

VII.B.5 Brentwood Case Study

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Subcontractors:

- Proton Onsite, Wallingford, CT
- Werken, Washington, DC
- Anderson Burton, Colorado Springs, CO

Project Start Date: May 15, 2015

Project End Date: Project continuation and direction determined annually by DOE

Overall Objectives

This project will document lessons from the permitting and construction of a hydrogen fueling station to further reduce the time and costs associated with deploying hydrogen-fueling technology. This work will address key barriers defined in the Multi-Year Research, Development, and Demonstration Plan, including:

- Lack of knowledge regarding project siting.
- Inadequate installation expertise.
- High permitting costs.

Fiscal Year (FY) 2016 Objectives

- Document lessons learned for future hydrogen infrastructure projects.
- Publish NREL technical report of lessons learned.

Technical Barriers

This project addresses the following technical barriers from the Fuel Cell Technologies Office Multi-Year Research, Development, and Demonstration Plan.

Market Transformation

- (A) Inadequate Standards and Complex and Expensive Permitting Procedures
- (G) Lack of Knowledge Regarding the Use of Hydrogen Inhibits Siting (e.g., Indoor Refueling)

(L) Inadequate Installation Expertise

Technology Validation

- (A) Lack of Data on Stationary Fuel Cells in Real-World Operation

Contribution to Achievement of DOE Technology Validation Milestones

This project will contribute to achievement of the following DOE milestones from the Fuel Cell Technologies Office Multi-Year Research, Development, and Demonstration Plan.

- Milestone 3.5: Validate distributed production of hydrogen from renewable liquids at a projected cost of \$5/gge and from electrolysis at a projected cost of \$3.70 with an added delivery cost of <\$4/gge. (4Q, 2018)

FY 2016 Accomplishments

- The fueling station permitting has been completed.
- The report documenting the lessons learned is drafted as an NREL technical report and will be published shortly.



INTRODUCTION

Deploying hydrogen fueling stations (HFSs) is a critical step in the overall process of hydrogen technologies deployment. The placement of high-pressure hydrogen fueling dispensers in the retail environment represents a significant change in retail fueling technology. The purpose of this project is to better understand the obstacles to HFS deployment. This project will document lessons from the permitting and construction of a hydrogen fueling station (shown in Figure 1) to further reduce the time and costs associated with deploying hydrogen fueling technology.

APPROACH

NREL leveraged the strengths and knowledge of the project partners to derive the best understanding of the issues with siting and building hydrogen fueling stations.

RESULTS

The lessons learned analysis produced the following key lessons.

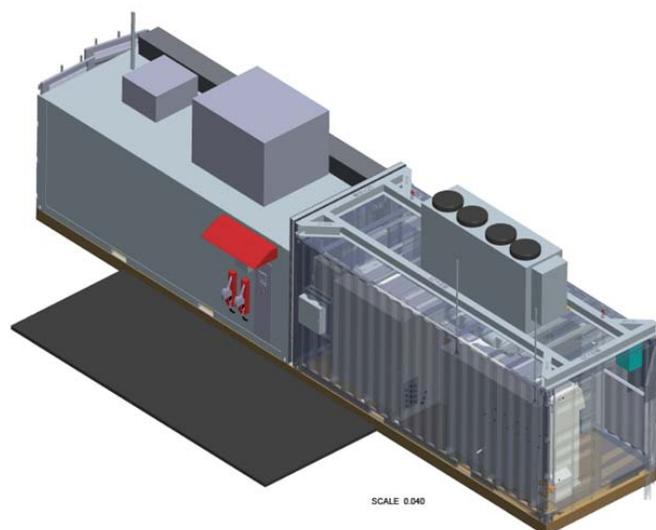


FIGURE 1. Modular hydrogen fueling station

- A Phase I environmental audit would be very valuable for project developers to evaluate the potential for siting a hydrogen fueling station.
- Coordination of the multiple authorities having jurisdiction involved in any project can save time and money and will likely only be accomplished effectively by a single advocate.
- An existing site may have serious safety problems that a new project such as a hydrogen fueling station uncovers and must be resolved before the station project can proceed.
- Integrating a new project into an existing site, particularly an older site that may have limited documentation, will present challenges that must be weighed against the prospects of employing a new site.

CONCLUSIONS AND FUTURE DIRECTIONS

This study produced valuable lessons learned that could aid project developers for hydrogen fueling stations that would be located at both commercial and government sites. The station can also be used as learning tool to explain both safety issues and the elements of hydrogen technologies for a variety of stakeholders, including project developers, the safety community, and the general public.

FY 2016 PUBLICATIONS/PRESENTATIONS

1. Brentwood Lessons Learned Draft NREL Technical Report August 2016.