

Carolina; October 26, 2006, in San Francisco, California; and December 6, 2006, in New Orleans, Louisiana. This Notice No. 3 announces that the FRA has scheduled an additional meeting, to be held on February 15, 2007, in Syracuse, New York.

At the meeting, FRA intends to solicit oral statements from private crossing owners, railroads and other interested parties on issues related to the safety of private highway-rail grade crossings, which will include, but not be limited to, current practices concerning responsibility for safety at private grade crossings, the adequacy of warning devices at private crossings, and the relative merits of a more uniform approach to improving safety at private crossings. FRA has also opened a public docket on these issues, so that interested parties may submit written comments for public review and consideration.

**DATES:** The public meeting will be held in Syracuse, New York on February 15, 2007, at the Doubletree Hotel, 6301 State Route 298, Syracuse, New York, 13057, beginning at 9:30 a.m.

Persons wishing to participate are requested to provide their names, organizational affiliation and contact information to Michelle Silva, Docket Clerk, FRA, 1120 Vermont Avenue, NW., Washington, DC 20590 (telephone 202-493-6030). Persons needing sign language interpretation or other reasonable accommodation for disability are also encouraged to contact Ms. Silva. Additional public meetings will be announced as they are scheduled.

**FOR FURTHER INFORMATION CONTACT:** Ron Ries, Office of Safety, FRA, 1120 Vermont Avenue, NW., Washington, DC 20590 (telephone 202-493-6299); Miriam Kloepfel, Office of Safety, FRA, 1120 Vermont Avenue, NW., Washington, DC 20590 (telephone 202-493-6299); or Kathryn Shelton, Office of Chief Counsel, FRA, 1120 Vermont Avenue, NW., Washington, DC 20590 (telephone 202-493-6038).

**SUPPLEMENTARY INFORMATION:** For additional information, please see the initial notice, published July 27 in the **Federal Register** (citation: 71 FR 42713) and available at <http://a257.g.akamaitech.net/7/257/2422/01jan20061800/edocket.access.gpo.gov/2006/pdf/06-6501.pdf>

#### Request for Comments

While FRA solicits discussion and comments on all areas of safety at private highway-rail grade crossings, we particularly encourage comments on the following topics:

At-grade highway-rail crossings present inherent risks to users,

including the railroad and its employees, and to other persons in the vicinity should a train derail into an occupied area or release hazardous materials. When passenger trains are involved, the risks are heightened. From the standpoint of public policy, how do we determine whether creation or continuation of a private crossing is justified?

Is the current assignment of responsibility for safety at private crossings effective? To what extent do risk management practices associated with insurance arrangements result in "regulation" of safety at private crossings?

How should improvement and/or maintenance costs associated with private crossing be allocated?

Is there a need for alternative dispute resolution mechanisms to handle disputes that may arise between private crossing owners and the railroads?

Should the State or Federal government assume greater responsibility for safety at private crossings?

Should there be Nationwide standards for warning devices at private crossings, or for intersection design of new private grade crossings?

How do we determine when a private crossing has a "public purpose" and is subject to public use?

Should some crossings be categorized as "commercial crossings", rather than as "private crossings"?

Are there innovative traffic control treatments that could improve safety at private crossings on major rail corridors, including those on which passenger service is provided?

Should the Department of Transportation request enactment of legislation to address private crossings? If so, what should it include?

Issued in Washington, DC, on December 29, 2006.

**Jo Strang,**

*Associate Administrator for Safety.*

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## DEPARTMENT OF TRANSPORTATION

### Research and Innovative Technology Administration

[RITA-2006-26758]

#### Statement Regarding a Coordinated Framework for Regulation of a Hydrogen Economy

**AGENCY:** Research and Innovative Technology Administration, U.S. Department of Transportation.

**ACTION:** Notice of inquiry and request for public comment.

**SUMMARY:** The purpose of this **Federal Register** notice is to inform the public of current U.S. statutes and regulations that may be applicable to a hydrogen economy and to request comments on their interface. This notice describes and indexes several statutory and regulatory provisions of each major Federal agency and discusses possible applications of these provisions to aspects of a hydrogen economy, including construction and certification of transportation/ports infrastructure, the use of fuel cells to power automobiles and generate electricity for homes and businesses, and effects on public safety and health. The notice also describes the regulatory jurisdictions of each Federal agency in the context of a hydrogen economy. In addition, public comments are invited on a Web site that was created to depict the regulatory framework of a hydrogen economy. The Web site is located at <http://hydrogen.gov/regulations.html>. Comments will be used to improve the Web site.

**DATES:** Comments must be received on or before March 6, 2007.

**Public Participation:** The Ad Hoc Committee on a Regulatory Framework for a Hydrogen Economy (Ad Hoc Committee) of the Interagency Working Group on Hydrogen and Fuel Cells (IWG), which is part of the Executive Office of the President's National Science and Technology Council (NSTC), is seeking comments and advice from individuals, public interest groups, industry and academia on this statement regarding the framework for regulation of a hydrogen economy.

The Ad Hoc Committee members include the Office of Science and Technology Policy (OSTP), Department of State (DOS), U.S. Department of Transportation (DOT) (including the Federal Aviation Administration (FAA), Federal Highways Administration (FHWA), Federal Railroad Administration (FRA), National Highway Traffic Safety Administration (NHTSA), Federal Transit Administration (FTA), the Maritime Administration (MARAD), Federal Motor Carrier Administration (FMCSA), Pipeline and Hazardous Materials Safety Administration (PHMSA) and Research and Innovative Technology Administration (RITA)), Department of Agriculture (USDA), Department of Labor's (DOL's) Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA) and Federal

Energy Regulatory Commission (FERC). It is the intent of the Ad Hoc Committee that comments be received in a common docket. Thereafter, participating agencies with relevant statutory authority may review the comments or the comments may be read and considered by the Ad Hoc Committee.

**ADDRESSES:** If you wish to file comments using the Internet, you may use the DOT DMS Web site at <http://dms.dot.gov>. Please follow the online instructions for submitting an electronic comment. You can also review comments on-line at the DMS Web site at <http://dms.dot.gov>.

Please note that anyone is able to electronically search all comments received into our docket management system by the name of the individual submitting the comment (or signing the comment if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; pages 19477–78) or you may review the Privacy Act Statement at <http://dms.dot.gov>.

You can also mail or hand-deliver comments to the U.S. Department of Transportation (DOT), Dockets Management System (DMS). You may submit your comments by mail or in person to the Docket Clerk, Docket No. RITA–2006–26758, U.S. Department of Transportation, 400 Seventh Street, SW., Room PL–401, Washington, DC 20590–0001. Comments should identify the docket number; paper comments should be submitted in duplicate. Do not submit information that you consider to be proprietary or confidential business information to the Docket. Instead, send or deliver this information directly to the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this document. You must mark the information that you consider proprietary or confidential. If you send the information on a disk or CD–ROM, mark the outside of the disk or CD–ROM and also identify electronically within the disk or CD–ROM the specific information that is proprietary or confidential.

The DMS is open for examination and copying, at the above address, from 9 a.m. to 5 p.m., Monday through Friday, except federal holidays. If you wish to receive confirmation of receipt of your written comments, please include a self-addressed, stamped postcard with the following statement: “Comments on Docket RITA–2006–26758.” The Docket Clerk will date stamp the postcard prior to returning it to you via the U.S. mail. Please note that due to delays in the

delivery of U.S. mail to Federal offices in Washington, DC, we recommend that persons consider an alternative method (the Internet, fax, or professional delivery service) to submit comments to the docket and ensure their timely receipt at U.S. DOT. You may fax your comments to the DMS at (202) 493–2251.

**FOR FURTHER INFORMATION CONTACT:**

William Chernicoff, Office of Research, Development and Technology, Research and Innovative Technology Administration, Department of Transportation, Room 2440, 400 Seventh Street, SW., Washington, DC 20590 or [hydrogenregs@dot.gov](mailto:hydrogenregs@dot.gov) or 202–366–4999 or 800–853–1351.

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**1.0 Introduction**

As a result of the promise of hydrogen as a clean and renewable energy resource, the Hydrogen Fuel Initiative was launched shortly after the President's 2003 State of the Union address.

“With a new national commitment \* \* \* the first car driven by a child born today could be powered by hydrogen, and pollution-free. Join me in this important innovation to make our air significantly cleaner, and our country much less dependent on foreign sources of energy.”

Section 806 of the Energy Policy Act of 2005 (EPAAct) (Pub. L. 109–58) directs the establishment of a Hydrogen and Fuel Cell Technical Task Force, which is to include representatives from OSTP, DOT, DOD, DOC (including NIST), DOS, EPA, NASA and any other federal agencies as the Secretary of Energy determines appropriate. The NSTC IWG, which is co-chaired by DOE and OSTP, carries out the duties specified in EPAAct Section 806. Sec. 806(b)(1)(D)–(E) calls for the Task Force to work toward “uniform hydrogen codes, standards and safety protocols;” and “vehicle hydrogen fuel system integrity safety performance.” Therefore, the IWG has created the Ad Hoc Committee to examine existing authorities related to these issues in order to minimize uncertainties and inefficiencies in the commercial sector that can stifle innovation and impair the competitiveness of U.S. industry. Members of the Ad Hoc Committee were from the chief legal office of each participating agency or department, paired with a technical representative from the same agency or department. This arrangement represents a new model for examining the current regulatory framework at the same time that the emerging technology is being researched and developed.

The Ad Hoc Committee is chaired by the Chief Counsel of the Research and Innovative Technology Administration (RITA) of the U.S. Department of Transportation. The Committee includes representation from the Department of Transportation (DOT) which includes air (Federal Aviation Administration), motor vehicles, e.g., cars, trucks and buses (National Highway Traffic Safety Administration), motor carriers (Federal Motor Carriers Safety Administration), rail (Federal Rail Administration), mass transit systems (Federal Transit Administration) and pipelines (Pipeline and Hazardous Materials Safety Administration); and the Department of State (DOS), U.S. Department of Agriculture (USDA), the United States Coast Guard (USCG), the National Aeronautics and Space Administration (NASA), the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA) and the Federal Energy Regulatory Commission staff (FERC). The Ad Hoc Committee met on March 9, May 11, May 25, June 5, June 22, July 13 and July 20, 2006.

The purpose of the Ad Hoc Committee is to identify existing regulatory and statutory authorities and the lead agency (or instances in which shared authorities exist) that will govern these hydrogen technologies and

applications as they move from development into the marketplace, focusing specifically on issues of safety, economic utility, and environmental soundness. In so doing, the Ad Hoc

committee recognizes the value in consistent and comprehensive communications about the regulatory framework for a hydrogen economy

between government, industry, and academia.

**2.0 Regulatory Matrix**

**BILLING CODE 4810-HY-P**

AREA OF REGULATION	DOT		PHM SA	FAA	FRA	MAR AD	FTA	EPA		USCG	OSHA	NIST	USDA	FERC	OTHER-NON-FEDERAL		Port-Tunnel Authority	State (Police or other)
	NHT SA	FMC SA						EPA	Coast Guard						State Fire Marshal	Local Fire Marshal		
Light-duty Vehicle	X							X										X
Commercial Truck	X	X						X										X
Commercial Truck-HAZMAT	X	X	X					X										X
Bus	X	X						X										X
Transit Bus	X						X	X										
Passenger Rail					X			X										
Freight Rail			X		X			X										
Passenger Plane				X				X										
Cargo Plane			X	X				X										
Marine Vessel - Cargo			X					X	X									
Marine Vessel - Passenger								X	X									
Pipeline			X												X			
Bridge																	X	
Tunnel																	X	
Portable Fuel Container			X								X							
Stationary Fuel Cell											X				X			X
Private stationary fuel cell															X			
Fueling Station								X			X				X			
High V Power Line											X			X				
Hydrogen Plant								X			X				X			
Safety Training for Operators		X	X	X	X	X	X	X			X							
State Fire Marshal Training																		X

### 3.0 Statements of Agency/Department Regulations Applicable to a Hydrogen Economy

#### 3.1 U. S. Department of Labor/ Occupational Safety and Health Administration (OSHA)

The Occupational Safety Health Administration's (OSHA's) mission is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. OSHA receives its authority to fulfill this mission through the Occupational Safety and Health Act of 1970, 29 U.S.C. 651, et seq. OSHA standards are contained in 29 CFR part 1910 for General Industry, in part 1926 for Construction Industry, and in parts 1915, 1917, and 1918 for Maritime Industry. In the absence of specific OSHA standards, employers are obligated under Section 5(a)(1)—“the General Duty Clause” of the OSHA Act to protect employees from serious recognized hazards.

**Note:** OSHA standards apply to private sector employers, and to agencies of the United States Government. OSHA standards do not apply to particular working conditions for which other federal agencies have issued worker safety or health regulations. States and their political subdivisions are required to comply with OSHA standards only in the 26 states and territories that administer OSHA-approved state plans.

This **Federal Register** notice is limited to providing information on OSHA standards which may be applicable to, or might be considered useful sources for information pertaining to, hazards related to workplace use of hydrogen. The worksites involving hydrogen operations may contain additional occupational hazards which may be covered by other OSHA standards. The omission of such standards from this **Federal Register** notice in no way limits their applicability.

The following standards, as noted above, may be applicable to, or might be considered useful sources for information pertaining to hazards related to workplace use of hydrogen:

29 CFR 1910.38, Emergency action plans, specifies the required content of an emergency action plan when an emergency action plan is required by another standard.

29 CFR 1910.101, Compressed gases (general requirements), contains requirements for compressed gases in containers including cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks. The inspection

requirements of compressed gas cylinders are contained under 1910.101(a); the in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks under paragraph (b); and the safety relief device requirements for compressed gas containers in paragraph 1910.101(c).

29 CFR 1910.103, Hydrogen, contains requirements for hydrogen systems. Paragraph (b) of this section applies to gaseous hydrogen systems on consumer premises where the hydrogen supply originates outside the consumer premises and is delivered by mobile equipment. It does not apply to gaseous hydrogen systems having a total hydrogen content of less than 400 cubic feet, nor to hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the purpose of storing hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

Paragraph (c) under § 1910.103 applies to liquefied hydrogen systems on consumer premises. The standard excludes liquefied hydrogen portable containers of less than 150 liters (39.63 gallons) capacity and liquefied hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the sole purpose of storing liquefied hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

29 CFR 1910.119, Process safety management of highly hazardous chemicals, covers processes containing a threshold quantity of a highly hazardous chemical. A process is defined as “\* \* \* any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling or on-site movement of such chemicals, or combination of these activities.” The standard applies to flammable liquids and gases at a threshold quantity of 10,000 pounds or more, specified quantities of chemicals listed in Appendix A of the standard, and to the manufacture of explosives. Because hydrogen would be covered as a flammable gas, the PSM standard would apply to processes containing hydrogen in quantities of 10,000 pounds or more, with some exceptions.

29 CFR 1910.120, Hazardous waste operations and emergency response, contains requirements for emergency response operations. When there is more than an incidental release of hydrogen, or a substantial threat of a release, then emergency response operations must comply with

§ 1910.120(q), “Emergency response to hazardous substance releases.”

29 CFR 1910.132(a), Personal protective equipment, requires that protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever necessary.

29 CFR 1910.156, Fire brigades, contains requirements for the organization, training, and personal protective equipment of fire brigades whenever they are established by an employer. The requirements under 1910.156 apply to fire brigades, industrial fire departments and private or contractual type fire departments. Personal protective equipment requirements contained in this section apply only to members of fire brigades performing interior structural fire fighting.

29 CFR 1910.307, Hazardous (Classified) locations, contains requirements for electrical installations in hazardous locations. Locations where flammable concentrations of hydrogen may exist under normal or abnormal conditions may be classified as Class I, Division 1 or 2 locations. Electric equipment in these locations must be: (1) Approved as intrinsically safe for locations, (2) approved for installation in locations classified due to the presence of hydrogen, or (3) of a type and design which the employer demonstrates will provide protection from the hazards arising from the combustibility and flammability of hydrogen.

29 CFR 1910.1200, Hazard communication requires that hazards associated with hydrogen must be conveyed to employees. In addition, the standard requires that the information be transmitted through a comprehensive hazard communication program, including, but not limited to, container labeling, material safety data sheets, and employee training on the hazards associated with handling hydrogen.

#### 3.2 U.S. DOT/ Federal Aviation Administration (FAA)

I. Statutory Authority Safety Regulation; General Requirements (49 U.S.C. 44701(a)(5))

The Federal Aviation Administration has the statutory authority to regulate hydrogen under its safety regulations. The Administrator is charged with promoting safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards for practices

and methods, and procedures the Administrator finds necessary for safety in air commerce and national security.

## II. Current Regulatory Framework

FAA regulations directly impact the use of hydrogen in 14 CFR part 420, License to Operate a Launch Site. This part applies to any person seeking a license to operate a launch site or to a person licensed to operate a launch site for rockets. The FAA included these safety regulations to keep public a safe distance from the storage and handling of liquid hydrogen, used as rocket fuel (14 CFR 420.67, 420.69 and Part 420 Appendix E).

The FAA regulates the use of hydrogen in airships. For instance, 14 CFR 21.1(b) governs the airworthiness of airships. It points an applicant seeking an airworthiness certificate for an airship to various other aircraft certification provisions. The FAA also published an advisory circular, AC 21.17-1A, which advises that hydrogen is not an acceptable lifting gas for use in airships.

The FAA also regulates hydrogen, if it is used in a manned free balloon. For example, airworthiness standards for manned free balloons appear in 14 CFR part 31, with mention of lighter-than-air gas in 14 CFR 31.1(c)(1).

There is nothing in the FAA regulations that would explicitly prohibit the use of new technologies utilizing hydrogen. However, many FAA regulations in parts 21, 23, 25, 27, 29, 31, 33, 34 and 36 provide aircraft and aircraft part certification requirements. To the extent an applicant were to seek approval of an aircraft that utilizes hydrogen, as a fuel or in some other way, the applicant would have to comply with the applicable aircraft certificate requirements, just like any other applicant. Likewise, an operator of an aircraft with new technologies using hydrogen would have to comply with operational requirements in parts 91, 119, 121, 125, or 135, just like any other operator.

The FAA currently has not received funding to conduct research on the use of hydrogen as an alternative fuel for aircraft.

### 3.3 U.S. DOT/ Federal Railroad Administration (FRA)

FRA has broad statutory authority to regulate all areas of railroad safety. See 49 U.S.C. 20101 et seq. Pursuant to its statutory authority, FRA promulgates and enforces a comprehensive regulatory program that addresses the three major elements of the railroad system: the rolling equipment, the track and signal system over which the rolling

equipment operates, and the rules for conducting such operations. See e.g., 49 CFR parts 209-236. FRA is also responsible for enforcing the hazardous materials regulations (HMR) promulgated by PHMSA (49 CFR parts 171-180). The HMR classify hydrogen, in its various forms, as a hazardous material, and specifically as a flammable gas. See 49 CFR 172.101 (column 3 of Hazardous Materials Table). Accordingly, the transportation of hydrogen would be subject to the packaging and hazard communication requirements of the HMR. Specific to the transportation of hydrogen by rail, Part 174 of the HMR contains general operating, handling, loading, and unloading requirements specific to the rail transportation of hazardous materials and detailed requirements for the handling and transportation of flammable gases such as hydrogen. See 49 CFR 174.200-174.204 for provisions specific to flammable gases. Although under the HMR, hydrogen may be transported as a compressed gas or a cryogenic liquid (see 49 CFR 172.101, 173.302, .304, .314, .316, .318, and .319), as a practical matter, because of cost considerations and the limited number of specialized rail tank cars capable of safely transporting hydrogen in its gaseous form, most hydrogen transported by rail would have to be in a cryogenic liquid form. See 49 CFR 173.314(c) and 173.319 (authorizing DOT class 107 tank cars for transportation of hydrogen as a compressed gas and DOT class 113 tank cars for transportation of hydrogen as a cryogenic liquid).

### 3.4 U.S. DOT/National Highway Traffic Safety Administration (NHTSA)

Motor Vehicle Safety: Research, Standards and Compliance; Defects, Recall, and Enforcement (49 U.S.C. 30101 et seq., 49 CFR 501-596)

NHTSA has the authority to regulate the safety of all motor vehicles (e.g., passenger vehicles, multipurpose passenger vehicles, trucks and buses), and to that end, conducts basic research, develops and issues motor vehicle safety standards and regulations, issues interpretations of and exemptions to the standards based on technical knowledge, enforces compliance with the standards, makes determinations regarding safety related defects in vehicles and equipment, and mandates safety recalls of non-compliant and defective vehicles and equipment.

• NHTSA currently regulates fuel system integrity of vehicles, including gasoline, diesel, compressed natural gas (CNG) and electric powered vehicles

(Federal Motor Vehicle Safety Standards 301, 303, 304 and 305). The existing standards ensure safety either by simply regulating full vehicle crash performance or in the case of CNG vehicles, by also regulating the safety of components and on-board fuel storage systems. NHTSA enforces compliance with these standards and conducts safety defects investigations on fuel leaks and fires.

• NHTSA has established an agencywide hydrogen project team to (1) study existing technologies in coordination with other agencies of the U.S. government and industry, and (2) devise a plan of action identifying the research and testing needed to establish a performance oriented safety standard that does not limit innovation or slow down the development of and marketing of hydrogen vehicles. Vehicles fueled by gasoline or diesel fuel are currently subject to performance requirements based on crash testing. It is important that occupants of hydrogen vehicles are provided with a level of safety comparable to that provided for occupants of vehicles fueled by gasoline or diesel fuel. Such a standard will, among other things, help build consumer confidence in the technology. For details about NHTSA's four year research plan, see <http://www-nrd.nhtsa.dot.gov/departments/nrd-11/H2-4yr-plan.pdf>.

• The team is focusing on component performance testing for leak prevention and detection and safety effectiveness for powertrain, tanks, regulator valves, and connecting lines. In addition, the team is evaluating how to test the performance of these vehicles in a crash in order to limit fire exposure and prevent catastrophic events.

• In the international arena, NHTSA leads the United States delegation to the United Nations Economic Commission for Europe (UN/ECE) World Forum for the Harmonization of Vehicle Regulations (WP.29). In that forum, NHTSA represents the U.S. on issues related to the safety of all types of vehicle fuel systems. NHTSA identifies best practices and seeks to harmonize its regulations with foreign regulations in order to improve safety and reduce costs.

• In the area of hydrogen-powered vehicles, NHTSA has been representing the U.S. in a WP.29 Working Group on Hydrogen since 2002. The purpose of the group is to develop a global technical regulation for hydrogen-powered vehicles under the 1998 Global Agreement. NHTSA is promoting the development of a performance standard for hydrogen vehicles, which is science-based and data driven.

- NHTSA, along with counterparts in Germany and Japan are currently leading this effort under WP.29. To facilitate and guide the process of developing such a GTR, NHTSA is working with the co-sponsors, Germany and Japan, to develop a work plan that can be accepted by all signatories to the 1998 Agreement for the Harmonization of Vehicle Regulations.

- NHTSA expects consideration and adoption of the work plan at the March 2007 session. Work on development of the GTR should commence shortly thereafter.

*Consumer Information* (49 U.S.C. 32301 *et seq.*); and *Fuel Economy* (49 U.S.C. 32901 *et seq.*; 49 CFR 523–538)

- NHTSA generates and provides consumer information to the public regarding the crashworthiness and other safety characteristics of vehicles in order to assist consumers in making sound decisions regarding the purchase of safe vehicles.

- NHTSA has the authority to regulate fuel economy of hydrogen-powered vehicles. Hydrogen is an alternative fuel for the purposes of the Corporate Average Fuel Economy (CAFE) program. Vehicles that use hydrogen as their only source of fuel (dedicated vehicles) or can alternately use hydrogen and petroleum fuel (dual-fuel vehicles) qualify for special calculation of their fuel economy performance under regulations administered by NHTSA. These special calculation procedures provide manufacturers with powerful incentives to develop and produce these vehicles, which could contribute to our efforts to reduce our dependence on foreign energy supply.

### 3.5 U.S. DOT/Federal Motor Carriers Safety Administration (FMCSA)

There are certain citations and regulatory authorities FMCSA believes are applicable in various uses of hydrogen. They are as follows:

49 U.S.C. 5121—General Authority.—To carry out this chapter, the Secretary of Transportation may investigate, make reports, issue subpoenas, conduct hearings, require the production of records and property, take depositions, and conduct research, development, demonstration, and training activities. After notice and an opportunity for a hearing, the Secretary may issue an order requiring compliance with this chapter or a regulation prescribed under this chapter.

For example, hydrogen is a flammable gas that may be transported by a motor carrier and there are regulations that govern the safe transportation of

hydrogen. Under this statutory authority, FMCSA has the ability to enforce the hazardous materials regulations and cite shippers and carriers of hazardous materials.

49 U.S.C. 31136 and 31502(b)—Minimum Safety Standards.—Subject to section 30103(a) of this title, the Secretary of Transportation shall prescribe regulations on commercial motor vehicle safety. The regulations shall prescribe minimum safety standards for commercial motor vehicles. At a minimum, the regulations shall ensure that—

(1) Commercial motor vehicles are maintained, equipped, loaded, and operated safely;

(2) The responsibilities imposed on operators of commercial motor vehicles do not impair their ability to operate the vehicles safely;

(3) The physical condition of operators of commercial motor vehicles is adequate to enable them to operate the vehicles safely; and

(4) The operation of commercial motor vehicles does not have a deleterious effect on the physical condition of the operators.

49 U.S.C. 31502(b).—Requirements for qualifications, hours of service, safety, and *equipment standards*

(b) Motor Carrier and Private Motor Carrier Requirements.—The Secretary of Transportation may prescribe requirements for—

(1) Qualifications and maximum hours of service of employees of, and *safety of operation and equipment* of, a motor carrier; and

(2) Qualifications and maximum hours of service of employees of, and *standards of equipment* of, a motor private carrier, when needed to promote safety of operation.

For example, if a commercial motor vehicle will use hydrogen as a fuel source, the specific regulations regarding fuel systems of a commercial motor vehicle are found in 49 CFR subpart E.

### 3.6 U.S. DOT/Pipeline and Hazardous Materials Safety Administration (PHMSA)

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is the Federal agency charged with the safe and secure movement of hazardous materials to industry and consumers by all transportation modes, including the nation's pipelines.

#### Pipeline Safety

PHMSA is responsible for prescribing and enforcing regulations to promote the safety of interstate and intrastate pipelines transporting hazardous

liquids, natural gas, and other flammable, corrosive and toxic gases. PHMSA regulates pipeline safety pursuant to the Federal Pipeline Safety Law, codified in 49 U.S.C. 60101, *et seq.* and implementing regulations, Pipeline Safety Regulations (PSR), 49 CFR parts 190–199.

Part 192 of the PSR regulates the transportation of natural gas and other gases in pipelines, including hydrogen, which is transported as a compressed flammable gas. Section 192.3 defines the “transportation of gas” as the “gathering, transmission, or distribution of gas by pipeline or the storage of gas in, or affecting interstate or foreign commerce.” States may enforce safety standards on intrastate pipelines if the State has been certified by PHMSA under 49 U.S.C. 60105.

#### Hazardous Materials Safety

PHMSA also prescribes the Hazardous Materials Regulations (HMR), 49 CFR parts 171–180, implementing the Federal Hazardous Materials Transportation Law, 49 U.S.C. 5101 *et seq.*, to promote the safe transportation of hazardous materials in commerce. PHMSA shares authority for enforcement of the HMR with the Federal Aviation Administration, the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the U.S. Coast Guard.

In addition to packaging and hazard communication requirements, the HMR prescribe requirements for training employees, registration and security plans. Hydrogen, a hazardous material, is classified as a flammable gas in the Hazardous Materials Table (49 CFR 172.101) and is subject to all applicable requirements in the HMR, including packaging and hazard communication requirements. Hydrogen may be transported as a compressed gas in cylinders or as a cryogenic liquid in portable tanks, cargo tank motor vehicles, or rail tank cars.

### 3.7 Environmental Protection Agency (EPA)

#### Solid Waste

1. Fuel cell production and hydrogen fuel production may use toxic or hazardous process inputs and process catalysts, and may produce solid waste streams that require management under RCRA.

2. End-of-life disposal of fuel cells and fuel cell-powered vehicles will require effective management of hazardous materials, and may produce significant quantities of these materials. Hazardous materials found in existing

fuel cells include corrosive electrolytes, flouride-containing plastics, and heavy metal catalysts.

3. Hydrogen fuel production, distribution, and storage operations required to support the hydrogen economy (stationary and portable fuel

cell applications) may present risks associated with accidental releases or spills of hazardous and explosive materials.

Authority	Rule	Category	Regulation
42 U.S.C. 6921 .....	40 CFR Part 261.	Waste .....	Identification and Listing of Hazardous Waste.
42 U.S.C. 6922 .....	40 CFR Part 262.	Waste .....	Standards Applicable to Generators of Hazardous Waste.
42 U.S.C. 6924 .....	40 CFR Part 264.	Waste .....	Standards For Owners and Operators of Treatment, Storage and Disposal Facilities.

**CERCLA/EPCRA—Reportable Quantities (RQs)**

1. By definition, any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act (42 USCA § 6921) is a CERCLA “hazardous substance.” (see CERCLA § 101(14)(C))

2. Reportable Quantity (RQ) is that quantity of a hazardous substance, the release of which requires notification to the National Response Center. Reportable Quantities are established by regulation and the levels are based on an evaluation of the intrinsic physical, chemical, and toxicological properties of each substance. Upon proposal to list under RCRA (above), the RQ will be

proposed for CERCLA and EPCRA notification requirements.  
3. CERCLA adopts the same definition for the purposes of the notification requirements as its “source” statute (in this case section 3001 of SWDA). EPCRA uses the CERCLA hazardous substance list for its emergency reporting.

Authority	Rule	Category	Regulation
42 U.S.C. 9602, 9603 and 9604; 33 U.S.C. 1321 and 1361.	CERCLA—40 CFR Part 302.	Waste/Hazardous Substance ..	Identification and Listing of Hazardous Waste.
42 U.S.C. 9604, 9605; 33 U.S.C. 1321 and 1361.	CERCLA—40 CFR Part 300.	Waste/Hazardous Substance ..	National Oil and Hazardous Substances Pollution Contingency Plan (NCP).
42 U.S.C. 11002, 11004, and 11048.	EPCRA—40 CFR Part 355	Waste/Hazardous Substance ..	Emergency Planning and Notification.

**Mobile Sources**

The role of EPA with regard to vehicle regulations is multiple. The EPA establishes emission standards for vehicles, regulates fuels and fuel additives, specifies the procedures for

testing and certification, conducts basic research, provides guidance to the state programs, and performs compliance enforcement. The table below lists regulations that are, or may be, applicable to a hydrogen economy. Both

exhaust and evaporative emissions that result from the conversion or combustion of hydrogen-based fuels (e.g. fuel cells, H<sub>2</sub> internal combustion engine) are areas that would require management under the CAA.

Authority	Rule	Category	Regulation
42 U.S.C. 7521–7554 and 7601	40 CFR Parts 85 and 86 .....	Passenger vehicles and light-duty trucks and heavy-duty highway engines (trucks and buses).	Control of Air Pollution from New and In-Use Motor Vehicles and Engines.
42 U.S.C. 7521–7554 and 7601	40 CFR Parts 85, 89–92, 94, 1048, 1051, 1065, 1068.	Nonroad engines and vehicles, including locomotives and marine engines.	Control of Emissions from New and In-Use Nonroad Engines.
42 U.S.C. 7571–7574 and 7601	40 CFR Part 87 .....	Aircraft engines .....	Control of Air Pollution From Aircraft and Aircraft Engines; Emission Standards and Test Procedures.
42 U.S.C. 7581–7590 and 7601	40 CFR Part 88 .....	Clean Fuel Vehicles .....	Emission Standards for Clean-Fuel Vehicles.
42 U.S.C. 7545 and 7601 .....	40 CFR Part 80 .....	Fuels Used in Mobile Sources	Regulations of Fuels and Fuel Additives.
15 U.S.C. 2001–2006, and 2013	40 CFR Part 600 .....	Fuel Economy .....	Fuel Economy Regulations.

**Note:** EPA performed fuel economy tests on hydrogen fuel cell vehicles in November 2002 and again in September 2003. The results of EPA’s preliminary efforts have been documented.<sup>1</sup> Currently, the EPA is also

participating with the Society of Automotive Engineers on developing SAE J2572: Recommended Practice for Measuring the Fuel Consumption and Range of Fuel Cell Powered Electric Vehicles Using Compressed

Gaseous Hydrogen. It would be the intent of SAE J2572 to provide standardized tests that allow for determination of fuel consumption and range based on the Federal Emission Test Procedure. The SAE practice would be expected to cover fuel cell powered vehicles which use compressed hydrogen gas onboard.

<sup>1</sup>C. Paulina, Hydrogen fuel cell vehicle fuel economy testing at the U.S. EPA National Vehicle and Fuel Emissions Laboratory, Society of Automotive Engineers, Powertrain & Fluid Systems Conference and Exhibition, 01–2900, 2004; and

E.W. Lemmon, M.L. Huber, D.G. Friend, and C. Paulina, Standardized Equation for Hydrogen Gas Densities for Fuel Consumption Applications, National Institute of Standards and Technology, 01–0434, 2006.

Stationary Sources

The number of stationary power applications using hydrogen as a fuel is expected to grow in the future. For example, potential hydrogen fuel cell applications include both distributed

and baseload power generation, utility and residential power sources, auxiliary or emergency power generation, and off-grid power supplies. Such facilities, as well as facilities that produce hydrogen (e.g. regeneration of natural gas or coal

to hydrogen) may be covered by EPA rules under the Clean Air Act. The following are a list of certain regulations that may be applicable to hydrogen-related applications. Other regulations may also apply.

Authority	Rule	Category	Regulation
42 U.S.C. 7412 .....	40 CFR part 63 .....	Boilers and Heater Emission Standards (Boiler MACT).	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters.
		Combustion Turbines (Turbine MACT).	National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines.
		Internal Combustion Engines (Engine MACT).	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.
42 U.S.C. 7411 .....	40 CFR part 60 .....	Steam Generating Units (Boiler NSPS).	Standards of Performance for Steam Generating Units.
		Combustion Turbines (Turbine NSPS).	Standards of Performance for Stationary Combustion Turbines.
		Internal Combustion Engines (Engine NSPS).	Standards of Performance for Stationary Spark-Ignited and Compression Ignition Internal Combustion Engines.
42 U.S.C. 7470–7479 .....	40 CFR 52.21 .....	New Source Review: Major Stationary Sources in Attainment Area.	Prevention of significant deterioration of air quality—Covers the construction of new major stationary sources or any project to an existing source.
	40 CFR 51.166		
	40 CFR 51.165 .....	New Source Review: Major Stationary Sources in Non-attainment Area.	Permit Requirements.
	40 CFR part 51 subpart I .....	New Source Review: Minor Stationary Sources.	Review of New Sources and Modifications.

3.8 Federal Energy Regulatory Commission (FERC)

Electricity Jurisdiction

The rates, terms, and conditions applicable to the transmission of electric energy in interstate commerce and the sale of electric energy at wholesale (i.e., for resale) in interstate commerce by public utilities are subject to FERC's authority pursuant to Parts II and III of the Federal Power Act (FPA), 16 U.S.C. 824 et seq. Part II of the FPA is neutral as to the type of fuel used to generate electricity.

Natural Gas Jurisdiction

Under Congressional authorization in the Natural Gas Act of 1938, FERC regulates the transportation and storage of natural gas in interstate commerce and the construction and operation of pipeline facilities that a natural gas company uses to transport natural gas in interstate commerce (15 U.S.C. 717, et seq.; 18 CFR 157.1–157.22 and 18 CFR 157.201–157.218). FERC does not have jurisdiction over the transportation of hydrogen in interstate commerce or over the construction of facilities related to hydrogen transportation (i.e., pipeline, compression, import/export).

3.9 State and Local Utility Regulations

States are developing programs to promote the hydrogen economy, e.g., Florida's One-Stop Uniform Hydrogen Siting Program and California's 2010 Hydrogen Highway Network for fueling stations and the use of hydrogen as a transportation fuel. Under California's Highway Network, an energy station would be classified as distributed generation if the energy station's electrical power is not consumed solely on site and is interconnected to the grid.

3.9 U.S. Coast Guard (USCG)

Summary of U.S. Coast Guard Jurisdiction on Hydrogen (H2) Issues

The Coast Guard (CG), based on current practice and regulatory authority, would have two roles relating to transportation of H2. One concerns the licensing and operation of hypothetical H2 deepwater ports, and the second concerns safety standard setting and enforcement authority for vessels that might carry H2 as bulk cargo, such as hypothetical H2 tank vessels.

The first role would arise only if there develops a need to ship hydrogen to the U.S. in vessels that would offload the cargo at deepwater ports, as is currently being done with liquefied natural gas. Assuming Congress amends the

Deepwater Ports Act to encompass H2, the CG's Deepwater Ports Standards Division would likely be responsible for developing and maintaining regulations and standards for H2 deepwater ports and for assisting the Maritime Administration in processing H2 deepwater port license applications. The CG's regulations for deepwater ports in 33 Code of Federal Regulations Subchapter NN are based on delegated authority, and contain design, construction, equipment, and operational requirements for deepwater ports. The CG also manages the development of Environmental Impact Statements for deepwater port license approval. The CG coordinates interagency review of and public comment on license applications, and develops guidance for oversight of post-licensing activities associated with the development of deepwater ports, including the design, construction, and activation phases, environmental monitoring programs, operational procedures, risk assessments, security plans, safety and inspections.

In its second role, the Coast Guard has regulatory authority to ensure safe design and operation of vessels that could carry hydrogen. This authority derives from 46 U.S.C. 3703 and 33 U.S.C. 1903(b). The CG has determined

that hydrogen is hazardous when transported in bulk by vessel, either in gaseous or liquid form. The relevant regulations are in 46 CFR Subchapter O, Certain Dangerous Bulk Cargoes, and specify cargo compatibility and aspects of vessel design, construction, materials, and operations. Which particular standards would apply depend on the form in which the hydrogen is transported (compressed gas or liquefied), and what kind of vessel is being employed. To enhance transportation safety, hydrogen is most likely to be transported as a metallic hydride, adsorbed onto metal particles. Assuming the metal particles would be a hazardous bulk solid, they would be regulated under CG regulations in 46 CFR Part 148, Carriage of Solid Hazardous Materials in Bulk.

Although these regulations have some special provisions for transporting certain gases, there are currently no requirements specifically for hydrogen. Should the need for marine transportation of hydrogen materialize, these regulations would need to be modified to include special hydrogen requirements, due to hydrogen's metal embrittlement properties. Absent such modifications, 46 CFR 150.140 would prohibit the bulk transportation by vessel of hydrogen, without special permission from the CG Commandant. The shipment of unlisted hazardous bulk solids (metallic hydride) would also require express permission of the Commandant.

#### 4.0 Statement of Consensus Regulatory Statements in Specific Areas

##### 4.1 Hydrogen Transportation and Port Regulatory Framework

###### Agency Jurisdictional Consensus Statement for Hydrogen Transportation\*

A transition from America's current hydrocarbon-based energy economy to a hydrogen economy will require a suitable water and land-based transportation infrastructure. In the future, cryogenic hydrogen-carrying vessels powered by fuel cells may be able to unload their shipments of liquid hydrogen at ports located in Federal (so-called "deepwater ports") and state waters or at land-based terminals. Currently, pipelines (interstate and intrastate) transport hydrogen gas to specialized industrial markets. Hydrogen is also currently transported to industrial customers in cylinders, portable tanks, cargo tank motor vehicles, or rail tank cars.

For the hydrogen economy to develop, hydrogen must either be shipped to market-area fuel cells to

generate electricity for near-by users or be used to power supply-area fuel cells to generate electricity for market areas. A hydrogen economy will require reliable and safe interconnections between distributed generators using hydrogen fuel cells and electric utilities, as well as between electric utilities, to allow for the delivery of hydrogen-generated electricity for retail consumption.

The statement includes regulatory analyses by the members of the Hydrogen Port Subcommittee and is not a statement of policy of the participating federal agencies.

This consensus statement identifies the respective current authorities, if any, of the Pipeline and Hazardous Materials Safety Administration (PHMSA) and the Maritime Administration (MARAD) of the U.S. Department of Transportation (DOT), the Federal Energy Regulatory Commission (FERC), and the U.S. Coast Guard, Department of Homeland Security (CG) with respect to the transportation of hydrogen. The statement also includes the authority of the Minerals Management Service (MMS) of the U.S. Department of the Interior on the issue of storage and withdrawal of sequestered carbon dioxide. Certain jurisdictional responsibilities of the various agencies as to hydrogen are clearly set forth in statutes and regulations.

The consensus statement concludes: (1) Currently no Federal agency has the statutory authority to approve the construction or siting of interstate hydrogen pipelines or hydrogen deepwater ports; (2) PHMSA and CG currently have regulations in place regulating the transportation of hydrogen as a hazardous material; and (3) MARAD has the authority to provide loan guarantees for hydrogen-carrying vessels.

The statement recognizes that the Surface Transportation Board (STB), the Federal economic regulator of railroads, also regulates economic aspects of interstate hydrogen pipelines. The STB provides limited regulation of the transportation rates and common carrier terms of service of such pipelines. Under the STB's hydrogen pipeline authority, hydrogen pipeline rates must be just and reasonable, but the STB may not on its own initiative investigate and alter rates charged by a hydrogen pipeline and has no authority over hydrogen pipeline construction.

A functioning hydrogen economy will be subject to the regulatory oversight of certain Federal (as well as state and local) agencies, but not others.

- PHMSA. PHMSA's current pipeline safety regulations apply to the safe

transportation of hydrogen gas in interstate and intrastate pipelines, including pipeline transportation facilities within the limits of the Outer Continental Shelf (OCS) (generally from 3 to 200 miles off-shore). Numerous provisions of PHMSA's Hazardous Materials Regulations apply to the transportation of hydrogen by non-pipeline modes.

- MMS. To the extent that carbon dioxide (CO<sub>2</sub>) sequestered from hydrogen production is injected into and withdrawn from storage in the OCS, MMS would be required to grant pipeline rights-of-way through and a lease of submerged portions of the OCS.

- FERC. FERC currently has jurisdiction over the transportation of natural gas (methane) in interstate commerce and over the facilities (on and off-shore) used for such transportation. FERC also has exclusive authority to approve the siting, construction, or operation of natural gas import facilities, including LNG terminals on-shore and in state waters. FERC has no jurisdiction regarding the construction of facilities for, or the storage or transportation of, gaseous or liquefied hydrogen, or the importation of hydrogen.

- MARAD. MARAD is responsible for issuing licenses for deepwater ports in Federal waters for natural gas, LNG, and oil, but has no current authority over prospective hydrogen deepwater ports. MARAD's current authority to make loan guarantees for vessels would apply to the construction of hydrogen-carrying vessels.

- CG. The CG has primary safety and security authority over port areas and navigable waterways and is responsible for matters relating to navigation safety, vessel engineering, and safety standards for vessels carrying hazardous materials, including hydrogen. The CG processes applications for deepwater ports for natural gas and oil, but has no current authority over prospective hydrogen deepwater port applications.

#### I. PHMSA

##### A. Pipeline Safety

PHMSA is responsible for prescribing and enforcing regulations to promote public and environmental safety for over 2 million miles of pipelines for hazardous liquids, natural gas, and other flammable, corrosive and toxic gases, including hydrogen. PHMSA regulates pipeline safety pursuant to the Federal Pipeline Safety Laws, codified in 49 U.S.C. 60101, et seq., and implementing regulations, 49 CFR parts 190-199.

Currently, the pipeline safety regulations apply to the transportation

of hydrogen gas by pipeline, but would not apply to the transportation of liquefied hydrogen by pipeline. Specifically, PHMSA regulations at 49 CFR part 192 prescribe the minimum safety requirements for pipeline facilities and the transportation of gas, including natural gas, flammable gas, or gas that is toxic or corrosive. Because hydrogen is flammable, current pipeline safety regulations apply to the transportation of hydrogen gas by pipeline. Section 192.3 defines the "transportation of gas" as the "gathering, transmission, or distribution of gas by pipeline or the storage of gas in or affecting interstate or foreign commerce." PHMSA's pipeline safety authority extends to pipeline facilities and the transportation of gas on-shore and offshore within the limits of the OCS. PHMSA's regulations apply to transmission lines serving deepwater ports.

The pipeline safety regulations in 49 CFR part 195 prescribe safety standards for pipeline facilities used in the transportation of hazardous liquids (petroleum, petroleum products, or anhydrous ammonia) or carbon dioxide. Hydrogen is not included in the definition of hazardous liquid and, therefore, liquefied hydrogen is not subject to Part 195. The Secretary of Transportation is authorized, pursuant to 49 U.S.C. 60101(a)(4)(B), to designate as hazardous a substance that "may pose an unreasonable risk to life or property when transported by a hazardous liquid pipeline facility in a liquid state (except for liquefied natural gas)." Pursuant to 49 CFR 1.53, the Secretary has delegated that authority to the Administrator of PHMSA. PHMSA has not revised the pipeline safety regulations to designate hydrogen as a hazardous liquid. If so designated, liquefied hydrogen would be subject to PHMSA's pipeline safety regulations.

#### B. Hazardous Materials Safety

PHMSA is responsible for issuing the regulations to implement the Federal Hazardous Materials Transportation Law, 49 U.S.C. 5101 *et seq.*, to promote the safe transportation of hazardous materials in commerce. PHMSA's Hazardous Materials Regulations (HMR) are found at 49 CFR parts 171–180. PHMSA shares authority for enforcement of the HMR with the Federal Aviation Administration, the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the U.S. Coast Guard. In addition to packaging and hazard communication requirements, the HMR prescribe requirements for

training employees, registration and security plans.

Hydrogen, a hazardous material, is classified as a flammable gas in the Hazardous Materials Table (49 CFR 172.101) and is subject to all applicable requirements in the HMR, including packaging and hazard communication requirements. Hydrogen may be transported as a compressed gas in cylinders or as a cryogenic liquid in portable tanks, cargo tank motor vehicles, or rail tank cars. The HMR include design, manufacturing, and maintenance standards for packaging used for the transportation of hydrogen.

#### C. International Effect

By its terms, the Federal Hazardous Materials Transportation Law applies to the transportation of hazardous materials in intrastate, interstate, and foreign commerce. 49 U.S.C. 5101. As a matter of longstanding practice, however, PHMSA asserts jurisdiction over a hazardous materials shipment only when those materials are affecting transportation in the United States. Shippers and carriers of hazardous materials coming into or leaving the United States must comply with U.S. law while that product is being shipped within the United States. Shipments of hazardous materials into or within other countries must comply with the laws of those countries.

PHMSA is actively involved in international efforts to establish uniform and effective safety standards for hazardous materials transportation. PHMSA participates in United Nations committees and other international working groups and has taken steps to harmonize its regulations with UN Recommendations, the International Maritime Organization's International Maritime Dangerous Goods Code (IMDG), and the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO). Under certain conditions, PHMSA's regulations allow the use of the IMDG Code and ICAO Technical instructions for transportation into, within, or out of the U.S.

#### D. Carbon Dioxide Sequestration

Carbon dioxide results from producing hydrogen from natural gas or LNG. The hydrogen economy would require capturing, separation, and storage or reuse of carbon dioxide. One plan is to transport captured carbon dioxide by pipeline for injection and storage in subsea strata. Carbon dioxide is not a "gas" within pipeline safety regulations, but when transported as a liquid, compressed carbon dioxide is

subject to Part 195 of the pipeline safety regulations. Carbon dioxide is classified as a non-flammable gas (non-flammable gas includes both liquefied and non-liquefied compressed gases) under the HMR, 49 CFR 172.101. Carbon dioxide may be transported as liquefied or non-liquefied compressed gas in cylinders, portable tanks, cargo tanks, or rail tank cars, in accordance with 49 CFR parts 171–180.

Other Federal agencies may have a future role to play with respect to carbon dioxide sequestration. MMS oversees facility permitting, grants pipeline rights-of-way through submerged portions of the OCS, and performs facility inspections, including safety related items as the CG authorizes. A producer of hydrogen seeking to store carbon dioxide in the ocean floor on the OCS within the Federal domain must obtain permission from the MMS. In addition, existing laws, regulations, and treaties that apply to minerals mining and oil and gas production potentially apply to the injection of carbon dioxide into the geological sub-seabed of the ocean.

#### II. FERC

The FERC regulates under the Natural Gas Act of 1938 (15 U.S.C. 717, *et seq.*): (1) The rates, terms, and conditions applicable to the transportation of natural gas by natural gas companies in interstate commerce within the United States (Sections 4 and 5 and Part 154 regulations); (2) the construction (with the right of eminent domain), operation, acquisition, and abandonment of natural gas pipeline facilities operating in interstate commerce (Section 7 and Part 157 regulations); and (3) the place of entry or exit, siting, and the construction and operation of LNG terminal facilities, onshore or in State waters, operating in foreign commerce (Section 3 and Part 153 regulations). The FERC has no authority to regulate the transportation, or facilities associated with the transportation, of hydrogen in interstate commerce or the importation of hydrogen.

FERC regulates the transmission of electric energy in interstate commerce and the sale of electric energy at wholesale in interstate commerce by public utilities, pursuant to Parts II and III of the Federal Power Act (16 U.S.C. 824, *et seq.*). The statute does not differentiate between electric energy produced from one source as opposed to another.

#### III. MARAD

By its authority delegated from the Secretary of Transportation, MARAD is the lead Federal agency for the licensing

of deepwater ports. The Deepwater Port Act of 1974, as amended by the Maritime Security Act of 2002, 33 U.S.C. 1501, *et seq.* (DWPA), and related regulations at 33 CFR parts 148, 149, and 150, establish a licensing system for the ownership, construction, and operation of deepwater port structures located seaward of State territorial waters. Deepwater ports are fixed or floating manmade facilities which are used as ports or terminals to offload and transfer oil and natural gas from ships and may also include storage facilities for oil or natural gas, and vaporization facilities for LNG.

MARAD is responsible for determining the financial responsibility of potential licensees, rendering citizenship determinations for ownership, and securing operational and decommissioning guarantees for deepwater port projects. Additionally, MARAD is responsible for issuing records of decision to grant or deny approval of project applications and issuing licenses to construct, operate, and decommission deepwater ports.

The DWPA defines "natural gas" in section 3(13) as "either natural gas unmixed, or any mixture of natural or artificial gas, including compressed or liquefied natural gas." Therefore, MARAD has no current jurisdiction over prospective hydrogen gas importation through deepwater ports. However, the operation of a hydrogen deepwater port would be similar to a natural gas deepwater port. Because liquefied hydrogen shares similar properties to LNG (*i.e.*, it can be liquefied, transported, and re-vaporized), an amendment to the DWPA would allow for the importation of liquefied hydrogen via deepwater ports.

MARAD also has loan guarantee authority to finance hydrogen-carrying ships constructed in the United States. See the Merchant Marine Act of 1936, as amended, 46 App. U.S.C. 1271, *et seq.*, and related regulations at 46 CFR part 298.

#### IV. CG

##### A. Deepwater Ports

The CG's Deepwater Ports Standards Division, within the Office of Operating and Environmental Standards, is responsible for developing and maintaining regulations and standards for deepwater ports and for processing deepwater port license applications for oil and natural gas (not hydrogen). The CG's main functions as stated in delegated authority are:

- Develop and update the regulations for deepwater ports, 33 Code of Federal Regulations Subchapter NN. These

regulations contain general requirements, design, construction and equipment requirements, and operational requirements.

- Develop Interagency Memorandums of Understanding, Memorandums of Agreement, and Cooperating Agreements among Federal and State Agencies for licensing.

- Manage the development of Environmental Impact Statements for compliance with the National Environmental Policy Act of 1969 (NEPA) for license approval.

- Coordinate interagency review of and public comment to license applications within the statutory timeframe of 330 days from the time a complete application is received.

- Develop guidance for oversight of post-licensing activities associated with the development of deepwater ports including the design, construction, and activation phases, environmental monitoring programs, operational procedures, risk assessments, security plans, safety and inspections.

##### B. Vessel Standards

The Coast Guard regulates vessel construction and operating standards, including standards for vessels that could carry hydrogen. This authority derives from 46 U.S.C. 3703 and 33 U.S.C. 1903(b). The standards that would apply depend on the form in which the hydrogen is transported, and what kind of vessel is being employed.

##### a. Carriage as a Compressed or Liquefied Gas

PHMSA lists compressed and liquefied hydrogen in the hazardous materials table at 49 CFR 172.101. This causes it to be subject to CG regulation under the Hazardous Materials Transportation Act, 49 U.S.C. 5100, *et seq.*, if carried in packaged or containerized form.

The CG has made the determination that hydrogen is hazardous when transported in bulk by vessel, either in gaseous or liquid form. This determination was made in 46 CFR 153.40(f)(1), pursuant to delegated authority from the Secretary of Transportation. The Secretary's authority derives from 49 U.S.C. 5103 and was originally delegated in 49 CFR 1.46(t). The CG function was preserved after the CG was transferred into the Department of Homeland Security, by operation of §§ 888(b and c) and 1512(d) of the Homeland Security Act of 2002, Public Law 107–296.

If carried as a bulk liquid, hydrogen would be regulated under 46 U.S.C. Chapter 37. Bulk gas tank vessel cargoes (such as hydrogen) are regulated under

CG regulations at 46 CFR part 153, Ships Carrying Bulk Liquid, Liquefied Gas, or Compressed Gas Hazardous Materials. This Part consists mainly of design and operational standards including general vessel requirements, cargo containment systems, cargo tanks, piping systems and cargo handling equipment, cargo venting, pumprooms, gauging, temperature control systems, and certain special requirements. If hydrogen were transported as a liquefied gas, it would also be regulated under 46 CFR part 154, Safety Standards for Self-Propelled Vessels Carrying Bulk Liquefied Gases. This Part regulates design and construction of hull structure, cargo tank location and survival capability, ship arrangements, cargo containment systems, special requirements for different types of tanks, piping, hoses, materials, construction, pressure and temperature control, venting and ventilation, atmospheric control, electrical, instrumentation, firefighting equipment, and special operational requirements. If hydrogen were to be shipped in a tank barge, it would be regulated under 46 CFR parts 38, Liquefied Flammable Gases, and under part 151, Barges Carrying Bulk Liquid Hazardous Material Cargoes, which include compressed gases.

Although all these regulations have some special provisions for transporting certain gases, there are no requirements specifically for hydrogen. Should the need for marine transportation of hydrogen materialize, these regulations would need to be modified to include special hydrogen requirements, due to hydrogen's metal embrittlement properties. Absent such modifications, 46 CFR 150.140 would prohibit the bulk transportation by vessel of hydrogen, without special permission from the CG Commandant.

##### b. Carriage as Metallic Hydride

An unpublished USCG study concluded that hydrogen is most likely to be transported as a metallic hydride, adsorbed onto metal particles that could then be transported more safely. The hydrogen would be stripped off at the destination and the metal shipped back for reuse. The metal particles would then presumably be treated like any other hazardous bulk solid, which would be regulated under 46 CFR part 148, Carriage of Solid Hazardous Materials in Bulk. These regulations contain manifesting, reporting, loading, transporting, and stowage requirements. There is a list of certain hazardous bulk cargoes that can be transported pursuant to the regulations, including ferrous metal borings, shavings, turnings, and

cuttings. The shipment of unlisted hazardous bulk solids (metallic hydride) would require express permission of the

CG Commandant after filing a special petition for a special permit.  
C. Additional Resources

C. Additional Resources

HOTLINKS TO LAWS & REGULATIONS APPLICABLE TO THE DEEPWATER PORTS STANDARDS DIVISION

Maritime Transportation Security Act of 2002 .....	National Environmental Policy Act of 1969.
Deepwater Port Act of 1974:	
Title 14 (US Code) Coast Guard .....	Code of Federal Regulations.
Title 33 (US Code) Navigation and Navigable Waters .....	CFR 33 Ch I (Parts 1–199).
Title 46 (US Code) Shipping .....	CFR 46 Ch I (Parts 1–199).
Title 49 (US Code) Transportation .....	CFR 49 Vol 1&2 (Parts 1–185); 190–195.

4.2 Hydrogen Vehicle Regulatory Framework

Federal Regulations Governing Introduction of Hydrogen Motor Vehicles Into Commerce

Manufacturers of hydrogen fueled motor vehicles will have to meet certain federal requirements prior to introducing their vehicles into commerce in the United States. This statement identifies requirements applicable to manufacturers under the Clean Air Act, the National Traffic and Motor Vehicle Safety Act (Vehicle Safety Act), and Motor Vehicle Information and Cost Savings Act (Cost Savings Act), and the regulations promulgated pursuant to those statutes. This statement highlights the more major provisions for manufacturers, but manufacturers and others should consult the specific statutes, regulations and standards to determine the full and precise substantive and procedural requirements. Manufacturers of hydrogen fueled vehicles may also be subject to other federal, state or local regulations.

Under the Clean Air Act, motor vehicles or engines must generally be certified by EPA as conforming to applicable regulations before the vehicle or engine can be sold or otherwise introduced into commerce in the United States. Under the Vehicle Safety Act, motor vehicles and motor vehicle equipment must be certified by the manufacturer as meeting all applicable Federal motor vehicle safety standards. Under the Cost Savings Act, manufacturers must meet specified corporate average fuel economy (CAFE) standards for passenger cars and light trucks, and bumper standards for passenger cars.

I. Requirements Under the Clean Air Act

Section 203(a) of the Clean Air Act (42 U.S.C. 7522(a)) prohibits manufacturers from introducing into commerce (including sale, importation, etc.) any new motor vehicle or new

motor vehicle engine subject to emissions standards under the Act unless that vehicle or engine is covered by a certificate of conformity issued by EPA. EPA has promulgated standards applicable to all motor vehicles and motor vehicle engines under section 202 of the Act (42 U.S.C. 7521), so this means that, unless a motor vehicle or engine is covered by an exemption, discussed below, a manufacturer may not introduce a motor vehicle into commerce in the United States without an EPA certificate.<sup>2</sup>

The regulatory provisions applicable to motor vehicles and engines are found in 40 CFR parts 85 and 86. These regulations detail the specific standards and other requirements that must be met and provide the mechanism that manufacturers must use to receive certifications of conformity for their vehicles and engines. In general, manufacturers must test vehicles or engines that represent the highest emitters (the “worst-case” vehicle or engine) within a group of similar type vehicles or engines (called the “test group” or the “engine family”). The manufacture must show that the vehicles or engines in the group or family meet all requirements. The manufacture must also provide information indicating that the vehicles or engines will meet such requirements for the full useful life of the vehicle or engine. The useful life is usually 8–10

<sup>2</sup>The Clean Air Act defines motor vehicles as “any self-propelled vehicle designed for transporting persons or property on a street or highway” (42 U.S.C. 7550(2)). This definition is further clarified in 40 CFR 85.1703. Although motor vehicles generally do not include vehicles designed for use off roads, like tractors or construction equipment, such “nonroad vehicles” and “nonroad engines” powered by internal combustion engines would be covered by similar restrictions under the Act (see 42 U.S.C. 7550(10) and (11) and 42 U.S.C. 7547). Standards and other requirements applicable to various types of nonroad engines (e.g., diesel nonroad engines, locomotives, marine engines), including requirements to certify nonroad engines and vehicles prior to introduction into commerce, can be found in 40 CFR Parts 89–92, 94, 1039, 1048 and 1051.

years or a certain number of miles, depending on the type of vehicle. If EPA finds that the manufacturer has met the requirements of the regulations, EPA will grant a certificate of conformity for all vehicles in the test group or engines in the engine family. The manufacturer then must label the vehicles or engines to identify them as meeting EPA requirements for the model year of the vehicle or engine. The vehicle or engine can then be introduced into commerce. Manufacturers must receive separate certificates of conformity for all test groups and engine families and must receive new certificates every year. Manufacturers who introduce only small volumes of vehicles into commerce in the United States are often subject to special provisions that allow some flexibility in meeting the requirements in part 86. See, e.g., 40 CFR 86.1838–01 (Small Volume Manufacturer Certification Procedures).

There are certain exemptions from the requirement to certify motor vehicles and engines. These exemptions are specified under 40 CFR part 85, subpart R. Of particular importance for the purposes of hydrogen powered vehicles, there are exemptions for test programs, pre-certification vehicles, and display vehicles.

The standards applicable to motor vehicles are generally fuel neutral, but standards applicable to engines (in particular, engines used in heavy-duty vehicles like 18-wheelers) are often broken into provisions for diesel engines and spark-ignited engines. It is unclear how hydrogen-powered vehicles would be categorized. The provisions applicable to motor vehicles in general will likely be directly applicable to hydrogen-powered motor vehicles. The testing provisions are designed so that vehicles are tested, generally on vehicle dynamometers. The testing provisions simulate normal driving and pollutants are measured by unit of distance (e.g. grams per mile).

One concern for hydrogen-powered vehicles is that for engine-certified

vehicles, the testing is done using engine dynamometers and pollutants are measured by unit of power consumption (e.g. grams per brake horse-power hour). These tests have generally been designed for standard internal combustion engines, so engines powered by fuel cells or hybrid-fuel cells might need to use special testing provisions (see, e.g. 40 CFR 86.090–27), which may involve substantial complexity and questions regarding proper representation of actual driving conditions. In addition, even for vehicles certified on vehicle dynamometers, there are likely to be complexities concerning the testing of hybrid engines and fuel cells, and the use of a non-carbon-based fuel for measurement of fuel consumption.

Therefore, especially as hydrogen-powered (particularly fuel-cell powered and hybrid) vehicles are first introduced into the market, and particularly for heavy-duty engines, it is recommended that manufacturers come to EPA well before the traditional period for certification to discuss any complications that might result from a manufacturer's intention to request certification of a hydrogen-powered motor vehicle or engine.

## II. Requirements Under the Vehicle Safety Act (Codified at 49 U.S.C. Chapter 301)

### *Federal Motor Vehicle Safety Standards*

Title 49, United States Code (U.S.C.), section 30101, et seq. (the Act) authorizes NHTSA to issue safety standards for new motor vehicles and new items of motor vehicle equipment. All motor vehicles and items of motor vehicle equipment manufactured or imported for sale in the United States must comply with all applicable safety standards set forth in 49 CFR part 571. Manufacturers of motor vehicles must self-certify compliance of their products in accordance with part 567, *Certification*.

Persons altering a new vehicle prior to its first retail sale to a consumer are considered vehicle alterers under NHTSA's certification regulation. Part 567.7, *Requirements For Persons Who Alter Certified Vehicles*, requires alterers to certify that the vehicle, as altered, complies with all applicable safety standards.

Manufacturers, distributors, dealers, or motor vehicle repair businesses modifying a new or used vehicle are prohibited by 49 U.S.C. 30122 from knowingly making inoperative any device or element of design installed on or in a motor vehicle or item of motor vehicle equipment in compliance with

an applicable Federal motor vehicle safety standard.

The Act provides NHTSA limited grounds on which to grant a motor vehicle manufacturer a temporary exemption from one or more of the safety standards. The procedures for a temporary exemption are found at 49 CFR part 555. The Act does not authorize the agency to grant temporary exemptions to manufacturers of motor vehicle equipment.

Several of the existing Federal motor vehicle safety standards address fuel system integrity, electrical isolation, and flammability. A research plan for hydrogen, fuel cell and alternative fuel vehicle safety was published July 14, 2004 (69 FR 42126). The plan and comments are contained in docket 18039 and can be accessed through the Department of Transportation's Document Management System at <http://dms.dot.gov/>.

### *International Harmonization*

NHTSA, along with counterparts in Germany and Japan are currently leading an effort under the United Nations' World Forum for the Harmonization of Vehicle Regulations to develop safety performance requirements under a comprehensive Global Technical Regulation (GTR) that would apply to hydrogen vehicles. To facilitate and guide the process of developing such a GTR, NHTSA is working with the co-sponsors, Germany and Japan, to develop a work plan that can be accepted by all signatories to the 1998 Agreement for the Harmonization of Vehicle Regulations. NHTSA expects consideration and adoption of the work plan at the March 2007 session. Work on development of the GTR should commence shortly thereafter.

### *Safety-Related Defects and Noncompliances*

The Act prohibits the sale or lease of defective or noncompliant vehicles or equipment except under certain circumstances. It requires manufacturers to notify consumers that a motor vehicle or item of equipment they purchased contains a safety-related defect or failed to comply with the standards, and requires manufacturers to remedy such defects and noncompliances without charge. The following regulations relate to the defect and noncompliance notification and remedy campaigns and prohibitions: Part 556, *Exemption for Inconsequential Defect or Noncompliance*; Part 573, *Defect and Noncompliance Responsibility and Reports*; Part 577, *Defect and Noncompliance Notification*; and Part 576, *Record Retention*, sets forth

requirements for manufacturers' retention of complaints, reports and other records concerning defects and malfunctions that may be related to motor vehicle safety. In addition, Part 579, *Reporting of Information and Communications About Potential Defects*, sets forth requirements for manufacturers' reporting certain information that may help identify defects and noncompliances, including reports of foreign recalls and safety campaigns, and early warning information.

### *Vehicle Identification Number*

49 CFR part 565 requires that each motor vehicle have a vehicle identification number (VIN), and specifies the content requirements for the VIN.

### *Manufacturer Identification*

Under 49 CFR Part 566, *Manufacturer Identification*, a manufacturer of motor vehicles or motor vehicle equipment to which a motor vehicle safety standard applies, must submit information identifying itself and its products to NHTSA not later than 30 days after it begins manufacture.

### *Designation of Agent for Foreign Manufacturers*

Under 49 CFR part 551, *Procedural Rules*, all manufacturers headquartered outside of the United States must designate a permanent resident of the United States as the manufacturer's agent for service of all process, notices, orders and decisions.

## III. Requirements Under the Cost Savings Act

### *Fuel Economy*

49 U.S.C. Chapter 329 requires each motor vehicle manufacturer to achieve at least a minimum Corporate Average Fuel Economy (CAFE). NHTSA has established standards for passenger cars (49 CFR part 531, *Passenger Automobile Average Fuel Economy Standard*), and light trucks (part 533, *Light Truck Fuel Economy Standards*). Manufacturers are required to file CAFE reports under part 537, *Automotive Fuel Economy Reports*.

Manufacturers of hydrogen-powered vehicles should be familiar with Part 538, *Manufacturing Incentives for Alternative Fuel Vehicles*. In 1996, NHTSA issued a final rule entitled "Manufacturing Incentives for Alternative Fuel Vehicles," which established gasoline gallon equivalent (GGE) factors for gaseous fuels in CAFE calculations, including hydrogen and Hythane®, when used in internal combustion engine (ICE) vehicles. The GGE factors are set forth in section

538.8. For hydrogen, the GGE factor is 0.259, meaning that 100 standard cubic feet of hydrogen at a standard pressure of 14.6 psi and at 60 degrees Fahrenheit is equivalent on an energy content basis to 0.259 gallons of unleaded gasoline. A GGE for hydrogen fuel cells remains to be established.

Several regulations provide procedures under which manufacturers may apply for exemptions from or for flexibility in achieving compliance with the CAFE standards. See Part 525, *Exemptions from Average Fuel Economy Standards* (for low-volume manufacturers); Part 526, *Petitions and Plans for Relief under the Automotive Fuel Efficiency Act of 1980*; and Part 535, *Three-year Carryforward and Carryback of Credits for Light Trucks*. Credits may also be available for a manufacturer of passenger cars under 49 U.S.C. 32903. Manufacturers should also be aware of Part 529, *Manufacturers of Multistage Automobiles*.

#### Bumpers

49 U.S.C. Chapter 325 directs NHTSA to issue and enforce bumper standards for passenger cars to reduce the economic loss resulting from damage to cars involved in motor vehicle accidents. Part 581, *Bumper Standard*, sets forth the requirements for the impact resistance of passenger cars in low speed front and rear collisions.

#### 4.3 Hydrogen Stationary Fuel Cells Regulatory Framework

##### I. Occupational Safety and Health Administration

*Disclaimer:* This guidance is limited to OSHA standards which may be applicable to, or might be considered useful sources for information pertaining to, occupational hazards related to workplace stationary fuel cells. The omission of any OSHA standards from this notice in no way limits their applicability to any other workplace hazards. In addition, any potential application of the standards referenced below may be dependent on specific factual situations at individual worksites.

##### Background

Stationary fuel cells can be used for backup power, power for remote locations, stand-alone power plants for towns and cities, distributed generation for buildings, and co-generation (in which excess thermal energy from electricity generation is used for heat). When these fuel cells are used at a workplace, then employers are required to comply with OSHA requirements.

##### Potentially Applicable Standards

The two primary potential hazards associated with stationary fuel cells are: (1) electrical hazards; and (2) fire and explosion hazards from flammable gases (such as hydrogen, liquefied petroleum gases (LPG), etc.) associated with the operation of stationary fuel cells.

##### A. OSHA Standards That May Apply to Electrical Hazards Associated With Stationary Fuel Cells

Because stationary fuel cells generate electric power, OSHA's electrical standards contained in 29 CFR part 1910 for general industry; part 1926 for construction industry; and parts 1915, 1917, and 1918 for Maritime Industry may be applicable. Typically, electric power generators (such as Stationary Fuel Cells) are covered by OSHA Subpart S standards in part 1910, if they are not connected to distribution systems (i.e., a system that is supplying power to two or more buildings) or if they are only emergency or standby in nature. If a Stationary Fuel Cell supplies power to a distribution system, then the provisions contained in 29 CFR 1910.269, *Electric Power Generation, Transmission, and Distribution*, may apply.

##### B. OSHA Standards That May Apply to Fire and Explosion Hazards Associated With Fuel Sources to Stationary Fuel Cells

In addition to the potential electrical hazards, the materials used to fuel the reactions within stationary fuel cells may present explosion hazards due to their composition and amounts present in the workplace. Several OSHA standards may have some application to these hazards. For example, if hydrogen is fed directly into the stationary fuel cell, OSHA's hydrogen standard at 29 CFR 1910.103 may apply to stationary fuel cells, depending upon their location and use. Likewise, if a liquefied petroleum gas is used as a fuel source, then OSHA's liquefied petroleum gas standard at 29 CFR 1910.110 may apply. In addition, if 10,000 pounds or more of a flammable liquid or gas such as hydrogen is present at the worksite and is involved in a process, then OSHA's Process Safety Management Standard may apply. Additionally, other OSHA standards, such as, 1910.38, 1910.101, 1910.120, and 1910.156 may apply.

Electric equipment in the vicinity of hydrogen sources may need to meet 29 CFR 1910.307 requirements depending on such factors as the quantity of flammable material that might escape in case of accident, the adequacy of

ventilating equipment, and the total area involved.

C. The Applicability of Section 5(a)(1) of the Occupational Safety and Health Act of 1970.

In the absence of specific OSHA standards, employers are obligated under Section 5(a)(1)—“the General Duty Clause” of the OSH Act to protect employees from serious recognized hazards. OSHA would consider several sources to determine whether a hazard is recognized by an employer.

##### II. Pipeline and Hazardous Materials Safety Administration, USDOT

The Pipeline and Hazardous Materials Safety Administration (PHMSA) has existing regulations governing the safe transportation of hydrogen gas by pipeline and prescribing packaging standards (among other requirements) for the movement in commerce of hydrogen gas or cryogenic liquid by other transportation modes. PHMSA regulations also would apply to transportation in commerce of fuel cells or fuel cell components, to the extent that they contain other hazardous materials.

##### A. Transportation of Hydrogen to Site of Stationary Fuel Cell

PHMSA issues and enforces the Pipeline Safety Regulations (PSR), 49 CFR parts 190–199, implementing the Federal Pipeline Safety Law, 49 U.S.C. 60101 et seq. to promote the safety of interstate and intrastate pipelines transporting hazardous liquids, natural gas, and other flammable, corrosive and toxic gases. Part 192 of the PSR regulates the transportation of natural and other gases in pipelines, including hydrogen, which is transported as a compressed flammable gas. PHMSA would regulate the transportation of hydrogen gas by pipeline to the site of the stationary fuel cell. (States may enforce safety standards on intrastate pipelines if the State has been certified by PHMSA under 49 U.S.C. 60105.)

PHMSA issues the Hazardous Materials Regulations (HMR), 49 CFR parts 171–180, implementing the Federal Hazardous Materials Transportation Law, 49 U.S.C. 5101 et seq., to promote the safe transportation of hazardous materials in commerce. Hydrogen, a hazardous material, is classified as a flammable gas in the Hazardous Materials Table (49 CFR 172.101). Therefore, the transportation in commerce of hydrogen as a gas or refrigerated liquid in cylinders, portable tanks, or cargo tank vehicles to the site of a stationary fuel cell would be regulated by PHMSA, subject to all

applicable requirements in the HMR including packaging and hazard communication requirements.

#### B. Transportation of Fuel Cell or Fuel Cell Components Containing Hazardous Materials

A variety of types of stationary fuel cells appear to be under development containing different electrolytes. Depending on the type of fuel cell, PHMSA may regulate it under the Federal Hazardous Materials Transportation Law, 49 U.S.C. 5101 et seq. and HMR, 49 CFR parts 171–180, when the fuel cell or fuel cell component is in transportation in commerce to the site. PHMSA would only regulate a fuel cell or fuel cell component in transportation if it contains a material identified in the Hazardous Materials Table (49 CFR 172.101) or meeting the definition of a hazardous material in 49 CFR part 173. Electrolytes used to carry electrically charged particles from one electrode to another within a fuel cell include materials such as potassium hydroxide, sodium carbonate, magnesium carbonate, phosphoric acid, calcium oxide, and zirconium oxide. Several of these—potassium hydroxide, phosphoric acid, and calcium oxide—are listed as hazardous materials in the Hazardous Materials Table and would be subject to the applicable requirements of the HMR, including packaging requirements. The HMR provide exceptions from packaging and labeling requirements for limited quantities of certain hazardous materials meeting specified criteria. For units or components too large to be packaged in accordance with the HMR, or for which there is an alternative method of packaging not provided for in the HMR, the offer may apply to PHMSA for a special permit. (49 CFR 107.105)

#### III. Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission's (FERC) regulatory authority with respect to stationary fuel cells depends on whether the owner or operator of stationary fuel cells is a public utility, i.e., a person that sells electric energy at wholesale in interstate commerce (a person that sells electric energy for resale). If the owner or operator is a public utility, the rates, terms and conditions of such sale are subject to the authority of the FERC pursuant to Parts II and III of the Federal Power Act, 16 U.S.C. 824, et seq.

#### IV. Environmental Protection Agency

The extent to which particular stationary fuel cells are regulated

directly by EPA under the Clean Air Act can usually be determined by whether they are part of a source category (like boilers or process heaters) that is covered by a New Source Performance Standard (40 CFR part 60), National Emission Standard for Hazardous Air Pollutants (40 CFR part 63) or a New Source Review Regulation (40 CFR parts 51 and 52). Smaller stationary fuel cells may also be regulated as consumer or commercial products under Clean Air Act section 183(e), 42 U.S.C. 7511b(e).

#### 5.0 General Comments on State and Local Jurisdiction

The regulatory role in a hydrogen economy for state and local jurisdictions includes, but is not limited to, health and safety regulations of local building codes and safety codes applicable to the use and generation of hydrogen, many aspects of hydrogen fueling stations including tank and infrastructure installation and maintenance for hydrogen fueling operations, the design and structure of parking garages and any other infrastructure regulated by local governments and state governments.

Issued in Washington, DC, on December 22, 2006.

**Victoria Sutton,**

*Chief Counsel, Research and Innovative Technology Administration.*

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### DEPARTMENT OF TRANSPORTATION

#### Surface Transportation Board

[STB Docket No. AB-33 (Sub-No. 236X);  
STB Docket No. AB-576 (Sub-No. 2X)]

#### **Union Pacific Railroad Company— Abandonment Exemption—in Bexar County, TX; Alamo Gulf Coast Railroad Company—Discontinuance of Service Exemption—in Bexar County, TX**

On December 15, 2006, Union Pacific Railroad Company (UP) and Alamo Gulf Coast Railroad Company (AGCR), jointly filed with the Surface Transportation Board (Board) a petition under 49 U.S.C. 10502 for exemption from the provisions of 49 U.S.C. 10903. UP seeks to abandon and AGCR seeks to discontinue service over a line of railroad extending between milepost 253.26 and milepost 256.0 on UP's Kerrville Subdivision, a distance of 2.74 miles in Bexar County, TX. The line traverses United States Postal Service Zip Codes 78028 and 78029, and includes no stations.

The line does not contain Federally granted rights-of-way. Any documentation in UP's or AGCR's

possession will be made available promptly to those requesting it.

The interest of railroad employees will be protected by the conditions set forth in *Oregon Short Line R. Co.—Abandonment—Goshen*, 360 I.C.C. 91 (1979).

By issuance of this notice, the Board is instituting an exemption proceeding pursuant to 49 U.S.C. 10502(b). A final decision will be issued by April 4, 2007.

Any offer of financial assistance (OFA) under 49 CFR 1152.27(b)(2) will be due no later than 10 days after service of a decision granting the petition for exemption. Each offer must be accompanied by a \$1,300 filing fee. See 49 CFR 1002.2(f)(25).

All interested persons should be aware that, following abandonment of rail service and salvage of the line, the line may be suitable for other public use, including interim trail use. Any request for a public use condition under 49 CFR 1152.28 or for trail use/rail banking under 49 CFR 1152.29 will be due no later than January 24, 2007. Each trail use request must be accompanied by a \$200 filing fee. See 49 CFR 1002.2(f)(27).

All filings in response to this notice must refer to STB Docket No. AB-33 (Sub-No. 236X) and AB-576 (Sub-No. 2X) and must be sent to: (1) Surface Transportation Board, 1925 K Street, NW., Washington, DC 20423-0001; and (2) Mack H. Shumate, Jr., Senior General Attorney, 101 North Wacker Drive, Room 1920, Chicago, IL 60606. Replies to the petition are due on or before January 24, 2007.

Persons seeking further information concerning abandonment procedures may contact the Board's Office of Public Services at (202) 565-1592 or refer to the full abandonment or discontinuance regulations at 49 CFR part 1152.

Questions concerning environmental issues may be directed to the Board's Section of Environmental Analysis (SEA) at (202) 565-1552. [Assistance for the hearing impaired is available through the Federal Information Relay Service (FIRS) at 1-800-877-8339.]

An environmental assessment (EA) (or environmental impact statement (EIS), if necessary), prepared by SEA will be served upon all parties of record and upon any agencies or other persons who commented during its preparation. Other interested persons may contact SEA to obtain a copy of the EA (or EIS). EAs in these abandonment proceedings normally will be made available within 60 days of the filing of the petition. The deadline for submission of comments on the EA will generally be within 30 days of its service.