

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 Local Ordinance: Adopting National Fire Protection Association (NFPA) 2, *Hydrogen Technologies Code*¹

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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 National Fire Protection Association 2, *Hydrogen Technologies Code*, Annex C, *Sample Ordinance Adopting NFPA 2*.

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,

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.

Adopting National Fire Protection Association 2, Hydrogen Technologies Code

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

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 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.

NFPA 2 to some extent.⁹ States generally adopt one of the two national model fire codes: NFPA 1, Fire Code or the International Fire Code, which have incorporated NFPA 2 by reference since 2012¹⁰ and 2015,¹¹ respectively. However, in some states, such as Colorado, the state-adopted fire code applies only to certain buildings and facilities, such as those owned by the state.¹² Thus, in Colorado and other states, a hydrogen fueling station may not be subject to NFPA 2 unless the municipality has adopted it. A municipality that has not adopted NFPA 2 is in a poor position to review and approve applications for safe hydrogen fueling stations.

Hydrogen fueling station developers should check if NFPA 2 applies in the municipality in which they plan to build.¹³ If not, they may choose another municipality or work with the municipality to adopt NFPA 2.

The following model is, therefore, a municipal ordinance that adopts NFPA 2. It is based on NFPA 2, Annex C, Sample Ordinance Adopting NFPA 2. The model adopts NFPA 2 as a municipal ordinance but, in contrast to the current Annex C, does not also adopt it as regulations governing conditions hazardous to life and property from fire and explosion. Ordinarily, a legislature or town council authorizes an agency to promulgate regulations to fill in detailed technical requirements that the legislature or town council is unable, or in a poor position, to draft. Where, as here, the legislature or town council adopts a highly detailed, technical set of requirements in an ordinance, there is no need for additional regulations; the detailed, technical requirements are already in the ordinance. Adopting NFPA 2 as both an ordinance and an identically worded set of regulations is redundant, and may cause confusion for AHJs, courts and the regulated community.

The model provides for enforcement through a misdemeanor with fines and imprisonment, and authorizes legal proceedings to correct violations. The model includes

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.

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 See *Colorado*, International Code Council, <https://www.iccsafe.org/advocacy/adoption-map/colorado/> (last visited June 18, 2020); *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>.

¹³ The International Code Council's website, <https://www.iccsafe.org/>, can be searched by state name to learn which states have adopted the *International Fire Code*, and to what extent. Similarly, the NFPA's CodeFinder, <https://codefinder.nfpa.org/>, can be searched by state name to learn which states have adopted NFPA 1, *Fire Code* and to what extent.

provisions for local amendments, repeal of conflicting ordinances, publishing the ordinance according to the jurisdiction’s procedural requirements, severability, and an effective date.

Section 3, Enforcement, is a revised version of the penalty provision in NFPA 2, Annex C. It has been redrafted for clarity and simplicity. The model specifically adopts NFPA 2, Annex B, Administration, which provides additional administrative enforcement authority, among other things. Many municipalities have existing, equivalent provisions for administering and enforcing fire codes, which can be amended as needed and used instead of Section 3 and Annex B. In that case, Section 3 and Annex B can be omitted from the model.

If passing a municipal ordinance is difficult, a station developer can ask the local building or fire official to accept NFPA 2 as an alternative method of construction. Most fire and building codes include a provision allowing the local official to accept alternative materials, design and methods of construction and equipment, as long as they offer equivalent quality, strength, effectiveness, fire resistance, durability, and safety.¹⁴

This model contains Microsoft Word automatic paragraph/outline numbers

1. DEFINITION

- 1.1. “NFPA 2” means the [2020]¹⁵ edition of the National Fire Protection Association 2, *Hydrogen Technologies Code*.

2. ADOPTION OF NFPA 2

- 2.1. NFPA 2; the documents adopted by NFPA 2, Chapter 2, *Referenced Publications*; and NFPA 2, Annex B, *Administration*¹⁶ are hereby adopted and incorporated into this ordinance as if fully set out at length.

¹⁴ See, e.g., *International Building Code* § 104.11 (2018); *International Fire Code* § 104.9 (2018); NFPA 1, *Fire Code* § 1.4 (2018).

¹⁵ [Insert the year of the latest edition of NFPA 2.]

¹⁶ Annex B, *Administration*, grants the “authority having jurisdiction” (“AHJ”), among other things, authority to inspect hydrogen installations and operations; issue orders, permits and notices of violation; and impose monetary penalties. It also establishes a Fire Code Board of Appeals to hear appeals of decisions of the AHJ. Many municipalities have existing, equivalent provisions for administering and enforcing fire codes, which can be amended as needed and used instead of Annex B and Section 3, *Enforcement*. In that case, omit Annex B and Section 3 from the text. The AHJ is the organization, office or individual that administers and enforces the building or fire code in the municipality, see NFPA 2 §§ 1.7.1 & 3.2.2. An example would be the municipal fire code official or fire marshal.

2.2. Three (3) copies of NFPA 2, including all its Annexes, shall be kept on file and open to inspection by the public in the office of the [jurisdiction's keeper of records] of the [jurisdiction].

3. ENFORCEMENT

3.1. A person violates this ordinance if he, she or it fails to comply with the provisions of this ordinance; fails to comply with an order made pursuant to this ordinance; or violates any condition attached to a permit, approval, or certificate issued pursuant to this ordinance.

3.2. Any person who violates this ordinance shall be guilty of a misdemeanor, punishable by a fine of not less than \$____ nor more than \$____, imprisonment for not less than ____ days nor more than ____ days, or both.

3.3. Each day that a violation continues constitutes a separate offense.

3.4. Imposition of a penalty for a violation shall not excuse the violation, permit the violation to continue, or prevent correction of the violation.

3.5. [The authority having jurisdiction]¹⁷ is authorized to institute legal proceedings to correct or remedy violations of this ordinance.

4. LOCAL AMENDMENTS OF NFPA 2

NFPA 2 is amended as follows:

[list amendments]¹⁸

5. REPEAL OF CONFLICTING ORDINANCES

Ordinance No. _____ of [jurisdiction] entitled [name of ordinance] and all other ordinances or parts of ordinances in conflict with this ordinance or any standard adopted by it are hereby repealed.

¹⁷ The authority having jurisdiction is the organization, office or individual that administers and enforces the building or fire code in the municipality, *see* NFPA 2 §§ 1.7.1 & 3.2.2. An example would be the municipal fire code official or fire marshal.

¹⁸ Local jurisdictions should review NFPA 2 for sections that need to be amended to reflect local circumstances, *e.g.*, to specify the authority having jurisdiction. NFPA 2 also contains some bracketed language that local jurisdictions might want to amend.

6. SEVERABILITY

If any section, subsection, sentence, clause, or phrase of this ordinance is held to be invalid or unconstitutional by a court of competent jurisdiction, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The [governing body] hereby declares that it would have passed this ordinance, and each section, subsection, clause, or phrase hereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared invalid or unconstitutional.

7. PUBLICATION OF ORDINANCE

The [jurisdiction's keeper of records] is hereby ordered to cause this ordinance to be published.¹⁹

8. EFFECTIVE DATE

This ordinance shall be in effect [number of days] after the date of this ordinance's final passage and adoption.

¹⁹ An additional provision may be required to direct the number of times the ordinance is to be published and in what media. Posting may also be required.