

IX.1 Development of Hydrogen Education Programs for Government Officials

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Subcontractors:
• Greenway Energy, Aiken, SC
• Advanced Technology International, Charleston, SC

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Fiscal Year (FY) 2012 Objectives

- Further develop relationships with government consortium groups and associations.
- Further establish direct lines of communication with individual city, county and state officials to disseminate important hydrogen and fuel cell information through project partners existing communication resources.
- Further institute recurring statewide events to provide public officials with opportunities to view the latest hydrogen and fuel cell technologies.
- Continue to raise public awareness and acceptance of the benefits of hydrogen and fuel cell technologies in order to increase interest in the adoption of hydrogen and fuel cells.
- Synthesize objective and technically accurate information that will be made available to a wide audience through the internet, a national meeting, and smaller personal meetings.

Technical Barriers

This project addresses the following technical barriers from the Education section (3.8.5) of the Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan:

- (A) Lack of Readily Available, Objective, and Technically Accurate Information
- (B) Mixed Messages
- (C) Disconnect Between Hydrogen Information and Dissemination Networks
- (D) Lack of Educated Trainers and Training Opportunities
- (E) Regional Differences
- (F) Difficulty of Measuring Success

Technical Targets

This project will contribute to achievement of the following DOE milestones from the Education (3.8) section of the Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan:

- Milestone 11: Develop set of introductory materials suitable for a non-technical audience. (4Q, 2006)
- Milestone 13: Develop materials for community seminars. (4Q, 2008)
- Milestone 14: Hold community seminars to introduce local residents to hydrogen. (4Q, 2008 through 4Q, 2012)
- Milestone 17: Hold “Hydrogen 101” seminars. (4Q, 2008 through 4Q, 2012)
- Milestone 29: Evaluate knowledge and opinion of hydrogen technology of key target audiences and progress toward meeting objectives. (4Q, 2009)

Progress for the Hydrogen 101: State and Local Government Education

FY 2012 Accomplishments

- In person presentations to over 45 groups of targeted South Carolina decision makers.
- Featured presenter in a DOE webinar: Where the Jobs Are: Hydrogen and Fuel Cells in South Carolina.
- Reached 21,672 targeted additional state and local government officials and decision makers.
- Webinar presentations can be viewed through a SlideShare channel.

- Videos of educational information on hydrogen are available on the SCHFCA YouTube and Greenway Energy YouTube channels.
- Developed market value proposition case studies on material handling equipment (MHE) early markets for hydrogen and fuel cell technologies.
- Presentations to groups including: national congressional candidates, staff of national presidential candidates, state house and senate members and staff, Leaders at the SC Department of Commerce, and the Coastal Conservation League.
- Hydrogen 101 materials were utilized in wider public education efforts that reached additional non-decision makers.
- Educational efforts with SC House and Senate members to demonstrate the effect of state level incentives for fuel cells and renewable technologies on creating viable markets.
- Hosted the DOE Secretary Chu visit in South Carolina, which included briefing Congressman James Clyburn.

Facilitate Cooperation and Best Practices with Southeastern States

The SCHFCA is working with state stakeholders to pinpoint resources in other southeastern states that could potentially be the start of a neighboring state's Hydrogen and Fuel Cell Economic Cluster. The SCHFCA intends to survey economic developers in southeastern states regarding opportunities to use the Market Value Proposition case study to promote fuel cell use in fork lifts.

1. Compile and document the “best practices” that have benefited the development of the South Carolina Hydrogen and Fuel Cell Economic Cluster.
2. Identify stakeholders (i.e., State Department of Commerce, State Energy Office, Clean Cities office, DOE award staff) that are knowledgeable about the industry, research facilities and projects in neighboring southeastern states.
3. Work with state stakeholders to pinpoint resources in other southeastern states that could potentially be the start of a neighboring state's Hydrogen and Fuel Cell Economic Cluster.
4. Survey economic developers in southeastern states regarding opportunities to use market value proposition case studies to promote fuel cells for forklifts, combined heat and power (CHP) and cell tower back up power.
5. Document and report the state's resources that make a case for a hydrogen and fuel cell economic cluster.
6. Travel to meet with state leaders (potential champions) to discuss and present our findings regarding resources already in their state that potentially make up an

economic cluster and some best practices that they could adopt or modify to fit their needs.

7. Meet and present market value proposition case studies to potential customers and regional economic developers in southeastern states.
8. Follow up with invitations to travel to South Carolina to see what we are doing and continue discussions on how we can work together.



Introduction

This project exists to develop and distribute educational material focusing on hydrogen and fuel cell technology to be presented to state and local government officials. These officials range from legislators at the state level to the planners at the local level. The activities associated with this project are based on a fundamental understanding of our diverse target audience and what issues and topics are of greatest interest to them.

The SCHFCA has been building relationships with key government and industry groups to promote the creation of a hydrogen economy throughout South Carolina and the southeast. Educational efforts have been key to the success of the SCHFCA in gaining acceptance of hydrogen energy technologies among government officials. Greenway Energy has worked with Aiken Technical College, the Applied Research Center: Hydrogen and Savannah River National Laboratory on hydrogen workforce education and public outreach. Efforts on this project will leverage existing materials and expertise and create materials for government officials.

Hydrogen and fuel cell technologies are moving out of the laboratory and into economically competitive niche markets such as cell phone tower back-up power and forklift operations. As hydrogen technologies become competitive in these early markets, communities will need to be educated about the opportunities afforded by hydrogen technologies and about safety concerns associated with them. The Hydrogen 101 program led by the SCHFCA seeks to raise awareness about hydrogen and fuel cells to community leaders within South Carolina and the Southeast.

South Carolina is among a small, but growing, number of states that have a hydrogen implementation strategy and is on the leading edge of fuel cell research and adoption. The state has been recognized as one of the top five leaders in hydrogen and fuel cells, but a significant lack of information on hydrogen still exists among state and local leaders. In order to maximize the resources existing in the state and surrounding region, it is imperative that an effective outreach and education program be conducted so that the decision

to accept hydrogen technologies in the local community is informed and wise.

Approach

The project team is composed of South Carolina-based hydrogen experts with connections to technically accurate information and civic organizations and associations that have already established communication networks and events with our target audience. The entire team works together to identify specific messaging that the local audience and sub audiences are interested in. Based on the feedback we gather from the civic organizations and other community opinion leaders, education materials and demonstrations are developed.

The marketing of the program is conducted through the existing websites, email distribution lists and communication networks. The distribution of the material is primarily conducted at events associated with each of the civic associations partnered on the project; however, several stand-alone events and webinars are planned.

Results

Building on the educational successes that assisted in the passage of the South Carolina Hydrogen Permitting Act, the SCHFCA has focused on decision makers in FY 2012 and reaching out to new candidates to state and national political offices, economic developers and business leaders. These efforts have been focused on discussing the success of hydrogen and fuel cell technologies in early markets and methods to increase adoption of hydrogen technologies within the state and region.

The Hydrogen 101 program in 2012 expanded its audience again to include business leaders and economic development officials based on input gathered from stakeholders. The focus of interactions with decision makers has been to emphasize the business case for fuel cells in early markets. This education focuses on helping them understand where fuel cells can provide a value proposition for their organizations. The program performed outreach through group presentations, webinars, and small group or individual meetings. Presentation materials were updated and expanded depending on the audience and brochures were printed to summarize key messages.

The development of early market hydrogen technology case studies included: H₂ Lift Truck Case Study, Telecom Backup Case Study, CHP Case Study

The MHE Market Value Proposition Case study hand-out was developed, printed and distributed at meetings and to specific decision makers in government and business.

The direct number of stakeholders reached was 21,339 and the wider educational efforts that leveraged Hydrogen

101 materials reached over 1 million people. In addition to education of leadership groups, the SCHFCA reached out to candidates for political offices and has continued discussions with newly elected leaders. The educational efforts focused on helping them understand how the hydrogen and fuel cell industry is growing the state economy, creating high paying jobs, and saving businesses money.

Groups have been overwhelmingly supportive of hydrogen and fuel cell technologies as a result of the presentations and view the technologies as having the potential to foster economic development within the state. Work has been started to collaborate with other states including Tennessee, North Carolina, and Florida to help educate regional leaders about opportunities for hydrogen technologies in their state and the potential to grow an interconnected regional hydrogen economy.

Conclusions and Future Directions

The SCHFCA Hydrogen 101 program has met all of its goals and its efforts are having an impact in creating wider support for hydrogen. Education about the effect of state level incentives on the market for fuel cell and other renewable technologies has started to show how states can grow their hydrogen economy. In 2012, SCHFCA will focus on working with other southeastern states to start more hydrogen and fuel cell activities.

Special Recognitions

1. Hosted the DOE Secretary Chu visit to South Carolina. There was national press pickup of the successful visit.

FY 2012 Publications/Presentations

1. The “Hydrogen and Fuel Cells: Lift Trucks, A Practical Application” brochure was revised, printed and distributed at the 2011 Fuel Cell Seminar & Exposition to over 800 attendees. It is given out at every meeting held with Dr. Shannon Baxter-Clemmons, and will be distributed at the 2012 Fuel Cell Seminar & Exposition to an expected attendance of 1,000.
2. Dr. Baxter-Clemmons co-authored an article titled, Staying the Course with Hydrogen, which was published in the Columbia Regional Business Report in September-October 2011 issue.
3. SCHFCA participated in the 2011 SC Renewable Energy Forum as a host sponsor with nearly 300 registrants.
4. Exhibited at the 2011 Green is Good for Business Conference and the 2011 Green Tie Event.
5. Dr. Baxter-Clemmons presented at the Charleston Energy Conference in 2011.
6. Dr. Baxter-Clemmons presented at the Hydrogen and Fuel Cell Technical Advisory Committee (HTAC) in Washington, DC, in November 2011.

7. Dr. Baxter-Clemmons presented on Hydrogen Fueling and conducted an End-User Educational Program at the 2011 Fuel Cell Seminar & Exposition in Orlando, Florida.

8. Dr. Baxter-Clemmons presented at the 91st Transportation and Research Board Annual Meeting held in Washington, DC in January 2012.

9. Dr. Baxter-Clemmons was guest speaker at the SC Society of Professional Engineers and the American Council of Engineering Companies of SC Winter Meeting in February 2012 to 93 attendees.

10. Dr. Baxter-Clemmons presented on the updates of the BMW Landfill Gas-to-Hydrogen project and the Development of Hydrogen Education Programs for Government Officials project at the Annual Merit Review conference held in Washington, DC in May 2012.

11. Dr. Baxter-Clemmons presented on Permitting Hydrogen and Fuel Cells in SC, held a poster presentation on Hydrogen Fuel Cell lift trucks and was a speaker at a Hydrogen and Fuel Cells Municipalities session at the World Hydrogen Energy Conference held in Toronto, Canada in June 2012.

12. SCHFCA was a sponsor of the SC Clean Energy Summit and conducted a four speaker session in July 2012 with an attendance of 240 high level energy stakeholders.

13. Dr. Baxter-Clemmons spoke at the Senate Fuel Cell and Hydrogen Caucus briefing in Washington, DC in July 2012.