

NFPA

Hydrogen Standards and Projects

National Hydrogen Association

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NFPA Hydrogen Standards and Projects

- NFPA has several existing hydrogen standards
- NFPA has several new projects to address other aspects of hydrogen usage
- NFPA standards are developed through technical committees and public input
- NFPA is looking for input to new hydrogen projects and existing standards

Existing Hydrogen Standards

- NFPA 50A Standard for Gaseous Hydrogen Systems at Consumer Sites 1999 Edition
- NFPA 50B Standard for Liquefied Hydrogen Systems at Consumer Sites 1999 Edition
- NFPA 853 Standard for the Installation of Stationary Fuel Cell Power Plants 2000 Edition

Existing Hydrogen Standards

- NFPA 50A currently covers bulk gaseous hydrogen systems at user installations
- Sets system design criteria
- Sets separation distances from installations to 14 different types of exposures

Existing Hydrogen Standards

- NFPA 50B currently covers bulk liquefied hydrogen systems at user installations
- Sets system design criteria
- Sets separation distances from installations to 12 different types of exposures

Existing Hydrogen Standards

- NFPA 853 applies to stationary fuel cells that exceed 50 kW (non-residential)
- New document- 2000 edition is the first edition
- Sets siting requirements, fuel storage arrangements, exhaust requirements, and fire protection requirements

New Projects

- Expand NFPA 52 Compressed Natural Gas (CNG) Vehicular Fuel Systems Code 1998 Edition will cover hydrogen usage
- These requirements would be added to to 2005 edition of NFPA 52
- Committee looking for input and members
- Contact Carl Rivkin (crivkin@nfpa.org)

NFPA 52 Current Scope

- 1-1* Scope.
 - This code shall apply to the design and installation of compressed natural gas (CNG) engine fuel systems on vehicles of all types, including the following:
 - (a) Original equipment manufacturers
 - (b) Vehicle converters
 - (c) Vehicle fueling (dispensing) systems
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NFPA 52 Current Scope

- **Exception:** Vehicles and fuel supply containers complying with Federal Motor Vehicle Safety Standards covering the installation of CNG fuel systems on vehicles and certified by the respective manufacturer as meeting these standards shall not be required to comply with Section 2-4, 2-8.4, and Chapter 3 (except Section 3-11).
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NFPA 52 New Scope

- The revised 2005 edition of NFPA 52 would expand the current scope to include hydrogen
- Requirements would not conflict with FMVSS or other Federal or State regulations

New Projects

- Expand NFPA 853 to cover small fuel cell applications (residential usage)
 - Incorporate NFPA 50A and 50B into 2002 edition of NFPA 55 Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders
 - This would expand scope 50A/B to cover manufacturers
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Other New Projects

- The 2002 edition of the National Electrical Code (NEC®) includes a new article, Article 692, that covers the electrical installation requirements for fuel cell systems
- NFPA is looking to develop a training program in NFPA hydrogen standards

Other New Projects

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DOE/NFPA/NREL COLLABORATIVE EFFORTS

- (1) NREL and NFPA Are Working to Design and Generate Two Collaborative Reports (Titles are “Tentative”):**
 - (a) “Representative Operating Hydrogen Refueling Facilities: Safety and Codes and Standards-Related Issues”***
 - (b) “How To Permit a Hydrogen Refueling Facility Guide for Code Enforcement Officials”***

 - (2) Specific Operating Hydrogen Refueling Facilities to Be Documented in the Report “Representative Operating Hydrogen Refueling Facilities: Safety and Codes and Standards-Related Issues”**
 - (a) Chicago Hydrogen Bus Project**
 - (b) Palm Desert Renewable Hydrogen Transportation Project**
 - (c) Ford Motor Company**
 - (d) Honda Refueling Facility in Torrance, CA**
 - (e) California Fuel Cell Partnership**
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DOE/NFPA/NREL COLLABORATIVE EFFORTS

- (3) Providing Technical Support to NFPA with in Their Hydrogen-Related Codes and Standards Development Efforts with Respect to:
- o Offset Distances*
 - o Ventilation Issues*
 - o Technical/Engineering Basis for Proposed Requirements*
- (4) Development of a Seminar on Hydrogen and Hydrogen Safety (through Sentech) That Would Be Offered as an Ongoing NFPA “Continuing Education” Course for Building Code and Fire Safety Officials
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DOE/NFPA/NREL COLLABORATIVE EFFORTS

- (5) Hydrogen Program Representation (Dr. Michael Swain) on NFPA's Technical Committee on Vehicular Alternative Fuel Systems -- Committee Charged with Revising Two Standards to Include Hydrogen:
 - o NFPA 52 (Compressed Natural Gas Vehicle Fuel Systems)
 - o NFPA 57 (Liquified Natural Gas Fuel Systems Code)**

- (6) Collaborating with NFPA to Generate Articles about Hydrogen Technology and Hydrogen Safety in the Magazine of the International Fire Marshalls Association**

