

This document has been prepared as part of the implementation project of *Legal Pathways to Deep Decarbonization* (Michael B. Gerrard and John C. Dernbach, eds. Environmental Law Institute [2019]) (LPDD). For background information on the project, see <https://lpdd.org>

Streamlining Siting, Permitting, and Construction of Hydrogen Fueling Stations

Model State Statute: Updating State Fire Code Regulations¹

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Introduction

“Because . . . hydrogen fuel cell vehicles require specific refueling infrastructure, state and local laws, regulations, and ordinances may require amendments to streamline infrastructure siting, permitting, and construction.”²

Hydrogen Fuel Cell Vehicles and Deep Decarbonization

Hydrogen fuel cell vehicles are one of the most promising technologies for reducing greenhouse gas emissions from heavy-duty vehicles (e.g., trucks and buses).³ They are powered by hydrogen fuel cells, which generate electricity from hydrogen and oxygen; electric motors turn the wheels. Hydrogen fuel cell vehicles emit only water vapor, no greenhouse gases or air pollutants. If we include emissions from conventional production and distribution of gaseous hydrogen and diesel fuel, hydrogen fuel cell trucks emit 20 to 45% less greenhouse gas than diesel trucks.⁴

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¹ Based on Fla. Stat. Ann. § 633.202 (West 2020).

² Michael B. Gerrard & John C. Dernbach, *Legal Pathways to Deep Decarbonization in the United States* 422 (2019).

³ *Id.* at 389 (“[H]ydrogen fuel cell technology offers the greatest potential for reducing the carbon intensity of HDVs [heavy-duty vehicles] . . .”).

⁴ Dong-Yeon Lee et al., *Life-cycle implications of hydrogen fuel cell electric vehicle technology for medium- and heavy-duty trucks*, 393 J. Power Sources 217 (July 31, 2018), abstract available at <https://www.sciencedirect.com/science/article/abs/pii/S0378775318304737?via%3Dihub>; see also Frontier Energy, Inc., *Air Climate Energy Water Security: A guide to*

The Deep Decarbonization Pathways Project Technical Report calculates that greenhouse gas emissions from the U.S. transportation sector must be reduced by 76% to 104% by 2050.⁵ To meet those goals, the report models a scenario in which compressed natural gas, liquid natural gas, and hydrogen fuel cell heavy-duty vehicles are introduced in the mid-2020s, become the majority of new vehicle sales by the mid-2030s,⁶ and make up the majority of on-road heavy-duty vehicle miles travelled by the late 2040s.⁷ In another scenario, up to 50% of heavy-duty vehicles would be powered by hydrogen fuel cells by 2050.⁸

Hydrogen fuel cell vehicles face a number of barriers, including lack of an adequate network of hydrogen fueling stations. Hydrogen fueling stations face legal and economic barriers, as well as potentially time-consuming problems in siting, permitting, and construction. Changes in the law and careful advance planning can greatly reduce these barriers.

Ensuring State Fire Codes are Up-to-Date

The most important requirements for hydrogen fueling stations are the safety standards codified in the National Fire Protection Association 2, Hydrogen Technologies Code (“NFPA 2”). The code provides fundamental safeguards for, among other things, handling liquid and gaseous hydrogen; preventing explosions; and safe design and operation of hydrogen fueling facilities, hydrogen fuel cell power systems and hydrogen generation systems.

According to a member of the California Fuel Cell Partnership, adopting NFPA 2 is the single most important step a state or municipality can take toward proper siting, permitting, and construction of a hydrogen fueling station. Every state has adopted NFPA 2 to some extent.⁹ States generally adopt one of the two national model fire codes:

understanding the well-to-wheels impact of fuel cell electric vehicles 6, California Fuel Cell Partnership, <https://cafcp.org/sites/default/files/W2W-2016.pdf> (last visited May 27, 2020) (totaling emissions from “well to wheels,” fuel cell electric cars emit about 150 grams CO₂ equivalent per mile (gCO₂e/mi) compared to about 400 gCO₂e/mi for gasoline cars).

⁵ Gerrard & Dernbach, *supra*, at 388 (citing James H. Williams et al., *Pathways to Deep Decarbonization in the United States, U.S. 2050 Report, Volume 1: Technical Report* (2015), available at <https://usddpp.org/downloads/2014-technical-report.pdf> [hereinafter “DDPP Technical Report”]).

⁶ Gerrard & Dernbach, *supra*, at 388; DDPP Technical Report at 65.

⁷ Gerrard & Dernbach, *supra*, at 388.

⁸ Gerrard & Dernbach, *supra*, at 388; DDPP Technical Report at 30-31.

⁹ Carl Rivkin, *National Codes and Standards Deployment and Outreach* 19 (2019), available at https://www.hydrogen.energy.gov/pdfs/review19/scs001_rivkin_2019_p.pdf.

NFPA 1, Fire Code or the International Fire Code, which have incorporated NFPA 2 by reference since 2012¹⁰ and 2015,¹¹ respectively.

Some states, however, have adopted an edition of a national model fire code that is out of date. It may not incorporate NFPA 2, or may be missing important revisions. For example, as of May 2020, Kansas used the 2006 edition of the International Fire Code;¹² this edition does not incorporate NFPA 2, which was first promulgated in 2011. As of May 2020, several states (Alaska, Arkansas, District of Columbia, Indiana, Kentucky and Tennessee) were using the 2012 edition of the International Fire Code,¹³ which also does not incorporate NFPA 2.

To deal with this problem, a state can pass legislation to ensure that its fire code is regularly updated. Florida does so as a matter of law; California and Minnesota do so as a matter of practice. The model given here is based on Florida’s statute. It requires the State Fire Marshal (or an equivalent state official) to adopt the current edition of a national model fire code as the state fire code, and update it every three years. It provides for regional and local amendments, if desired, and correction of errors.

The national fire code organizations, the International Code Council (“ICC”) and NFPA, update their standards regularly. The ICC updates its codes every three years;¹⁴ the NFPA every three to five years.¹⁵

Even if a state adopts an up-to-date national model fire code, the adopted fire code—and NFPA 2—may apply only to certain buildings and facilities, such as those owned by the state, as is the case in Colorado and other states. In such states, a hydrogen fueling station may not be subject to NFPA 2 unless the municipality has adopted it. To deal with this problem, see the Model Local Ordinance: Adopting National Fire Protection Association (NFPA) 2, Hydrogen Technologies Code.

1. PURPOSE

¹⁰ NFPA 1, *Fire Code* § 2.2 (2012), available at <https://submittalsarchive.nfpa.org/TerraViewWeb/ViewerPage.jsp?id=1-2012.ditamap&pubStatus=SDR> (registration for free account required).

¹¹ See, e.g., International Fire Code § 2309.3.1.1 (2015).

¹² *Code Listing*, Kan. Office of the State Fire Marshal, <https://www.firemarshal.ks.gov/181/Code-Listing> (last visited May 27, 2020).

¹³ See *International Codes-Adoption by State (April 2020)*, International Code Council, <https://www.iccsafe.org/wp-content/uploads/Master-I-Code-Adoption-Chart-April-2020.pdf>.

¹⁴ *The International Codes*, International Code Council, <https://www.iccsafe.org/products-and-services/i-codes/the-i-codes/> (last visited May 26, 2020).

¹⁵ *How the NFPA Standards Development Process Works*, National Fire Protection Association, <https://www.nfpa.org/Codes-and-Standards/Standards-development-process/How-the-process-works> (last visited May 26, 2020).

The purpose of this act is to protect public health, welfare and safety in public and private buildings, structures and facilities by ensuring [name of state] adopts current national model fire codes and regularly updates them to incorporate recent improvements in fire safety.

2. AUTHORITY TO ADOPT STATE FIRE CODE BY RULE

The State Fire Marshal¹⁶ shall adopt, by rule pursuant to [cite state administrative procedure act],¹⁷ the [name of state] Fire Prevention Code, which shall contain or incorporate by reference fire safety laws and rules that pertain to and govern the design, construction, erection, alteration, modification, repair, and demolition of public and private buildings, structures, and facilities and the enforcement of such fire safety laws and rules. The State Fire Marshal shall adopt a new edition of the [name of state] Fire Prevention Code every [third]¹⁸ year.

3. ADOPTING CURRENT NATIONAL MODEL FIRE CODES

The State Fire Marshal shall adopt the current edition of the [name of national model fire code, e.g., International Fire Code or National Fire Protection Association (NFPA) 1, *Fire Code* and NFPA 101, *Life Safety Code*][, but may not adopt a building, mechanical, or plumbing code].¹⁹ The State Fire Marshal may modify the selected codes and standards as needed to accommodate the specific needs of the state. Standards or criteria in the selected codes shall be incorporated by reference. [The State Fire Marshal shall incorporate within sections of the [name of state] Fire Prevention Code provisions addressing regional and local concerns and variations.]²⁰

[Include section 4 if the state wishes to incorporate regional and local variations in the State Fire Code; otherwise, it can be omitted.]

4. [REGIONAL AND LOCAL AMENDMENTS

No later than 180 days before the triennial²¹ adoption of the [name of state] Fire Prevention Code, the State Fire Marshal shall notify each municipal, county, and special district fire department of the triennial code adoption and steps necessary for local amendments to be included within the code. No later than 120 days before the

¹⁶ If a different official or agency adopts fire codes, substitute that official or agency throughout.

¹⁷ The Florida statute cites [Fla. Stat. Ann. §§ 120.536\(1\) and 120.54](#).

¹⁸ A state may choose to update codes on a different schedule. Florida updates its code every third year; Minnesota, as a matter of practice, updates its code every sixth year.

¹⁹ [Edit this to reflect any limits on the Fire Marshal's authority. The bracketed text is from Florida's statute.]

²⁰ [Include this if the state wishes to incorporate regional and local variations in the State Fire Code; otherwise, it can be omitted.]

²¹ [If the state chooses to update fire codes on a schedule other than every third year, change "triennial" throughout to match that schedule.]

triennial adoption of the [name of state] Fire Prevention Code, each local jurisdiction shall provide the State Fire Marshal with copies of its local fire code amendments. The State Fire Marshal has the option to process local fire code amendments that are received less than 120 days before the adoption date of the [name of state] Fire Prevention Code.

4.1. The State Fire Marshal shall review or cause the review of local amendments to determine:

4.1.1. If the local amendment should be adopted as a statewide provision;

4.1.2. That the local amendment does not provide a lesser degree of life safety than the code otherwise provides; and

4.1.3. That the local amendment does not reference a different edition of the national fire codes or other national standard than the edition provided or referenced in the fire safety codes adopted by the State Fire Marshal or prescribed by statute.

4.2. Any local amendment to the [name of state] Fire Prevention Code adopted by a local government shall be effective only until the adoption of the new edition of the [name of state] Fire Prevention Code. At such time, the State Fire Marshal shall adopt such amendment as part of the [name of state] Fire Prevention Code or rescind the amendment. The State Fire Marshal shall immediately notify the respective local government of the rescission of the amendment and the reason for the rescission. After receiving such notice, the respective local government may readopt the rescinded amendment. Incorporation of local amendments as regional and local concerns and variations shall be considered as adoption of an amendment pursuant to this section.]

5. PERIODIC UPDATES

The State Fire Marshal shall update, by rule adopted pursuant to [cite state administrative procedure act],²² the [name of state] Fire Prevention Code every 3 years. [Once initially adopted and subsequently updated, the [name of state] Fire Prevention Code shall be adopted for use statewide without adoptions by local governments.]²³ When updating the [name of state] Fire Prevention Code, the State Fire Marshal shall consider changes made by the national model fire codes incorporated into the [name of state] Fire Prevention Code, the State Fire Marshal's own interpretations, declaratory statements, appellate decisions, and approved statewide [and local] technical amendments.

6. CORRECTING CONFLICTS, OMISSIONS, AND UNINTENDED RESULTS

²² The Florida statute cites [Fla. Stat. Ann. §§ 120.536\(1\)](#) and [120.54](#).

²³ [Include, omit or modify this sentence as appropriate to conform to the home rule or other laws of the state.]

Upon the conclusion of a triennial update to the [name of state] Fire Prevention Code and notwithstanding any other provisions of law, the State Fire Marshal may address the issues identified in this subsection by amending the [name of state] Fire Prevention Code, subject only to the rule adoption procedures of [cite state administrative procedure act].²⁴ Following the approval of any amendments to the [name of state] Fire Prevention Code by the State Fire Marshal and publication on the State Fire Marshal's website, authorities having jurisdiction to enforce the [name of state] Fire Prevention Code may enforce the amendments to the code. The State Fire Marshal may approve only amendments that are needed to address:

- 6.1. Conflicts within the updated [name of state] Fire Prevention Code;
- 6.2. Conflicts between the updated [name of state] Fire Prevention Code and the [name of state] Building Code adopted pursuant to [cite state statute governing building construction standards];²⁵
- 6.3. The omission of [name of state]-specific amendments that were previously adopted in the [name of state] Fire Prevention Code; or
- 6.4. Unintended results from the integration of [name of state]-specific amendments that were previously adopted with the model code.

²⁴ The Florida statute cites Fla. Stat. Ann. Chapter 120.

²⁵ The Florida statute cites Fla. Stat. Ann. Chapter 553.