be added as it is under revision.

Please direct any updates, questions, or comments to Karen Quackenbush by email at kquackenbush@fchea.org.

Permitting and Installation of Hydrogen Fueling Stations

California Station Implementation

Jennifer Hamilton

We are still experiencing a hydrogen fuel shortage due to Hurricane Ida, although there is some hydrogen being delivered, it's not back to full status.

There are a few stations on the schedule for HySTEP so we do expect some more stations to open, including a HD one in Wilmington, in Q4.

Another tunnel study is underway for Boston by Sandia National Laboratories for the state of Massachusetts.

California Div. of Measurement Standards/Fuel Quality / Metrology **Christina Daniels**
Field testing has been underway and random sampling has been conducted at stations.

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

Juana Williams/Ralph Richter

No updates at this time.

VII. Open Discussion & Other Issues

FCHEA is working on a letter to update the OSHA standards along with CGA and others.

The seventh annual National Hydrogen and Fuel Cell Day is coming up on October 8, 2021!

VIII. Next Meeting – Tuesday, October 12, 2021 at 2:00 PM US Eastern.