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

Wednesday, June 5, 2024
TIME: 2:00 – 3:00 pm (Eastern Standard Time)

Minutes

Attendees

Connor Dolan	**Amy Ryan**	**Mark Fasel**
Karen Quackenbush	**Brian Ehrhart**	**Mark Siira**
Kelvin Hecht	**Kate Hyam**	**Mike Steele**
Sara Marxen	**Jennifer Hamilton**	**Owen Hopkins**
Laura Brumsey	**Tobias Hanson**	**Gerry Eisenberg**
Jennifer Gangi	**Norman Newhouse**	**Trey White**
Stella Pappasavva	**Christina Daniels**	**Will James**
Andrew Adkins	**Nick Barilo**	**Lisa Yang**
Christine Watson	**Jitesh P**	**Bob Boyd**

I. Welcome and Housekeeping Items

- FCHEA's anti-trust guidelines
- Meeting agenda
- Previous meeting minutes

II. DOE/HQ Update — Christine Watson

The Joint Office of Energy and Transportation (Joint Office) last week opened applications for a historic $1.3 billion funding opportunity for electric vehicle (EV) charging and alternative fueling infrastructure—**including hydrogen fueling infrastructure**—in urban and rural communities and along designated highways, interstates, and major roadways.

This funding opportunity is made possible by the Bipartisan Infrastructure Law's Charging and Fueling Infrastructure (CFI) Discretionary Grant Program and funds from the National Electric Vehicle Infrastructure (NEVI) Formula Program that are set aside for strategic grants to states and local governments. Supported by unifying guidance and technical assistance from the Joint Office, the CFI program is administered by the Federal Highway Administration and is open to state, regional, Tribal, and local government entities. The CFI program is divided into two distinct grant funding categories and requires that 50% of the funding over five years is made available for both *communities* and *corridors*:

- **Community Charging and Fueling Grants**: This program will strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure in urban and rural communities.
- **Alternative Fuel Corridor Grants**: This program will strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure along designated alternative fuel corridors.

Eligible applicants include states, metropolitan planning organizations, local governments, port authorities, Indian Tribes, U.S. territories, and more. Applications are **due by August 28, 2024**.

DOE released its Multi-Year Plan at the Annual Merit Review in May. Safety, Codes, and Standards has its own chapter in the document.

Here's the Safety Cods and Standards specific chapter in the MYPP:
https://www.energy.gov/sites/default/files/2024-05/hfto-mypp-safety-codes-standards.pdf

III. Codes &Standards Events and Fuel Cell Safety Information **Karen Quackenbush**

https://www.hydrogenandfuelcellsafety.info/s/FCHEA-Regulatory-Matrix-Markup-March-31-2024.pdf

Matrix: Newest edition (March 31, 2024) is now available for review. It uses redline/strikeout to depict progress over the last quarter. If you identify information in need of updating or have questions about any of the activities, please contact kquackenbush@fchea.org.

IV. Global Technical Regulations **Ian MacIntire**

NHTSA received several comment period extension requests for the hydrogen vehicle NPRM. Please see the link below for details.
https://www.federalregister.gov/public-inspection/2024-12333/federal-motor-vehicle-safety-standard-fuel-system-integrity-of-hydrogen-vehicles-compressed-hydrogen

V. Codes and Standards Organization Updates

Institute of Electrical and Electronics Engineers **Mark Siira**

New activity just approved. IEEE Industry Connections - Green Hydrogen https://standards.ieee.org/industry-connections/activities/green-hydrogen/. The primary focus for the proposed Industry Connections program is on – green – hydrogen as an energy carrier and energy storage for power systems / electrical applications. The goal for this Industry Connections Committee would be to identify gaps in technology and standards related to the use of green hydrogen primarily in the electrical power and energy sector, and subsequently initiate follow-on activities to address identified gaps.

1547 standard on interconnection is going through revision that includes vehicle to grid. This is on a fast track and is a high visibility project.

International Electrotechnical Commission IEC TC 105 **Kelvin Hecht**

The fuel cell power system cartridges working group for micro/portable systems has concluded activities. The IEC TC 105 plenary is exploring whether any countries have additional fuels to add to that list.

International Standards Organization ISO/TC 197 **Karen Quackenbush**

WG 22: ISO/DIS 19880-5, Gaseous hydrogen – Fuelling stations – Part 5: Dispenser hoses and hose assemblies, is out for vote and comment.

WG 23 (connectors) is preparing a NP Form 4 to restart the effort officially. Having addressed comments from a previous successful CD ballot, WG 23 plans to submit a DIS with the NP Form 4.

WG 34: ISO/DIS 22734-1, Hydrogen generators using water electrolysis — Part 1: General requirements, test protocols and safety requirements, is out for vote and comment.

SC 1 WG 1: ISO/CD 19870-1 - Hydrogen technologies — Methodology for determining the greenhouse gas emissions

Part 1: Emissions associated with the production of hydrogen up to production gate is out for vote and comment.

All technology Annexes are currently being worked on by the dedicated Task Forces of WG 1, who are making good progress. However, considering this work is still in progress, all technology Annexes are posted for information and commenting under a separate CIB "Work-in-Progress". Reviewers are advised to refer to them for cross-reference with the main text and Annexes A, B and C as applicable and provide comments as you see fit.

The following new draft documents are available for the related "Work in Progress" CIB:

- Annex E Water electrolysis
- Annex F Chlor-alkali electrolysis
- Annex G Steam cracking
- Annex H Coal gasification
- Annex I Methane pyrolysis
- Annex J Chemical looping water splitting (with CCS)
- Annex K Geological hydrogen
- Annex L Catalytic naphtha reforming

WG 16: A new work item proposal (NP) for ISO 15916, Hydrogen technologies -- Basic considerations for the safety of hydrogen systems is out for ballot, to start work on revising the Technical Report to be a Technical Specification.

The 1st edition of the following ISO deliverable is now published and available on ANSI's website:

ISO 19885-1, Gaseous hydrogen – Fuelling protocols for hydrogen fuelled vehicles – Part 1— Design and development process for fuelling protocols.
Link: https://webstore.ansi.org/

SCOPE: This document addresses the design and development of fuelling protocols for compressed hydrogen gas dispensing to vehicles with compressed hydrogen storage of fuel.

New Project Proposed for Cryo-compressed hydrogen refuelling protocol

SCOPE: This document defines the process of public and non public fueling stations for heavy duty vehicle. International industry is increasing its research and development activities on using clean energies in order to mitigate climate change effects arising from the use of fossil fuels. The automotive industry has identified its environmental impact and therefore successively introduces emission-free electric drive technologies into the market. This NP is focusing on the fueling process and the interface needed for heavy duty trucks, which are driven by hydrogen fuel cells or hydrogen combustion engines.

TC 197/WG 5 – Gaseous hydrogen land vehicle refuelling connection devices – Recent meeting in Boston, May 17. WG is addressing 17268-1 (Flow capacities up to and including 120 g/s) and 17268-2 (Flow capacities greater than 120 g/s). Livio Gambone is convenor. 17268-1 completed DIS Ballot and WG is addressing comments. Continued work on the 17268-2 document is focused on High Flow Receptacle Proposals and a list of KPIs for consideration of receptable profile selection is coming together.

TC 197/WG 18 – Gaseous hydrogen land vehicle fuel tanks and TPRDs – WG is addressing DIS comment on 19881 (tanks) and 19882 (TPRDs). Livio Gambone is convenor. Next meeting is planned for June 20th.

TC 197/WG 24 – Gaseous hydrogen – Fueling protocols for hydrogen-fuelled vehicles – Recent meeting in Boston, May 14-16. WG activity is officially restarted for HD fueling protocols document (ISO 19885-3). Steve Mathison is convenor. Next meeting is planned for June 27. The design and development standard work in WG 24 published in May as ISO 19885-1.

TC 197/WG 38 **NEW!** – Gaseous hydrogen – Fueling protocols for hydrogen-fuelled vehicles: communications between the vehicle and dispenser control systems. This is a new WG (formerly part of WG 24) and was approved in May for Communications document (ISO 19885-2). This WG has some coordination with WG 24 and was discussed at the recent WG meeting in Boston (May 14-16). Victoria Carette is convenor. Next meeting is planned for June 25. US TAG members will receive a Call for Experts for this new WG.

TC 197/SC 1 – The comment I made was to clarify Karen's portion that indicated Annex D was not referenced. It does exist and is titled *Methane Reforming (with CCS)*. It is part of the current CD for review/comment now for the Annexes A-D. Working Draft Annexes E-L are part of a CIB for comment.

SC 1 -

197 WG 5 – they have met in Boston three weeks ago. Refueling connection devices. Working on a -1 standard for volume standards under 120 and a -2 for over 120.

WG 24 – also met in Boston at the same time as WG5. That group is working on the heavy duty fueling protocol. The communications activity was approved to separate that activity into a new WG 38. That communications work is starting up again now after being previously paused. WG 38 has a new call for experts out as well to join that group. They will be meeting next in June.

WG 18 – manage fuel tanks and TPRD. Ballot closed on documents 19881 and 19882. Meeting on June 20th to discuss those comments with WG members and move onto a second DIS or FDIS.

National Fire Protection Association NFPA 2 and NFPA 853 **Chris LaFleur**

NFPA 2 - First draft meetings completed in May. Expecting a ballot on decisions made there. Waiting for the second draft report to be issued in October. Possibility for public comments on the second draft report to be reviewed in early 2025.

NFPA 853 – Installation standard for stationary fuel cells is meeting now in Charlotte, NC working on the next edition.

International Codes Council (ICC) **Mark Fasel**

H2 Working Group – meeting will occur tomorrow to address the comments made by technical committee on international fuel gas code to address primarily hydrogen mixtures in natural gas (hydrogen blending in natural gas). Fuel code gas committee will take results back from that working group to address comments which are due by July 8th.

ICC has filed ANSI pins to develop professional qualification requirements for hydrogen systems. The primary focus will be 1700 series for design professionals, engineers, inspectors, instructors, maintenance, and more. Calls for participation will be issued in the future. This work is being done in coordination with the Center for Hydrogen Safety. The first step is to develop a guideline for a standards working group to iterate on and develop into an ANSI standard.

Society of Automotive Engineers (SAE) **Mike Steele**

Task Force	*Document*	*	*Title*	*Date*	*Status*
Interface	J2600_201510	S	Compressed Hydrogen Surface Vehicle Fueling Connection Devices	21-Oct-15	Being revised in conjunction with ISO 17268
Interface	J2601_202005	S	Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles	29-May-20	Being revised
Interface	J2601/4	TIR	Ambient Temperature Variable and Fixed Orifice Fueling Protocol for Light Duty Gaseous Hydrogen Surface Vehicles	21-Nov-16	Reconciliation of final comment underway
Safety	J1766_201401	RP	Recommended Practice for Electric, Fuel Cell and Hybrid Electric Vehicle Crash Integrity Testing	10-Jan-14	Revised - Action required.
Safety	J2990/1_201606	RP	Gaseous Hydrogen and Fuel Cell Vehicle First and Second Responder Recommended Practice	3-Jun-16	Reconciliation meeting held. Final changes being made by sponsor.
Safety	J3294	TIR	Guidance for Material Selection for use in Hydrogen Systems	20-Apr-23	Soliciting comments

CSA **Sara Marxen**

Technical Committee Meetings
• If you are interested in joining hydrogen standards development committees with CSA, please contact Iris Monner (iris.monner@csagroup.org) • If you are interested in joining fuel cell standards or hydrogen generation development committees with CSA, please contact Mark Duda (mark.duda@csagroup.org)

- CSA Group's U.S. Committee Week is planned for October 21-24 in Philadelphia, PA.

Active Projects	
Designation/Title	**Status**
HGV 4.3, Test methods for hydrogen fueling parameter evaluation	This project is a revision of an existing standard to develop text to transition from a testing standard to a standard that can be used for certification. The Technical Committee ballot closed with no negative votes. We are preparing for publication.
CHMC 1, Test methods for evaluating material compatibility in compressed hydrogen applications - Metals	This project is to revise the existing edition of CHMC 1 to address updates in testing methods and clarify requirements. Content development continues with monthly meetings. Please contact Sara Marxen (sara.marxen@csagroup.org) if interested in joining this work.
TS HGV 4.3.5, Test methods for high flow hydrogen fuelling parameter evaluation	This project is to coordinate with the recent release of SAE TIR J2601/5, *High-Flow Prescriptive Fueling Protocols for Gaseous Hydrogen Powered Medium and Heavy-Duty Vehicles*. CSA will develop a Technical Specification for verification to the SAE protocol.
B107, Enclosed Hydrogen Equipment	This project is to develop a new standard that will address safety requirements related to hydrogen equipment use inside an enclosure. The committee is dispositioning Public Review and CSA Editorial comments.
B401.3, Hydrogen vehicle and trailer maintenance facilities code	This project is a new Canadian code that will be aligned with existing maintenance facility requirements in CSA B401.1 (natural gas) and existing hydrogen requirements – BNQ 1784-000 and NFPA 2 and 30A. Please contact Iris Monner (iris.monner@csagroup.org) if interested in joining this work.
FC 62282-2-100 * C22.2 No. 62282-2-100, Fuel cell/water electrolysis module	The committee continues to meet to adopt IEC 62282-2-100 - *Fuel Cell Technologies – Part 2-100: Fuel cell modules – Safety* for US and Canada and expanding the scope of the adoption to include water electrolysis modules. Contact Mark Duda (mark.duda@csagroup.org) for additional information.

Compressed Gas Association (CGA) **Rob Early**

Status of current and future publications:

Standard	Current edition	Status
CGA G-5, *Hydrogen*	8th (2017)	Updated edition to be released by 6/7/2024 and will have the ANSI designation.
CGA G-5.3, *Commodity specification for hydrogen*	7th (2017)	Deadline to submit proposed changes for next edition was 5/1/2023. A total of 7 PCs have been submitted. A PC resolution meeting was scheduled for 3 November 2023. Updates are now going through staff review. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-013

Standard	Current edition	Status
CGA G-5.4, *Standard for hydrogen piping systems at user locations*	6th (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, *Hydrogen vent systems*	3rd (2014)	Deadline to submit proposed changes for next edition is 03/04/2026. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=26-3 The task force met 19 and 20 October 2023 to review test results.
CGA G-5.6, *Hydrogen pipeline systems*	1st (2005 – reaffirmed 2013)	Deadline to submit proposed changes for next edition is 8/1/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=19-018
CGA H-3, *Standard for cryogenic hydrogen storage*	3rd (2019)	Updated edition has been released and will have the ANSI designation.
CGA H-4, *Terminology associated with hydrogen fuel technologies*	3rd (2020)	Deadline to submit proposed changes for next edition is 12/1/2024. However, all the content has been added to the updated version of CGA G-5. Once CGA G-5 has been issued, CGA H-4 will be retired. For updates use the following link: https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-59
ANSI/CGA H-5, *Standard for bulk hydrogen supply systems*	3rd (2020)	The deadline to submit proposed changes for the next edition is 2/26/2024. CGA is waiting for approval from the American National Standards Institute (ANSI) to activate this project. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-010
CGA H-10, *Combustion safety for steam reformer operation*	2nd (2018)	Deadline to submit proposed changes for next edition is 9/21/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-038
CGA H-11, *Safe start-up and shutdown practices for steam reformers*	2nd (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, *Mechanical integrity of syngas outlet systems*	1st (2016)	Deadline to submit proposed changes for next edition is 6/1/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=21-016
CGA H-13, *Hydrogen pressure swing adsorber*	1st (2017)	Council ballot due 21 Aug 2023, IHC Association approvals due 18 Sept 2023.

Standard	Current edition	Status
(PSA) mechanical integrity requirements		Pending no comments, estimated publish date by the end of September. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-027
CGA H-14, *HYCO plant gas leak detection and response practices*	1st (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, *Safe catalyst handling in HYCO plants*	1st (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-17, *Small scale hydrogen production and delivery*	New publication not released yet	Council ballot due 9 Aug 2023, IHC Association approvals due 7 Sept 2023. Pending no comments, estimated publish date by the end of September. https://portal.cganet.com/WorkItem/Details.aspx?id=18-093
CGA P-28, *OSHA process safety management and EPA risk management plan guidance document for bulk liquid hydrogen supply systems*	5th (2022)	Deadline to submit proposed changes for next edition is 08/01/2027. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-49
CGA PS-31, *Position statement on cleanliness for proton exchange membranes hydrogen piping / components*	1st (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, *Position statement on the use of LPG or propane tanks as compressed hydrogen storage buffers*	1st (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, *Position statement on roofs over hydrogen storage systems*	1st (2017)	The ad hoc committee will meet on 8 August 2023to resolve public comments and update PS-46. For updates see the link below: https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-012
CGA PS-48, *Position statement on clarification of existing hydrogen setback distances and development of new hydrogen setback distances in NFPA 55*	1st (2016)	The ad hoc committee met on 8 August 2023 to resolve public comments and update PS-48 to point to NFPA 2 for hydrogen instead of pointing to NFPA 55. For updates see the link below: https://portal.cganet.com/WorkItem/Details.aspx?id=21-062

Standard	Current edition	Status
PS-69, *Liquid Hydrogen Supply Systems Separation Distances*	1st (2022)	CGA has developed a position statement pointing users to the new liquid hydrogen system distances in NFPA 2:2023. The position statement covers the process of requesting a variance to use the numbers from the NFPA 2 section of the NFPA web site. PS-69 is free for downloading at https://www.cganet.com/wp-content/uploads/PS-69_1.pdf
CGA work item 21-127, *Transfer and unloading of hydrogen at near-consumer use points*	New publication not released yet	Develop a new standard to update traditional hydrogen delivery practices for industrial users to improve practices for retail applications.
CGA work item 21-128, *Noise from hydrogen venting and hydrogen systems operations*	New publication not released yet	Develop a 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. The task force held a meeting November 1 and is working on developing content for the publication.
CGA H-7, *Hydrogen system best practices*	New publication	Develop a new standard to capture recommended best practices for handling hydrogen, filling containers, starting up systems, maintaining hydrogen systems, and similar topics to ensure safe practices for those new to the hydrogen space and to share best practices from those already experienced with hydrogen. The standard has been released.
CGA work item 22-116, *Hydrogen separation distances*	New publication not released yet	CGA is developing a globally harmonized standard on the methodology for developing separation distances between hydrogen systems and exposures. The standard will provide details on mitigation techniques for reducing required distances, particularly in near-consumer locations (such as vehicular fueling) where room is limited. The working group has a first outline and continues to add content. The JWG has met multiple times via web conferences and met in person February 6-7 to continue work on the draft. Future web conferences are scheduled for 3 April 2024 and 2 May 2024.

Standard	Current edition	Status
CGA work item 22-127, *Hydrogen education plan*	New publication not released yet	CGA is developing a globally harmonized standard on hydrogen emergency response and safe hydrogen handling training. The JWG met on 17 April 2023, 11 May 2023, 9 June 2023 27 June 2023, 8 August 2023, and 15 September 2023.
CGA Hydrogen production gap analysis	Identification gaps in standards for hydrogen production	The hydrogen production gap analysis task force is reviewing CGA's portfolio to identify and develop plans to fill the gaps. Some broad topics are hydrogen production through electrolysis and hydrogen liquefaction.

Upcoming events:

CGA has established a new hydrogen membership category for those interested in hydrogen activities and not the whole range of industrial gases. The new membership category has a lower fee structure. More details can be found at https://www.cganet.com/cga-announces-formation-of-hydrogen-membership/ . Those who are interested are encouraged to review the material at the CGA web site https://www.cganet.com/membership/#hydrogen-membership or contact Rob Early at rearly@cganet.com . A list of CGA member companies, including can be found at https://www.cganet.com/about-us/cga-members/.

CGA has launched https://www.safehydrogenproject.org/ to grow awareness and access to standards and safety information. More details can be found at https://www.cganet.com/compressed-gas-association-announces-landmark-hydrogen-initiative/

CGA and other global industrial gas associations are developing joint working groups to establish consistent global positions on content in ISO/TC 197 and ISO/TC 197/SC 1 standards.

CGA will host its Technical Summit 2024 in Houston October 28-30 with three parallel seminars: (1) Hydrogen Safety and Technology, (2) Atmospheric Gases and Equipment, and (3) Specialty Gases.

American Society for Testing & Materials (ASTM) **Chrstina Daniels**

ASTM committee D03 Gaseous Fuels will have an in-person meeting Tuesday and Wednesday June 18-19, 2024, in Austin, TX. The D03.14 Hydrogen and Fuel Cells subcommittee will meet Tuesday afternoon.

American Society of Mechanical Engineers (ASME) **Ray Rahaman**

3078 was published which deals with clarification on how to apply the code regarding cell stack assemblies for electrolyzers. The goal of ASME is to make that a mandatory appendix and apply it to fuel cells as well. The code case is now going through revision. Industry comments have been provided and some clarifications are anticipated. Industry is requesting and pushing for some more commentary / general guidance notes in how the code case applies, particularly for manufacturers that have never had to apply pressure vessel requirements to a cell stack itself. The way ASME is structured, their standards committee does not like to see commentary

in code case or mandatory appendixes, the group will be discussing that subject next week on June 18th. The comments on the code case will be reviewed and will begin work on a document that can be referenced such as a technical bulletin on how to apply this code case.

VI. Discussion Topics

Center for Hydrogen Safety **Jennifer Hamilton**

Conference was held last week with 200+ attendees. CHS is planning two conferences next year.

California Station Implementation **Ben Xiong**

Here are a few updates on the California Hydrogen Refueling Network:

- Open stations: 55
- Stations commissioning: Port of Oakland, Thousand Palms
- California continues to experience ongoing gaseous hydrogen supply challenges affecting 10 light duty and 3 heavy duty stations in Southern California.

CEC investment plan group is meeting this week on the 7th.

Advisory Committee page: https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/advisory-committee-clean-transportation

Docket with notice for participation:
https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-ALT-01

California Div. of Measurement Standards/Fuel Quality / Metrology **Yuk Wong**

Fuel quality sampling continues in northern and southern CA. Some equipment repair is underway.

DMS meeting is proposing the adoption and incorporation of ASTM fuel quality specifications. Will also update requirements for display.
On April 26, 2024, CDFA proposed to adopt and incorporate by reference two natural gas motor vehicle fuel specifications, ASTM D8080 Standard Specification for Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) Used as a Motor Vehicle Fuel and ASTM D8487 Standard Specification for Natural Gas, Hydrogen Blends for Use as a Motor Vehicle Fuel, and update existing dispenser labeling requirements.

Any interested person or authorized representative may submit written comments to CDFA that are relevant to the proposed regulatory action. Follow this link to access the rulemaking file and for instructions on how to submit comments: https://www.cdfa.ca.gov/dms/regulations.html. All written comments must be submitted to CDFA by 5:00 p.m. PDT on June 11, 2024.

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

(1) U.S. Weights and Measures Standards Development Process

An overview of the status assigned to industry proposals to modify legal metrology standards for hydrogen gas-measuring devices used to refuel vehicles, which were addressed by the National Conference on Weights and Measures (NCWM) during its January 7-10, 2024 Interim Meeting held in New Orleans, Louisiana, are shown in the table below. The NCWM Specifications and Tolerances (S&T) Committee addressed a single proposal to include a device owner safety requirement in NIST Handbook 44 *Specifications, Tolerances, and Other Technical Requirement for Weighing and Measuring Devices*, Section 3.39. The NCWM Laws and Regulations (L&R) Committee addressed two separate fuel quality standard proposals to modify NIST Handbook 130 *Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality*, Section IV. Uniform Regulations F. Uniform Fuels and Automotive Lubricants Regulation. The January 2024 NCWM Interim Meeting Reports that include all three proposals under consideration in entirety (submitter, justification, links to associated materials, etc.) are available on the NCWM website at: https://www.ncwm.com/publication-16.

NCWM Committee	**Agenda Item Status/Agenda Item No./Agenda Item Title**	**Submitter's Stated Purpose**	**Submitter's Proposed Modification to the Code**	**Preliminary NCWM Committee Findings** (Final January 2024 NCWM Interim Meeting Report due mid-April 2024)
S&T	**Developing** HGM-23.1 UR.3.8. Safety Requirement [This is the second year the proposal is being considered]	Add safety requirement for hydrogen gas measuring devices to NIST Handbook 44 Section 3.39.	Add a new nonretroactive user requirement paragraph UR.3.8. to read: ***UR.3.8. Safety Requirement –All hydrogen gas-measuring devices subject to this code shall maintain verification of testing demonstrating conformance with the latest version of SAE J2601 Fuel Protocols for Light Duty Gaseous Hydrogen Surface Vehicles, as determined by the latest version of ANSI/CSA HGV 4.3 "Test Methods for Hydrogen Fueling Parameter Evaluation. (Nonretroactive as of January 1, 20XX)***	The NCWM assigned developing status to the proposal while it awaits a report on data being collected by CARB and CADMS that demonstrates how verification of gaseous hydrogen vehicle refueling systems to the safety protocol (SAE J2601) is also relevant to the NIST Handbook 44 device performance requirements for the equipment's metrological parameters.

NCWM Committee	Agenda Item Status/Agenda Item No./Agenda Item Title	Submitter's Stated Purpose	Submitter's Proposed Modification to the Code	Preliminary NCWM Committee Findings (Final January 2024 NCWM Interim Meeting Report due mid-April 2024)
L&R	**Withdrawn** FLR-23.3 Section 2.20. Hydrogen Fuel [This is the second year the proposal is being considered]	Add equivalent hydrogen quality standard, ISO 14687 to 2.20. Amends NIST HB 130 Part IV. Uniform Regulations F. Uniform Fuels and Automotive Lubricants Regulation Section 2 Standard Specifications under 2.20.	Modify Section 2 Standard Specification 2.20 as follows: **2.20. Hydrogen Fuel.** – Shall meet the latest version of SAE J2719, "Hydrogen Fuel Quality for Fuel Cell Vehicles." **or ISO 14687 "Hydrogen fuel quality — Product specification".** (Added 2012) **(Amended 20XX)**	The Committee, after hearing no support for the item and having not received any communication from the submitter regarding their request to select one standard agreed to withdraw the item. The Committee noted that withdrawing the item would not change the current status that hydrogen fuel shall meet the latest version of SAE J2719 *Hydrogen Fuel Quality for Fuel Cell Vehicles*.
L&R	**Voting** **Item Block 2 (B2)** B2: FLR-24.2 2.9. Liquefied Natural Gas (LNG) Vehicle Fuel, 2.10. Compressed Natural Gas (CNG), and 2.XX. Compressed Natural Gas (CNG) Blended with Hydrogen B2: FLR-24.1	Amend NIST Handbook 130 Part IV. Uniform Regulations F. Uniform Fuels and Automotive Lubricants Regulation Section 2 Standard Specifications under Sections 2.9 and 2.10 by replacing SAE J1616 and SAE J2699 with ASTM D8080 "Standard Specification for Compressed	Modify Section 2.9 and 2.10 as follows: **2.9. Liquefied Natural Gas (LNG) Vehicle Fuel.** – Shall meet the latest version of ~~**SAE J2699, "Liquefied Natural Gas (LNG) Vehicle Fuel."**~~ **ASTM D8080 "Standard Specification for Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) Used as a Motor Vehicle Fuel."**	The Committee did not hear support or opposition for the item, but recognized the proposal has merit, and therefore assigned the proposal Voting status. The L&R Committee worked further with the NCWM to correct the incorrect code series references.

NCWM Committee	Agenda Item Status/Agenda Item No./Agenda Item Title	Submitter's Stated Purpose	Submitter's Proposed Modification to the Code	Preliminary NCWM Committee Findings (Final January 2024 NCWM Interim Meeting Report due mid-April 2024)
	3.11.2.1.X. Identification of Grade and 3.12.2.X Identification of Grade [A new proposal]	Natural Gas (CNG) and Liquefied Natural Gas (LNG) Used as a Motor Vehicle Fuel." Amend NIST HB 130 Part IV. F. Section 2 by adding a new paragraph for ASTM D8487 "Standard Specification for Natural Gas, Hydrogen Blends for Use as a Motor Vehicle Fuel." Amend NIST HB 130 Part IV. F. Uniform Fuels and Automotive Lubricants Regulation Section 3 under 3.11 CNG and 3.12 LNG by adding labeling of grades to the method of sale for CNG and LNG.	**2.10. Compressed Natural Gas (CNG).** – Shall meet the latest version of **~~SAE J1616, "Recommended Practice for Compressed Natural Gas Vehicle Fuel."~~** **ASTM D8080 "Standard Specification for Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) Used as a Motor Vehicle Fuel."** Include a new fuel quality requirement for CNG and hydrogen blended products to read: **2.XX. Compressed Natural Gas (CNG) Blended with Hydrogen. – Shall meet the latest version of ASTM D8487 "Standard Specification for Natural Gas, Hydrogen Blends for Use as a Motor Vehicle Fuel."** Modify to include proposed new grade labeling requirements in current HB 130 Part IV. F. Section 3. Classifications and Labeling for Sale under Section 3.11 Compressed Natural Gas (CNG) and 3.12 Liquefied	

NCWM Committee	Agenda Item Status/Agenda Item No./Agenda Item Title	Submitter's Stated Purpose	Submitter's Proposed Modification to the Code	Preliminary NCWM Committee Findings (Final January 2024 NCWM Interim Meeting Report due mid-April 2024)
			Natural Gas (LNG) as follows: **3.11.2.1.X. Identification of Grade. – Each retail dispenser of CNG shall be labeled with an identification of the grade of the product.** **3.12.2.2.X. Identification of Grade. – Each retail dispenser of LNG shall be labeled with an identification of the grade of the product.**	

The 109th NCWM Annual Meeting will be held July 14 through 18, 2024 in Cleveland, Ohio. Agenda items intended for adoption during the July 2024 NCWM Annual Meeting must have achieved "V" voting status at the conclusion of deliberations on the January meeting. Only the fuel quality standard and refueling dispenser under L&R Committee Agenda Item Block 2 is up for adoption in July 2024. The NCWM S&T and L&R Committees can be contacted through the NCWM website available at: info@ncwm.com.

Updates May 2024 U.S. Regional Weights and Measures Associations Input
Prior to the July 2024 meeting two regional weights and measures association meetings were held in May.

The regional meeting of the Northeastern Weights and Measures Association (NEWMA) Annual Meeting held May 6 through 9, 2024 in Cape Cod, Massachusetts resulted in for: (1) Item HGM-23.1: No comments were heard on this item and the region recommended the proposal maintain developing status; (2) Item FLR-23.3: No comments were heard. NEWMA recommended the proposal be withdrawn; and (3) Item Block 2: NEWMA concurs with recommendations to remove the term "compressed" and include the text "as a motor vehicle fuel" in the proposed title for the new blended fuel standard 2.X.X. to read "Natural Gas Blended with Hydrogen as a Motor Vehicle Fuel". NEWMA agreed that the item with those changes should move forward as a voting item on the NCWM July 2024 agenda.

The Central Weights and Measures Association (CWMA) Annual Meeting held May 20 through 23, 2024 in Des Moines, Iowa resulted in for: (1) Item HGM-23.1: No comments were received on this item. The merits of placing this information in NIST Handbook 44 were questioned along with unanswered past questions about the proposal. The item is recommended to be withdrawn from the NCWM agenda; (2) Item FLR-23.3: The item is recommended for being withdrawn from the NCWM agenda; (3) Item Block 2: The CWMA noted the recommended changes to the title of the proposed new blended product standard 2.X.X. to read "Natural Gas Blended with Hydrogen as a Motor Vehicle Fuel" and recommended the proposal move forward as a voting item on the NCWM July 2024 agenda.

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Comments on the proposals are encouraged in the standards development process and welcomed up through July 2024. NIST OWM plans to prepare and submit to the NCWM technical committees its comments in a technical analysis of the hydrogen proposals by June 24, 2024. The analysis will also be available on the NIST OWM website at: https://www.nist.gov/pml/owm. Members on NIST sponsored USNWG on the Development of Commercial Hydrogen Measurements will also be notified of the proposals' latest status. If you have questions or comments regarding the USNWG or NIST OWM's work on hydrogen projects in the areas of U.S. device standards, test procedures, or hydrogen fuel specifications, please contact Juana Williams by email at: juana.williams@nist.gov or by telephone at (301) 975-3989.

VII. Open Discussion & Other Issues

None at this time.

VIII. Next Meeting – Wednesday, July 10th at 2:00 PM US Eastern.
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