

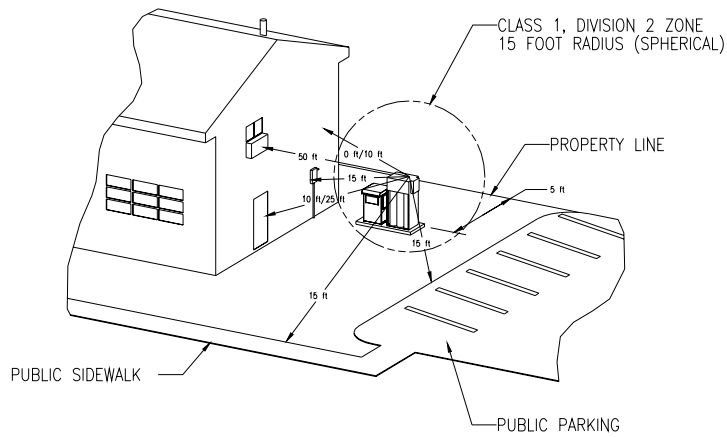


Connecting the Dots – Consistent Code Interpretations

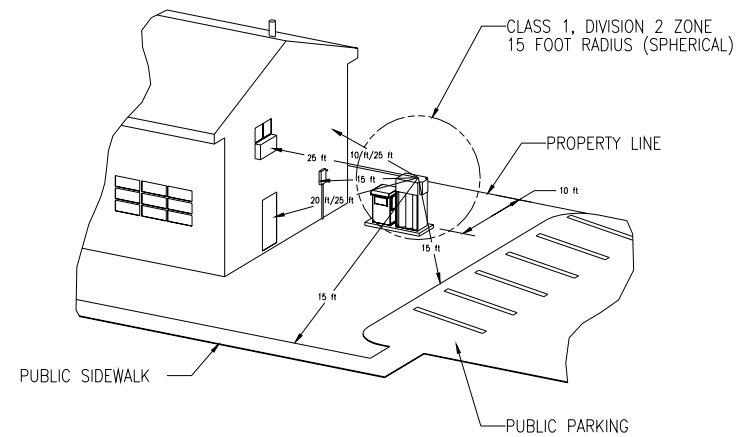
P.J. Buehler- 23 May 2007

How it Used to Be

NFPA 50 A:1999



2003 IFC Table 2209.3.1



Why That is a BIG Problem

Environmental Health & Safety Guideline

March 15, 2006



Subject: Siting Hydrogen Fuel Cells <50KW Output

COMPLIANCE SOURCE DOCUMENTS:

NFPA 853-2003 *Standard for the Installation of Stationary Fuel Cell Power Systems*
 Opinion Letter dated March 2, 2006 titled *Hydrogen Fuel Cell Safety*, Seyfarth Shaw LLP
 ReliOn Fuel Cell Manufacturer's document titled *Standards Relevant to the Installation of Hydrogen Fuel Cell Systems*
 dated November 8, 2005.

All fuel cell installations are subject to the written approval of the local authority having jurisdiction (normally the local Fire Marshal, Fire Chief or permitting agency). Prior to installation of a fuel cell system, the requesting applicant must secure from the local authority having jurisdiction separate, written approval of the proposed installation to be included with the application package. In addition, the following siting requirements must be met.

ITEM	DESCRIPTION
1.	The system shall be installed no closer than 5 feet to adjacent property lines that can be built upon.
2.	The system shall be at least 5 feet from overhead high voltage lines.
3.	The system shall be installed at least 5 feet from electrical equipment that is not normally of the sparking/ arcing type.
4.	The system shall be installed at least 15 feet from electrical equipment that is normally of the sparking/arcing type.
5.	The exhaust outlets of the system shall be located at least 10 feet from windows, doors, and other openings into normally occupied buildings that are not directly above the system: 15 feet from HVAC intakes, and 15 feet from wall openings, door or windows of a normally occupied building directly above the system.
6.	The system shall be installed at least 10 feet from liquid fuel tanks whose capacity is less than 1,000 gallons and at least 25 feet from liquid fuel tanks that are greater than 1,000 gallons.
7.	The system shall be installed at least 15 feet from public sidewalks and parked vehicles.
8.	The system shall be installed at least 25 feet from open flames, welding or where smoking is permitted.
9.	The system shall be placed on a firm foundation that is capable of supporting the equipment or components.
10.	The system shall be anchored, located and protected so that the system and equipment will not be adversely affected by rain, snow, ice, freezing temperatures, wind, seismic events and lightning.
11.	The system shall be located so the foundation of, and access to, associated components and the fuel cell power system are above the base flood elevation.
12.	The system shall be protected against access by unauthorized persons. Fire department access shall be provided.
13.	It shall be sited so the power system and equipment do not affect required building exits during normal operations or fire emergencies.
14.	It shall be located in a manner that allows service, maintenance and emergency access.
15.	It shall be located away from combustible materials, hazardous chemicals, high-piled stock, and other exposures to fire hazards. Fuel Cells are not to be located in areas that are used or likely to be used for combustible, flammable or hazardous materials storage.
16.	The fuel cell air intake shall be located so it is not adversely affected by other exhausts, gases or contaminants.
17.	The system exhaust outlet shall not be directed onto walkways or other paths of travel for pedestrians.

Other “Little” Problems

Depending on who interprets the codes, there are two completely different methods to determine setback distances.

Depending on the level of familiarity with hydrogen:

What code do I use?

How do I navigate from one code to another?

What is a safe setback distance?

How do I separate the “hydrogen” from the “fuel cell”?

I know, mix and match the biggest distances so I can be sure to be right!!!

How **HELP** Helped

By recommending competent and well respected fire consultants to industry.

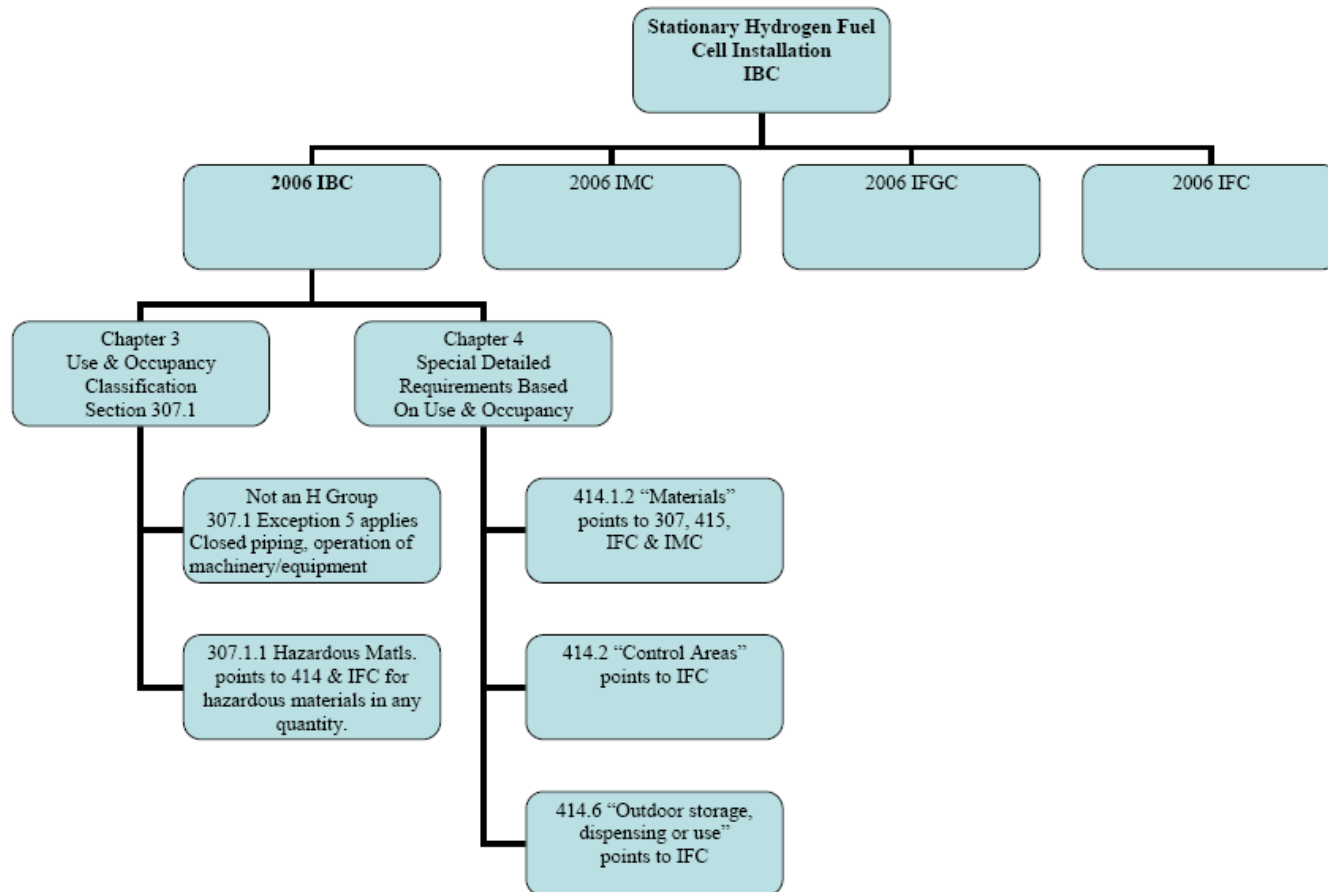
By helping to show AHJ's (Fire & Building officials) that there is a simple, clear path through the codes surrounding hydrogen.

SBCC

By providing a forum to disseminate the latest engineering and scientific research on hydrogen showings its pluses and minuses.

The Path

2006 I-Codes Application Matrix



The Product

Minimum hydrogen storage siting criteria for quantities less than 4,226 standard cubic feet (scf) and 4,226 to 21,125 scf. Information is provided as a service by Plug Power. Interpretation by the Authority Having Jurisdiction (AHJ) will determine final setback distances.		Controlling Code	Setback < 4,226 scf ^a	Setback 4,226 to 21,125 scf ^a
Room Cabinets, Enclosures, and Room Equipment	RT cabinet; CPS cabinet; Power Pedestal; Transfer/Disconnect switches; BTS; BSC; AC meter	IFC Table 3504.2.1	5 ft	10 ft
Buildings on the same property	Non-rated construction or openings within 25 feet	IFC Table 3504.2.1	5 ft	10 ft
	2-hour construction and no openings within 25 feet	IFC Table 3504.2.1	0 ft	5 ft
	4-hour construction and no openings within 25 feet	IFC Table 3504.2.1	0 ft	0 ft
Underground flammable or combustible liquid storage, distance to floor or fill opening		IFC Table 3504.2.1	5 ft	10 ft
Ignition sources (including appliance burner igniters, hot work and surfaces capable of igniting flammable vapors)		IFC Table 3504.2.1	5 ft	10 ft
Overhead Electric utilities	Overhead electric wire	IFC Table 3504.2.1	5 ft	10 ft
	Overhead bus, trolley or train wire	IFC Table 3504.2.1	5 ft	10 ft
Public streets, alleys, ways		IFC Table 3504.2.1	5 ft	10 ft
Public areas of public assembly		IFC Table 3504.2.1	5 ft	10 ft
Public sidewalks and parked vehicles		IFC Table 3504.2.1	5 ft	10 ft
Adjacent property of adjoining property that can be built upon		IFC Table 3504.2.1	5 ft	10 ft
Flammable vegetation and combustible materials		IFC 2703.12/2704.11	15 ft	25 ft
Roof intakes and openings		IFC Table 3504.2.1	5 ft	10 ft
Underground flammable or combustible liquid storage	Diked, distance to dike	IFC Table 3504.2.1	5 ft	10 ft
	Not diked, distance to tank	IFC Table 3504.2.1	5 ft	10 ft
Additional flammable gas storage areas		IFC Table 3504.2.1	5 ft	10 ft

PLUG POWER. PLUG WILL.