

X.9 Hydrogen Education in Texas

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Texas H2 Coalition, The Woodlands, TX

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Project End Date: September 1, 2010

Objectives

- Project Aim: Increase basic knowledge and awareness of Texas state and local government leaders about hydrogen and fuel cell technologies.
- Project Objectives:
 - Establish communications to reach the target audience.
 - Assemble needed materials for education and outreach.
 - Conduct workshops and webinars for the five major Texas cities/regions.

Technical Barriers

This project addresses the following technical barriers from the Education section (3.9) of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- (A) Lack of Readily Available, Objective, and Technically Accurate Information
- (C) Disconnect Between Hydrogen Information and Dissemination Networks
- (E) Regional Differences

Contribution to Achievement of DOE Education Milestones

This project will contribute to achievement of the following DOE milestones from the Education section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- **Milestone 17:** Hold Hydrogen 101 Seminars (4Q, 2008 through 4Q, 2012)

Accomplishments

- Expanded Texas e-mail hydrogen/fuel cell contact list.
- Initiated discussions with regional contacts, including Clean Cities' coordinators.
- Conducted outreach and education activities including two briefings (Austin and Houston) and displays at two conferences (Dallas/Ft. Worth and Houston).
- Presented project at the DOE 2009 Annual Merit Review.
- Completed initial Web site design.
- Assembled basic educational materials, including information on Texas and hydrogen.
- Began compiling baseline awareness information.



Introduction

Between 2000 and 2004, Texas demonstrated considerable interest and activity related to hydrogen and fuel cell technology. During that time, the Houston Advanced Research Center (HARC) organized a fuel cell consortium and created a fuel cell testing lab. Interest and activities have declined in Texas since 2004. In 2008, in cooperation with the Texas H2 Coalition and the State Energy Conservation Office, HARC developed the *Texas Hydrogen Roadmap*. It was apparent from analysis conducted for this report that Texas has significant advantages for hydrogen and fuel cell, but there is relatively little activity within Texas compared with other key states. The provision of informational materials and activities through outreach and education was seen as an effective way of reaching decision makers in Texas. Previous hydrogen/fuel cells efforts by the state and the Texas H2 Coalition had targeted the five major Texas urban areas, and this same targeting approach was adopted for this project.

Approach

The overall approach for this project takes advantage of HARC’s experience in energy and air quality programs to conduct outreach and education efforts to reach state and local government leaders. Many of these people know of HARC and are located in the five largest metropolitan areas (Figure 1). In addition, the Texas H2 Coalition had worked in most of the target cities to explore hydrogen and fuel cell projects. The outreach and education activities that were identified for this project include establishing communications with key organizations in these areas (particularly Clean Cities), compiling contact information on the target audience, and conducting workshops and briefings to communicate hydrogen and fuel cell education information. These activities are being organized, whenever possible, in coordination with other metro area events and activities.

Results

The major results to date on this project have been (1) establishing key contacts in each of the target regions and (2) determining initial schedules for hydrogen education workshops. Based on discussions with other

state hydrogen education programs, it was important to coordinate workshops with key organizations in target areas to best meet the target audience. The workshop format was revised to be shorter in duration with more opportunities for follow-up activities such as briefings to identified individuals or groups.

Educational materials developed by DOE and other organizations have been reviewed by project staff to determine how they could be utilized. One page flyers on each topical areas are being provided to participants and as part of the website. A limited number of links to key educational materials and sites is also included in the Web site design to attempt to refer the target audience to the most relevant, accurate, and informative information sources (for example, DOE’s hydrogen code training Web site). HARC had previously published the *Texas Hydrogen Roadmap* working with the State Energy Conservation Office and had compiled Texas-relevant information that could be used for outreach and education. Some of these materials are incorporated in presentation materials. In addition, HARC has identified current hydrogen fuel cell applications in Texas (fuel cell forklifts, backup power for cell towers, and fuel transit bus) to use as real world examples in outreach and education.

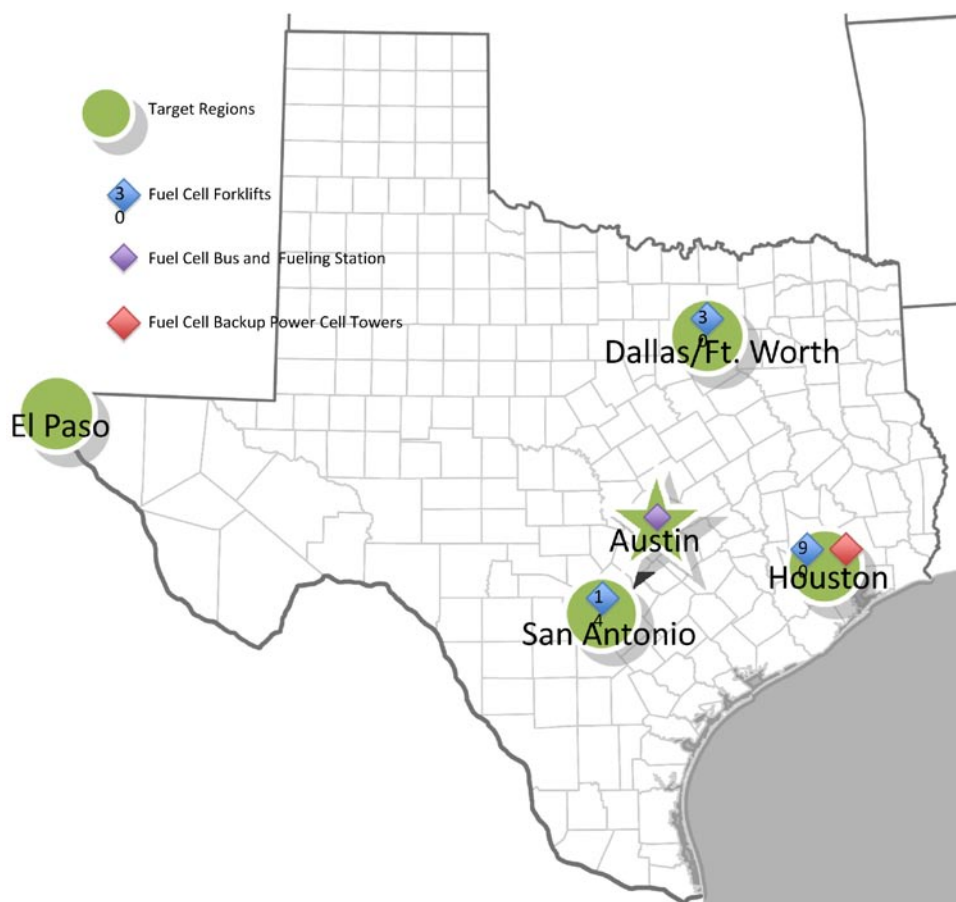


FIGURE 1. Target Regions and Application Examples

As an example of coordinative activities, HARC has identified a joint opportunity with the National Renewable Energy Laboratory's (NREL's) hydrogen code training workshop. HARC worked with NREL staff and contractors to establish a date and meeting place for these two events to occur over a two day period. This enables local government staff to help publicize and recruit participants for these related events. HARC has been involved in a previous project with area government staff on alternative fuels for the regional airport facility. The area has been considering hydrogen fuel cells as one of their options of interest for potential application at the airport and in related activities at or near the airport. The new fuel cell forklifts that are to be located in the San Antonio area serve as a real world example for workshop participants.

Following discussions with various organizations, workshop dates and venues have been identified for the Houston and Austin areas. The Houston event is planned to occur at the same location as two events that reach the target audience, one conference on air quality and the other on energy. In all target cities, HARC will work with Clean Cities' coordinators to communicate with the target audience.

The project has sought ways to assess progress on improving basic knowledge of hydrogen and fuel cells. Toward this end, questions are being posed as part of briefings and outreach to roughly assess the current level of knowledge of the target audience. Topic areas from the DOE's hydrogen education surveys are being used for this purpose to help establish a rough baseline. Follow-up assessments will be used with workshop participants to gauge progress. This is not intended to be a test/post test survey process, but a rough guide to improving materials and messages in the workshops, as well as improving information on the Web site.

Finally, incentives are being evaluated that would help ensure active participation in Texas workshops and briefings. Examples of incentives include a technology prize (such as a solar flashlight or fuel cell science kit), scholarships for hydrogen continuing education credits, training certificates, and/or provision of a conference registration fees.

Future Directions

- Workshops dates and venues will be finalized and workshops implemented.
- Additional opportunities for briefings to target audience will be identified.
- Target audience contacts will continue to be expanded.
- Project Web site will be launched.

FY 2009 Publications/Presentations

1. Texas and Hydrogen: Hydrogen 101; Houston Clean Cities Stakeholders Meeting; Houston-Galveston Area Council; March 18, 2009.
2. Texas and Hydrogen: Hydrogen 101; briefing for Texas legislative staff; Austin, Texas; April 9, 2009.
3. Hydrogen Education in Texas: DOE Annual Merit Review, May 21, 2009.