Hydrogen-XT, Inc. proposes to build 23 hydrogen fuel stations to complement the existing infrastructure in the state of California. These stations will be standardized around our patented stations design and on-site processes, and we are therefore submitting only one Hydrogen Safety Plan that is applicable to all locations.

# Hydrogen Safety Plan

## Hydrogen-XT, Inc. Fueling Network in California

**GFO-15-605**
Alternative and Renewable Fuel and Vehicle Technology Program
Light Duty Vehicle Hydrogen Refueling Infrastructure

**Proposed Station Locations:**
49715 Gorman School Rd, Gorman CA 93243
4 W Foothill, Arcadia CA 91006
100 Barnett St., Arroyo Grande CA 93420
12366 Boron Ave, Boron CA 93516
230 E Hwy 246, Buellton CA 93427
1518 Magnolia Ave, El Cajon CA 92020
3605 E.7th, Long Beach CA 90804
601 South Highway 395, Olancha CA 93549
10821 Tierrasanta Blvd, San Diego CA 92124
1102 Hollister St, San Diego CA 92154
3154 El Cajon Blvd, San Diego CA 92104
500 Bancroft Ave, San Leandro CA 94577
2120 McFadden Ave, Santa Ana CA 92705
11906 Campo Road, Spring Valley CA 91978
35555 Ghost Town Road, Yermo CA 92398
16125 Baseline Ave, Fontana CA 92336
4994 E Ashlan Ave, Fresno CA 93727
6819 Carson St, Lakewood CA 90713
1860 Main St Morro Bay, CA 93442
6616 Miramar Rd, San Diego CA 92121
1403 S Santa Fe Ave, Vista CA 92083
1010 Fairway Dr, City of Industry CA 91789
4498 Bonita Rd, Chula Vista CA 91902

**Revision Date: August 17, 2016**

### Points of Contact:


| | | | |
|---|---|---|---|
| Bob Boyd | BoydH2 | Director of Risk Management | Bob@BoydH2.com |
| Kym Carey | Hydrogen-XT | Director of Operations | kym.carey@hydrogenxt.com |

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## 1 Scope of Work

This project safety plan provides the details of the proposed Hydrogen-XT fueling station projects that feature on-site SMR production of hydrogen from pipeline natural gas/biogas and the H2Station CAR-200 fueling station in-a-box product from H2 Logic.

The Hydrogen-XT projects include third-party certified hydrogen fueling station modules from H2 Logic, Nuvera, and Bennett Pump, leaders in the field of hydrogen infrastructure modules to support deployments of hydrogen fueling stations to support the first commercial sales of fuel cell vehicles.

Much of the safety concerns regarding hydrogen vehicle fueling are being addressed by the hydrogen fueling station “in-a-box” design from H2 Logic and the integrated hydrogen production system from Nuvera. With the selection of H2Logic as major equipment supplier, much of the risk of operating a hydrogen fueling station has been integrated into the H2 Logic hydrogen station module. This safety plan is an extension of the safety approached developed by H2 Logic and Nuvera.

The safety plan from H2 Logic has been included with the project submittals and incorporated into the Hydrogen-XT station designs. The safety procedures of the three companies (H2 Logic, Nuvera, and Bennett Pump) will be closely linked in the operating procedures the Hydrogen-XT stations.

The Hydrogen-XT safety plan includes the following components:

- Site construction in compliance with the California Fire, Building, Mechanical Codes and The Hydrogen Technologies Code, NFPA-2 (2016)
- HazOp, FMEA, Third Party NRTL certification of all major equipment modules
- Safety Reviews of the Process Flow and P&ID for each specific site plan
- Site(s)-Specific NFPA-2 compliance review(s)

## 2 Organizational Safety Information

Hydrogen-XT, Inc. is a privately held company founded in 2010 that has developed a scalable and standardized hydrogen fueling station design with a small physical-footprint. Hydrogen-XT fueling stations feature the reformation of natural gas or biogas, water and electricity to produce cost-competitive hydrogen fueling stations with no hydrogen distribution costs or associated GHG emissions.

With roots in the oil/gas and nuclear industries, the team of professionals from Hydrogen-XT, Inc. bring a strong safety and risk management culture to their vision and mission to build the required fueling infrastructure that will enable consumers to purchase and drive hydrogen-fueled vehicles.

Safety is the highest priority at Hydrogen-XT and is incorporated into every project, site plan, and operating procedure.

## 2.1 ORGANIZATIONAL POLICIES AND PROCEDURES

Hydrogen-XT empowers employees to make safety culture part of every design, procedure, and operation. It provides employee and Contractor Safety programs developed to support the unique risks of operating hydrogen-dispensing systems.

Document Control procedures manage user manuals of major components, maintenance, and operating procedures.

A corporate-wide Engineering Management of Change (EMOC) procedure makes sure that current installed equipment is within original system specifications.

Each operating site has specific written procedures for maintaining the system safety functions, and documentation of all calibrations, inspections, and certifications Adherence to manufacturers' maintenance and service procedures will be followed.

H2 Logic will provide maintenance for the H2Station CAR-200.

## 2.2 HYDROGEN AND FUEL CELL EXPERIENCE

**Hydrogen-XT, Inc.,** Santa Anna, CA has developed a unique business plan for sale of motor fuel hydrogen using industry standard hydrogen fueling station modules from Nuvera, H2 Logic, and Bennett Pump. Specification sheets for these modules are supplied with the proposal package. It is notable that all HFS module suppliers are offering third-party listed and labeled products, pre-approved for use in hydrogen vehicle fueling station (HFS) applications.

**H2 Logic** H2 Logic has worked with hydrogen equipment since 2003 in many different ways, from installing fuel cells in a variety of vehicles to energy storage systems to hydrogen fueling. Today H2 Logic is 100% focused on hydrogen fueling stations. The H2Station CAR-200 is the latest 70MPa product generation "fueling station in-a-box" for use in both Europe and USA and designed for high volume manufacturing at the world's largest factory for hydrogen stations.

The H2Station CAR-200 is based on years of development and operational experience in more than seven countries in Europe. H2 Logic was one among the first companies to successfully conduct 70MPa fast fueling in 2011 in accordance with the SAE J2601. Since then, the company has delivered more than 30% of all new 70MPa fueling stations in Europe and now H2 Logic is bringing this technology to USA and California stations.

**Nuvera Fuel Cells Inc. (Nuvera)** is a leader in the development and advancement of hydrogen and fuel cell technology. Nuvera has developed its safety program (1) to assist customers in preventing and minimizing hazards that may be associated with the PowerTap hydrogen generation, storage and dispensing systems and (2) to assist in the protection of users, protect employees, public health, as well as environmental impacts from fires, explosions, or other unplanned events.

**FASTECH,** LLC, Buena Park, California, has been contracted to supply site specific design drawing and modify the fueling station sites to accommodate the hydrogen fueling system. Fueling and Service Technology, Inc. (FASTECH) centers its business on petroleum fueling stations, convenience store operations, and car wash systems. It has extensive experience building hydrogen fueling stations in California.

Bob Boyd of **Boyd Hydrogen, LLC,** Oakland, CA has been developing hydrogen vehicle fueling station designs and HFS installations since 2002. Boyd has a broad range of hydrogen project design experience and risk mitigation strategy development. Boyd is a member of the NFPA-2 Technical Committee, CSA, SAE, and ISO TC-197 technical committees.

BoydH2 will be providing Safety and Risk review and management support for the Hydrogen-XT projects through final commissioning of station(s) and continuing review of the station operational safety audit process.

Further information on the key project personnel is included in the proposal package.

# 3 Project Safety

The cornerstone of the fueling station being develop by Hydrogen-XT is the H2Station CAR-200 product from H2 Logic. The shared safety and design goals are to:

- Ensure that fueling of FCEVs is as safe as fueling a gasoline car
- Develop safe, reliable and cost effective hydrogen fueling stations

The H2Station Safety and Hydrogen-XT philosophy is to design system modules and site operations to avoid situations that may create hazardous situations by:

- Limiting risk of un-intended and programmatic hydrogen releases
- Reducing risk of sparks and ignition sources in hazardous areas
- Protecting fueling vehicle against overfilling or high/low temperature
- Fail-safe of components when no power
- Detecting and reacting to errors (e.g. leaks, component failures or system)
- Separate process control system and safety functions
- Site integrated Emergency Safety Shutdown system
- Protecting HFS component from unintended impact by vehicles operating at the multi-fuel dispensing station

## 3.1 IDENTIFICATION OF SAFETY VULNERABILITIES (ISV)

An initial **Project Risk Review** Identification of Safety Vulnerabilities (ISV) has been performed by BoydH2 as part of the project safety plan. The details are included in the last section of this

document. In summary, all identified safety and project risk vulnerabilities are being addressed by the project plan.

The key elements of the Identification of Safety Vulnerabilities and risk reduction plan include a series of safety reviews:

1. The **Project Risk Review**
2. **Equipment Safety Reviews** (HazOp, FMEA, and Layer of Protection Analysis) performed for the key components from Nuvera and H2 Logic
3. The **Safety Plan from H2 Logic** for the H2Station CAR-200 integrated fueling station system that will be the cornerstone of the Hydrogen-XT station dispensing system.
4. **Site Plan Safety Review**(s) for each site.
5. **System Safety Review** (HazOp) of site-wide P&ID interconnection field piping.

### 3.2 RISK REDUCTION PLAN

Hydrogen Fueling Station (HFS) technology has developed considerably since the early demonstration HFS deployments beginning in 1998 up until 2011 when the first edition of SAE J-2601 was published.

Now in 2016, the third edition of SAE J-2601 is about to be published and companies around the world are developing serial production, listed and labeled products, HFS modules to support the deployment of hydrogen vehicle fueling stations.

Hydrogen-XT has developed a station plan that features just three major listed and labeled appliances: a hydrogen generator, integrated compression and storage system, and retail dispenser. Each one of these major systems have components incorporated in an NFPA 2-compliant Hydrogen Equipment Enclosure and feature advanced layers of protection to minimize the footprint of hazardous area locations, and reduce the risk of any impact on adjacent exposures in the event of hydrogen system upsets and faults.

There are many benefits of incorporating all major components of a HFS into a Hydrogen Equipment Enclosure such as the H2 Logic H2Station CAR-200 integrated HFS. One key benefit is the ability to confine probable leaks (at the compressor or related valves, filters and control valves) and ability to detect those potential leaks into the HEE compartment and shut the system down safety.

The H2 Logic H2Station CAR-200 features the following safety elements:

- Constant monitoring of hydrogen leaks in the compressor room with hydrogen detectors.
- Constant monitoring of flames and sparks in the compressor room with UV flame detectors.
- Isolated tanks with automatic shut off valves to isolate tanks from stations.

- Constant monitoring of the oxygen level inside the compressor room.
- Smoke detectors to detect fire in the compressor room and the control room.

### 3.2.1 Underground Storage

A number of prime properties identified by Hydrogen-XT in highly desirable locations have extremely limited amount of space available for deployment of HFS components.

It has long been identified that underground storage vaults for fuels such as gasoline, diesel fuel, liquefied natural gas and liquid hydrogen is a viable option. Storage of flammable fluids and compressed gases in vaults is well supported by the California Fire Code.

Hydrogen-XT, BoydH2 and other members of the project team see some opportunities to move HFS components underground and will evaluate all options to make it possible to develop HFS designs for these prime properties.

## 3.3 OPERATING PROCEDURES

Published manufacture's operation procedures will be supplied and followed for each of the key elements of the fueling station: Nuvera's PowerTap, an integrated SMR H2 generator, H2 Logic's H2Station CAR-200 integrated fueling station, and the public access H70 hydrogen dispenser from Bennett Pump.

Site specific operation and maintenance procedures, including system start-up and back-up operation from tube trailer and tube trailer filling are investigated with the same principles in defining acceptance criteria of risk and identify risks by a qualitative risk assessment made in a HazOp. Results of the risk assessment are translated into operation and maintenance checklists and procedures.

Operational checks, tests and routine maintenance are performed at adequate intervals to assure system safety and minimal downtime. EMOC procedures will assure that operating sites keep documentation up to date with systems upgrades and lessons learned.

## 3.4 EQUIPMENT AND MECHANICAL INTEGRITY

Mechanical integrity is based on following the ASME piping code and the use of materials compatible with hydrogen at the service pressure and temperature encountered with hydrogen vehicle fueling.

Key components including the H2 Logic and Nuvera have been certified by third party Nationally Recognized Testing Laboratories (NRTL) such as CSA, UL and Intertek to assure the AHJ that the systems employed in the Hydrogen-XT hydrogen fueling stations meet the safety requirements in NFPA-2.

The interconnecting “field” piping system that connects the hydrogen supply system (Nuvera) to the compression and storage system (H2 Logic) and the public access dispenser (Bennett Pump) is designed to minimize the hazardous area footprint. Each site plan will be subject of a site-specific safety review (HazOp) of the interconnecting piping system that will meet ASME, NFPA-2, and California code compliance regulations.

- Piping systems are built and installed in compliance with ASME B-31.x codes for high pressure hydrogen.
- High pressure hydrogen wetted components are made of hydrogen compatible materials and relevant components have been tested after EN ISO 11114-4 “Test methods for selecting metallic materials resistant to H2 embrittlement.”
- Higher pressure hydrogen piping connections (above 5000 psig) are C&T fittings (cone and thread), the proven technology for H70 dispensing systems.

### 3.5 MANAGEMENT OF CHANGE (MOC) PROCEDURES

When new suggestions for improvement of safety or component reliability are identified and after design is completed during operation, the MOC process includes engineering, safety and material compatibility reviews before the installation or procedure is modified.

The process for handling updates is executed through a Hydrogen-XT Change Management system in which each change is handled as an “Engineered Management Of Change” (EMOC) request.

The EMOC process applies to changes in components, assemblies, documents, processes, and work instructions. The EMCO process ensures that all relevant updates are approved and implemented.

## 4 Communications Plan

Hydrogen-XT has developed a mobile phone application and back-end system to connect the hydrogen fueling station user to the stations, providing up to the minute status on each fueling station in the network with regard to availability and any service limitations such as non-com fueling only (due to a damaged IRDA transmitter on the nose of the fueling nozzle) which will result in less than complete fills (for more information, see http://hydrogenxt.com/mobile-interface/).

With full connectivity to each station Hydrogen-XT will support the CaFCP all station SOS system and will have reach-out capacity to transparently acknowledge any out of operation status to the CaFCP mobile app for HFS availability.

Hydrogen-XT will reach-out to the local community early in the site development process to address any community concerns and develop community champions for each fueling station deployment.

### 4.1 TRAINING

Hydrogen-XT employees, key component suppliers, and the installation contractor employees receive formal, hazard-specific, training related to the various hazards associated with installation, commissioning and servicing hydrogen fueling stations.

Safety training is continuous process at Hydrogen-XT and includes lessons learned, near miss, safety incident reporting and corrective action programs.

### 4.2 SAFETY REVIEWS

The Hydrogen-XT projects will incorporate a series of Safety Reviews including FEMA, HazOp and LOPA quantitative risks assessments to minimize the risks of HRS operation.

Action Items from each review will be tracked and carried forward to the Pre-Start-Up Safety Review.

The safety reviews are shown in the table below

| **Safety Review Description** | **Timing** |
|---|---|
| **Project Risk Review:** general review of project risks | August 3 to15 |
| **Certification** of H2 Logic serial production product H2Station CAR-200: FMEA, HAZOP, LOPA, and NRTL | All internal reviews done, NRTL now |
| **Certification** of Nuvera PowerTap On-Site Industrial Hydrogen Generator: CSA 5.99 Hydrogen Generators, NFPA 2, and ISO 16110 compliant hydrogen generators using fuel processing technologies | Industrial product. All internal and 3rd party NRTL reviews complete. |
| **Process Safety Review:** HazOp of the standard (and optional) configuration(s) for California stations | Once project has been awarded |
| **Project Site Risk Review** of each site : NFPA-2 and CFC Compliance, LOPA | Once project has been awarded |
| **Installation Risk Review**: contractor safety procedures, H2 system cleanliness procedures, purge plan review. | Prior to construction |
| **Pre-Start-Up Safety Review:** close out all checklists, dispenser validation, fuel quality testing | Prior to commissioning |
| **Annual Operations Review:** EMOC, calibration, safety incident and uptime log record review | Annually after station opening |

### 4.3 SAFETY EVENTS AND LESSONS LEARNED

The Hydrogen-XT operations safety plan includes lessons learned with a near miss and safety incident reporting program that encourages the capture of safety related hazardous operations during the commissioning, operation and maintenance activities.

Using the EMOC process corrective actions are suggested, reviewed by the safety team and maintenance and operational procedures are modified as safety or reliability concerns about a component, or procedure arise.

The Hydrogen-XT team will work closely and collaborate on best practice with the safety teams from the major equipment suppliers: Nuvera, H2 Logic, and Bennett Pump.

### 4.4 EMERGENCY RESPONSE

The hydrogen generation equipment, hydrogen storage and dispensing systems will be equipped with Emergency Stop Devices (ESD) that shut down hydrogen flow and electrical power in the event of an emergency. Each site will have a system-wide E-Stop button outside the fueling area for emergency responder use and identified with signage as per NFPA 2 or the requirements of the local AHJ.

The hydrogen fuel dispenser has one E-stop button at the dispenser shout there be any problem while fueling. The hydrogen production and compression systems are equipped with multiple ESD buttons, one on each of the generators, and one on the compressor control box. Each ESD button shuts off the individual compressor or hydrogen generator system.

The hydrogen fueling stations will be connected to the internet and remote access to the PLC will be limited to Hydrogen-XT, H2 Logic, and Nuvera support teams. These teams can, from remote locations, monitor system operational “levels” diagnose alarms and alerts and manage system downtime events. A series of communications methods including cell phone dial out assure that emergency and off-line events are seen by the operations teams.

H2 Logic handles operation monitoring and responding to any operation event, using the “H2Station Instant Service Response.” Each H2Station is continuously monitored using an online system to provide both operation monitoring and service response on a 24-hour basis.

H2 Logic provides a 24/7 Emergency Response phone number that connects to the emergency response team member. That team member will be able to guide individuals who need assistance. Nuvera also maintains a 24-hour call center for emergency response.

The Emergency Response number will also be available for any form of support for first responders. Depending upon the nature of the emergency, the response staff may be able to use remote access to the H2Station to support first responders.

Before taking the Hydrogen-XT station into onsite commissioning, the team will have extensive dialog with local Fire Department 1srt responders to review the site specific emergency response plan, receive local feedback on the location and identification of emergency stop devices. The commissioning team will work with the local first responders to identify the key components, test the emergency shut down system, and review the location of vent devices and discharge points.

Once the system is fully operational, Hydrogen-XT will make the Hydrogen fueling station available for any training exercises that could assist within additional education programs for local Emergency Responders.

### 4.4.1 Emergency Response Procedure

The following steps should be followed as part of the (site name) Emergency Response Plan in the event of a fire, sudden loss of pressure, a reported leak or rupture, or any other situation that may result in imminent danger to personnel or serious property damage:

1. Activate Emergency Stop Device located adjacent to the hydrogen pad or dispensers.
2. Evacuate the immediate area. In the event of a fire, evacuate the entire facility and call 911.
3. The 24-hour response call center will notify the Hydrogen-XT, Nuvera, and H2 Logic (the Emergency Response Contacts) of the nature and extent of the emergency and support local first responders as needed.
4. In some upset conditions pressure relief devices will allow hydrogen to relieve through vent stacks in a controlled manner with or without ignition and flame present at the vent stack outlet.
5. If ignition of venting hydrogen or natural gas has occurred, allow the hydrogen fuel supply to burn itself out. Deal with or prevent secondary fires, as needed.
6. The 24-hour response call center will maintain communication with the Incident Commander to keep updated to emergency conditions.
7. Emergency communications will be maintained until the incident is resolved.
8. Operating personnel are required to be trained on and familiar with the Emergency Response Plan.
9. The site operations team must test the Emergency Response Plan periodically.

## 4.5 SELF-AUDITS

All safety systems shall be thoroughly tested throughout the operation of the H2Station lifetime and must pass to continue operations, especially the initial testing before a site is deemed operational. H2 Logic, in collaboration with Hydrogen-XT and BoydH2, will develop a custom site inspection checklist for use during the station start-up phase.

During station operation, each station will be integrated into a custom enterprise network and back-office solution that will analyze operational data supplied through the telemetry included in the Hydrogen-XT station design. The Hydrogen-XT station data management technologies and the recommended maintenance intervals specified by H2logic and Nuvera will complement each other. The utilization of the collected and analyzed operating data is expected to facilitate improvements in the design of the components, maintenance performed, service intervals, and improve the operational efficiency and up-time of the HRS; thus ensuring customer satisfaction and each location's economic viability.

The **Annual Operations Review** will include an annual audit of each station for compliance with record-keeping requirements including, but not limited to, the following:

- Management of Change documents
- Instrument Calibration Records
- Maintenance Records
- Fuel Quality Test reports
- System Uptime Report Records

# 5 Initial ISV - Project Risk Review

**Date of Project Risk Review:** August 3, 2016

**Hazard/Risk Review Leader:** Bob Boyd

**Risk Review Participants:** Ken Templeton, Kym Carey

## 5.1 CODE COMPLIANCE

**Q.** How will the team be assured of permit approval success with limited time delays?

**A1.** Team will meet with local AHJs early in the process.

**A2.** Major components will be listed and labeled and rated for use as H2 fueling station equipment.

**A3**. The installation contractor is very experienced with the requirements for developing hydrogen fueling stations and will prepare a complete drawing set with engineering details for each site.

## 5.2 FUELING PROTOCOL

**Q.** How will the team assure that the fueling protocol meets CEC requirements?

**A1.** The projects will use H2 Logic dispenser control systems with Bennett dispensers running SAE J2601.

A2. The plan is to pay AP license fee; compliance with SAE J-2601 assures that vehicles will not be overfilled over heated or over pressurized.

## 5.3 SYSTEM CLEANLINESS

**Q.** How will the team guarantee fuel cell quality hydrogen is available at the dispenser?

**A.** Boyd Hydrogen will provide fuel quality oversight to the project and advise the team on component selection, installation and purging to establish hydrogen quality.

## 5.4 SMR: CO IMPURITY RISK MITIGATION

**Q.** How will the project guarantee that there is never any CO in the dispensed hydrogen?

**A1.** The design will include an on-site CO analyzer that will monitor hydrogen quality for CO level before hydrogen is compressed for storage.

A2. Only hydrogen with less than 200 ppb CO will be compressed to the main storage systems.

A3. Hydrogen-XT is reaching out to be part of a DOE sponsored test of an advanced fuel cell quality assurance “CO impurity sensor” based on a small sensitive PEM fuel cell that is being developed by a development team at Los Alamos National Laboratories.

### 5.5 SMR: CONTINUOUS OPERATION

**Q**. How will the team balance the need for continuous (hourly) production of hydrogen with the intermittent demand at the dispenser?

**A1.** Each Nuvera H2 SMR production system will include a Fuel Cell to produce power for local micro-grid or net-metering to the grid that provides a demand that can keep the H2 generator production going when compressed storage banks are full.

**A2.** Each site is planned to support the ability to both receive H2 from tube trailers, if production systems are down (for service), and to fill tube trailers for export of hydrogen for use at other locations.

### 5.6 SITE SETBACKS FROM H2 STORAGE SYSTEMS

**Q.** Many of the most highly regarded sites are constrained regarding available footprint. This project with onsite generation and compressed gas storage will take up considerable footprint. What plans are there for limiting exposures to lot lines, adjacent structures, public access, etc.?

**A1.** The design team will plan to utilize seismically reinforced firewalls to reduce the setback distances to the compressed hydrogen storage systems and will establish an equipment security zone similar to how First Element Fuels have built hydrogen fueling stations in California.

**A2.** The design team will consider multi-story installations when vertical designs will be accepted by the local community zoning requirements

**A3.** The design team will consider locating some HFS components underground in a vault constructed in accordance with California Fire Code requirements, and NFPA 2 chapter 5 risk mitigation strategy and design specific to the risks specific to locating hydrogen storage systems in an underground vault.

# 6 Additional Information

## 6.1 CODES AND STANDARDS

The H2 Logic H2Station, Nuvera PowerTap and Hydrogen-XT site construction designs are made in compliance with relevant parts of or latest versions of a range of codes, standards and guidelines, including the following:

| | |
|---|---|
| NEC (NFPA 70) | National Electrical Code |
| NFPA 2 - 2016 | Hydrogen Technologies Code |
| ANSI/HGV 4.1 | Hydrogen dispensing |
| CSA / HGV 4.3 | Test methods for hydrogen fueling parameter evaluation |
| ANSI/HGV 4.5 | Priority and sequencing |
| ANSI/HGV 4.6 | Manually operated valves |
| ANSI/HGV 4.7 | Automatic valves |
| ANSI/HGV 4.8 | Hydrogen Compressor |
| ANSI/HGV 4.9 | Hydrogen fueling stations |
| ANSI/HGV 4.10 | Fittings |
| UL 508A | Electrical panels |
| UL 698A | Industrial control panels |
| UL 913 | Intrinsically Safe Apparatus and zones |
| UL 1238 | Control Equipment for Use with Flammable Fuel Dispensing Devices |
| ANSI/ISA 12.12.01 | Non-incentive Electrical Equipment for Use in Class I and II, Div. 2 and Class III, Div. 1 and 2 Hazardous (Classified) Locations |
| IEC 61511 | Process controlled safety instrumented system |
| IEC 60079-10-1 | Explosive atmospheres |
| ASME | Hydrogen storage containers |
| SAE J2601 | Fueling Protocols for Light Duty FCEVs |
| SAE J2719 | Hydrogen Fuel Quality |
| SAE J2799 | Communication Protocol for H70 fueling |
| CFC | California Fire Code |
| CBC | California Building Code |
| CMC | California Mechanical Code |
| CCR | California Code of Regulations |
| CFR | Code of Federal Regulations |
| DMS | California Department of Food and Agriculture Division of Measurement Services |
| CSA 5.99 | Hydrogen Generator Appliance Standard |
| ISO 16110 | Hydrogen Generators using fuel processing technologies |