

X.9 Hydrogen Education and Outreach

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OURCO, Inc., Gambrills, MD

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Objectives

This project seeks to accomplish the following main objectives:

- Develop education and outreach materials for the transit industry, code officials, and the public to facilitate timely information exchange between stakeholders for buses and fleet vehicles. (Task 1)
- Develop standardized fact sheets to provide a knowledge base on hydrogen energy projects and systems so that both the general public and technical communities are aware of the advancements in hydrogen energy systems. (Task 2)

Technical Barriers

This project addresses the following technical barriers from the Education section of the Hydrogen, Fuel Cells, and Infrastructure Technologies (HFCIT) Program Multi-Year Research, Development and Demonstration Plan:

- A. Lack of Awareness
- B. Lack of Demonstrations or Examples of Real World Use
- C. Institutional Barriers and Access to Audiences

Approach

The following basic approach is in place to accomplish the project's objectives:

- Work with fleets to better understand their educational needs.
- Develop a standardized series of fact sheets on various hydrogen subjects for fleet and prioritized target audiences.
- Collect other education collateral that can be used to reach fleet and prioritized target audiences.
- Disseminate fact sheets and other education collateral using the mediums most requested by respondents.

Accomplishments

TASK 1: Assessment of Hydrogen Information Needs for Operators and Managers of Fleet Vehicles

- Over the June to December 2004 time period, OURCO staff worked with approximately 2,000 fleet operators in 22 states and 4 Canadian Provinces to better understand their education needs. These operators represented a wide variety of fleet operations, including:
 - Transit operations;
 - State agencies (e.g., public works, transportation, etc.);
 - Local government agencies (e.g., public works, law enforcement, etc.); and
 - Various private sector organizations.
- Findings from Task 1:
 - Fleet operators want information on technical features and the costs of hydrogen-fueled internal combustion engines, vehicles, fuel, equipment and related operational aspects.
 - Fleet operators prefer workshops/seminars/classes, websites, and videos/DVDs; followed by demonstration hardware and printed materials.
 - Fleet operators believe that the three most significant hurdles to be overcome are cost, fuel storage limitations, and vehicle durability.
- Recommendations based on the interaction with fleets:
 - Collect and make available information on:
 - The costs of hydrogen (at the dispenser), fleet related equipment, vehicles, operation and maintenance, installation and training;
 - Hydrogen vehicles and their attributes (e.g., fuel economy, emissions, performance, range, duty cycle limitations, etc.); and
 - How hydrogen-fueled internal combustion engines work.
 - Provide descriptions and periodic updates of progress describing how the DOE Hydrogen Program and industry are addressing issues related to:
 - Cost;
 - Fuel storage limitations; and
 - Vehicle durability.
 - Create the information for previous recommendations in the following delivery formats:
 - Posting to website specifically for use by fleet operators;
 - Workshops and seminars geared toward fleet operators; and
 - Videos and/or DVDs on relevant hydrogen information that can be replicated at low cost and distributed to a wide audience of fleet operators.
 - Make demonstration information (particularly related to previous recommendations) that is relevant to fleet operators available, and invite the participation from fleets that have expressed interest in being a part of such projects.

TASK 2: Hydrogen Fact Sheets

- Hydrogen Fact Sheet Series:
 - History of Hydrogen
 - The Hydrogen Economy

- Hydrogen Safety
- A Global Hydrogen Effort
- Hydrogen Production Overview
- Available online at:
 - <http://www.eere.energy.gov/hydrogenandfuelcells/education/hydrogen.html>
 - <http://www.hydrogenassociation.org/nha-facts.asp>
 - Various National Hydrogen Association (NHA) Member sites

**Fact Sheet Downloads from the NHA Website
(82,467 Downloads/year based on Q1 data)**

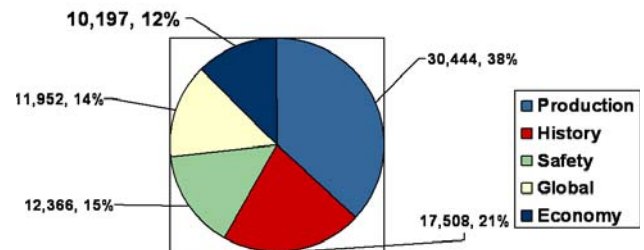


Figure 1. Number and Distribution of the Hydrogen Fact Sheets Currently Available to the Public

Future Directions (All tasks)

- Hold a series of hydrogen fleet preparation seminars/workshops in conjunction with conferences of major fleet organizations such as the National Association of Fleet Administrators (NAFA), American Public Transportation Association (APTA) and Federal Government fleet managers (FedFleet)
- Identify technical content and develop data for a “Hydrogen Fleet 101” course to be presented to fleets at the seminars/workshops
- Develop a hydrogen website for fleet operators for dissemination of the “Hydrogen Fleet 101” content.
- Implement DOE’s changes to fact sheets that are focused on specific production technologies and safety, which are currently in draft form.

Introduction

When this broad based solicitation was originally announced in 2001, it was designed to address a number of specific needs regarding early adopters such as fleet managers and operators; information resources, or the lack thereof; and the planning needs for education and outreach. This work was divided into three general tasks: Assessment of Hydrogen Information needs and dissemination of materials; Develop Hydrogen Fact Sheets and Develop an Education Plan.

To address changing needs and the increasingly limited educational resources, the early focus of this project was to develop informational resources through the fact sheet series (Task 2). More recently, the focus has shifted towards meeting the information needs of early adopters (Task 1).

Now halfway through the life of this project, several fact sheets have been developed and work with fleet operators and managers is under way. For Task 1, the next major step is to hold workshops and build a website that has the information fleet audiences need. For Task 2, the next step is to polish the existing fact sheets so they can all be publicly

available along with the creation of a few more fact sheets to finish the series.

Approach

To achieve the project’s objectives, Tasks 1 and 2 both fed into each other. In the first part of Task 1, the NHA researched the information needs of fleet managers and operators to determine what information about hydrogen technologies they needed most and the format (medium) that would be most useful.

Next, using existing communication materials and the fact sheets created through Task 2, the NHA will disseminate applicable materials so that the informational needs of this early adopter audience is met. Metrics to show progress will be developed as funding allows.

Results

Under this project, the NHA, in conjunction with DOE has set out to fulfill the hydrogen educational needs of specific early adopters with information that can be used for many other target audiences.

For Task 1, over the June to December 2004 time period, OURCO staff worked with approximately 2,000 fleet operators in the U.S. and Canada and learned the following:

- Fleet operators want information on technical features and the costs of hydrogen-fueled internal combustion engines, vehicles, fuel, equipment and related operational aspects.
- Fleet operators want information in the form of workshops/seminars/classes, websites, and videos/DVDs; followed by demonstration hardware and printed materials.
- Fleet operators believe that the three most significant hurdles to be overcome are cost, fuel storage limitations, and vehicle durability.

For Task 2, a standardized image for the fact sheets was developed. To date, ten fact sheets, covering a variety of hydrogen topics have been developed with language appropriate for key target audiences such as: State and Local Government Representatives and Large Scale End Users. Those that have been approved for public dissemination by DOE are available on a number of websites, including the DOE's HFCIT website

http://www.eere.energy.gov/hydrogenandfuelcells/hydrogen_publications.html and the National Hydrogen Association Website
<http://www.hydrogenassociation.org/nha-facts.asp>

Based on first quarter statistics for CY2005, visitors will download almost 100,000 of these five fact sheets from the NHA website this year.

Conclusions

To date, this project has received a warm reception by the people who have downloaded the fact sheets and responded to our research. In order to continue to meet the needs of the audiences we are striving to reach, it is critically important that the fleet managers and operators see a response in the form of answers to their questions and informational needs.

FY 2005 Publications/Presentations

1. "The State of Hydrogen Today"--Presentation for the DC Council of Governments on hydrogen properties and fleet vehicles
2. "Education: Broad Based Solicitation"—Poster presentation for the DOE 2005 Peer Review