

## Executive Summary

The goal of this project is to identify gaps and conflicts in current codes and standards addressing the construction permitting of refueling stations for fuel cell electric vehicles (FCEVs) as well as other hydrogen facilities. Once these conflicts and gaps are recognized, proposed resolutions for the relevant codes and standards are provided. In general, the requirements within relevant codes and standards should be harmonized in order to simplify the planning, design and construction requirements for gaseous hydrogen refueling stations from jurisdiction to jurisdiction. This harmonization has already been accomplished to a large degree due to the continued efforts of the responsible Technical Committees (TCs). This report offers a fresh look at the current requirements and offers suggestions for the continued improvement of hydrogen codes and standards.

## Introduction

The goal of this project is to identify gaps and conflicts in current codes and standards addressing the construction permitting of refueling stations and other hydrogen facilities. A code gap is considered to be a subject that one might expect to find information on within the document of interest, yet no information is present. This is especially common with new products and technologies. As the hazards associated with new products and technologies become better understood, codes / standards are revised to better address those hazards. A conflict exists when hazards are addressed in multiple codes / standards but the prescribed hazard mitigation varies among these codes and standards. For example, one code may prescribe a separation distance (e.g. - setback to property line, separation between hazards, separation between hazard and exposure, etc.) of 10 feet while another code or standard requires a separation distance of 30 feet. Code harmony is desired so that construction requirements are similar regardless of which codes / standards are utilized from jurisdiction to jurisdiction.

Plan review for a proposed construction project can frequently identify areas where codes have shortcomings, conflicts or gaps. A mock plan review was conducted of two (2) installations for which complete plans currently exist. The plan review was a tool used to assist in the identification of code issues and not the focus of the effort. Specific results of the plan review effort are not discussed further but were used along with side by side comparison of existing requirements to produce the issues discussed in this report. Relevant codes and standards used in the assessment included the following:

- International Building Code (IBC), 2012 Edition
- International Fire Code (IFC), 2009 and 2012 Editions
- NFPA 1, *Fire Code*, 2009 Edition (via extract text primarily)
- NFPA 2, *Hydrogen Technologies Code*, 2011 Edition
- NFPA 52, *Vehicular Gaseous Fuel Systems Code*, 2010 Edition
- NFPA 55, *Compressed Gases and Cryogenic Fluids Code*, 2013 Edition

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