

IX.3 Hydrogen Education State Partnership Program

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Subcontractors:

- National Conference of State Legislatures, Denver, CO
- Dr. Timothy Lipman, University of California, Berkeley, Berkeley, CA

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Project End Date: August 31, 2011

Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan:

- **Milestone 17** in Task 3: Educate State and Local Government Representatives. (recurring annually, including 2011)
- **Milestone 19 in Task 4**: Educate Potential End-Users. (4Q, 2011)
- **Milestone 14 in Task 2**: Educate Local Communities. (recurring annually, including 2011)
- **Milestone 30 in Task 7**: Assess Knowledge and Opinions of Hydrogen Technologies. (4Q, 2012)

Accomplishments

- Produced report and briefing paper about hydrogen production and storage for distribution to state policymakers and others.
- Organized, publicized, hosted, and facilitated five webinars on hydrogen and fuel cell topics of interest to state policymakers, local leaders, and end users. For the last two webinars, more than 300 people registered, including many state policymakers. All webinar presentations and recordings are posted on the CESA website.
- Informed state legislators through joint activities with the National Conference of State Legislatures (NCSL), including a webinar, a presentation at the NCSL Fall Forum, and a *NCSL LegisBrief*, an *NCSL WebBrief*.
- Encouraged cooperation and collaboration among DOE state education grantees by organizing, hosting, and facilitating six monthly calls focused on information exchange and strategy discussions.
- Reached influential audiences—state policymakers, financial institutions, business leaders, end users, and others—by giving presentations and distributing several of CESA's fuel cell briefing papers at conferences and meetings, including the CESA Fall 2010 Members Meeting, the NCSL Fall Forum, the Building Energy Conference, Fuel Cells Finance and Investment Summit, Ohio Fuel Cell Symposium, and the Northeast Commerce and Energy Association.



Introduction

Over the past two decades, the states have played a crucial role in advancing various clean energy technologies by implementing supportive policies and providing financial incentives. The states have the potential to do much to speed fuel cell commercialization. However, relatively few states are currently targeting fuel cell installation or

Fiscal Year (FY) 2011 Objectives

- Identify state hydrogen project best practices and policies.
- Develop strategies and information to overcome many state policymakers' resistance to providing support for fuel cells.
- Provide information and technical assistance to state policymakers and state renewable energy programs to foster effective fuel cell programs.
- Promote strategic opportunities for states and DOE to advance fuel cell deployment through partnerships, collaboration, and targeted activities.

Technical Barriers

This project addresses the following technical barriers from the Education section (3.9.5) of the 2009 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

Contribution to Achievement of DOE Education Milestones

This project contributes to achievement of the following DOE milestones from the Education section of the 2009

deployment with incentives or support programs. This hesitance to support fuel cells stems, in part, from reductions in available state funding for clean energy, but can also be attributed to the opinion that other energy technologies will provide a larger return on investment.

This project seeks to encourage states to consider taking steps to advance fuel cells, particularly stationary applications. It does this by providing state policymakers with accurate, convenient, easily digestible information and by directly addressing specific fuel cell-related issues that are of most concern to state policymakers. CESA is an ideal organization to lead this project, because the members have an in-depth understanding of the perspective of state clean energy agencies and other state energy policymakers, and have had considerable success facilitating state collaboration

Approach

The foundation for CESA's work on this project is a solid understanding of the perspectives and needs of state policymakers. For that reason, we maintain ongoing contact with key state policymakers—both from states that are providing financial support for fuel cells and from those that are not—through interviews, informal group discussions, and monitoring of relevant developments at the state level. From this intelligence gathering, we have identified the specific reasons why state policymakers have not been taking more aggressive action to promote fuel cells. We have then crafted messages and materials designed to encourage action. Those messages are delivered through well-attended webinars, widely circulated briefing papers, conference presentations, a webpage (www.cleanenergystates.org/projects/hydrogen-and-fuel-cells) a project listserv, and other means. We emphasize case studies of model projects and the identification of targeted actions that can appeal to state policymakers.

We also make sure that our work is well coordinated with the work of other DOE state-related fuel cell grantees, by facilitating monthly conference calls and maintaining regular one-on-one contact with those grantees.

Results

Early in this project, we identified hydrogen production and storage as an important topic on which state policymakers needed education. Because many of them were unfamiliar with current fuel cell technology and current uses of hydrogen, they had concerns about hydrogen safety and whether there would be an adequate supply of hydrogen if stationary fuel cells start to be used more widely. To directly address those two concerns, we produced and disseminated a briefing paper and a more detailed report on the topic of hydrogen production and storage. The longer report was written by Timothy Lipman, researcher and lecturer at the University of California, Berkeley and

Director of the U.S. Department of Energy Pacific Region Clean Energy Application Center. The briefing paper, which is designed to provide policymakers with the most essential information in a user-friendly format, draws on the longer report. We also hosted a webinar during which Dr. Lipman discussed his findings.

Because states have limited funding for supporting fuel cells and agency staff members have limited bandwidth to devote to fuel cells, we believe it makes sense for them to focus on those few market niches and audiences where near-term progress can be easiest and most likely. We identified supermarkets as one such niche, because several supermarket chains were already experimenting with fuel cells with the help of state support and because some supermarkets have an energy load profile that enables them to efficiently use both the electricity and heat produced by fuel cells. Moreover, this is a market dominated by large chains which have the ability to become repeat fuel cell customers if they are satisfied with their first installations. We used a webinar, attended by approximately 250 people, to encourage the consideration of fuel cells for supermarkets.

Although only a few states currently allow natural gas-fueled fuel cells to qualify for their renewable portfolio standards (RPSs), our research suggests that other states could be open to making such fuel cells eligible for inclusion. Concerns about local economic development and baseload power, as well as the limitations that the Interstate Commerce Clause of the Constitution places on RPSs, could make natural gas fuel cells appealing to states. We therefore organized a webinar on the topic, attended by 263 people, and various policymakers responded favorably to the presentations. The coincidental announcement by officials in Delaware that they would try to expand their RPS to include fuel cells gave additional attention to this topic.

We believe that we have played a valuable role over the past year by encouraging and facilitating greater cooperation and collaboration among DOE's state-related fuel cell grantees. Starting in December 2010, we organized monthly conference calls that have gone beyond the sharing of updates and announcements to discussions about strategy-related topics, such as key messages, target audiences, and model practices. We have maintained regular contact with many of the grantees and have tried to help their efforts by providing them with information about state policies and promoting their publications and events to our mailing list. As an example, we recently helped Virginia Clean Cities organize a webinar about fuel cells and first responders and are hosting that webinar, because Virginia Clean Cities does not have the platform or resources to do so.

Our other outreach activities—including presentations at conferences, the distribution of materials, and website updates—have all served the purpose of educating state policymakers, local leaders, and end users about fuel cells.

Conclusions and Future Directions

The grant from DOE for this project ends on August 31, 2011. But, before then, we will carry out several activities that will extend the reach and impact of the project. We will:

- Produce a briefing paper on fuel cells for supermarkets, including case studies of several supermarket projects. This briefing paper will build upon the webinar on the same topic and place the most essential information into a user-friendly form.
- Send out a printed packet of all five of CESA's briefing papers to a mailing list of several hundred state energy officials plus key state legislators. We believe that they will find this packet to be convenient and useful, and delivering hard copies will increase the likelihood that they will read the material.
- Hold a webinar on the topic of new financing approaches for fuel cells, including leasing and power purchase agreements. We believe that the increasing use of these financing models can make support for fuel cells more appealing to state policymakers.
- Hold a discussion with relevant state policymakers and others (e.g., representatives of Pacific Northwest National Laboratory) on the topic of performance monitoring of fuel cells. This discussion will enable them to share information on their individual performance monitoring approaches and to consider how they can cooperate on joint efforts.
- Continue ongoing activities, including disseminating information through the CESA fuel cell website and listserv and hosting monthly calls of DOE grantees.

Our efforts over the past year have significantly increased our understanding of state policymakers' views and needs related to fuel cells. We then identified and carried out focused activities that are helping to move state fuel cell efforts forward. CESA is well placed to encourage states to undertake further concrete market transformation actions related to stationary fuel cells, especially in regard to fuel cell financing, RPSs, supermarkets, and performance monitoring. However, additional funding would be required to allow us to devote significant attention to those topics after August.

FY 2011 Publications/Presentations

1. Presentation: Presenter at "Hydrogen & Fuel Cell Activities Regional Briefing," Northeast Energy and Commerce Association, Westborough, MA. (July 22, 2010).
2. Publication: "Hydrogen Fuel Cells: On-Site Energy Generation," *NCSL LegisBrief* (August-September 2010). Available at www.ncsl.org/default.aspx?tabid=21094.
3. Webinar Presentations: "Hydrogen Fuel Cells: Technology and State Policy" (September 28, 2010). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/?start=10.

4. Publication: "California Energy Commission: PIER/Advanced Energy Recovery System," *State Leadership in Clean Energy Award* (October 2010). Available at www.cleanenergystates.org/assets/Uploads/Resources-post-8-16/cesa-awardCECPIER.pdf.
5. Presentations: Workshop on "Fuel Cells and State Policy," at Fall 2010 CESA Members Meeting, Washington, D.C. (October 28, 2010).
6. Presentation: "Fuel Cells and the States," at NCSL Fall Forum, Phoenix, AZ (December 10, 2010).
7. Webinar Presentation: "DOE Hydrogen and Fuel Cell Programs," (December 14, 2010). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/resource/doe-hydrogen-and-fuel-cell-overview-presentation-by-sunita-satyapal.
8. Webinar Presentation: "Hydrogen Production and Storage" (February 2, 2011). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/resource/webinar-hydrogen-production-and-storage-for-fuel-cells.
9. Publication: "Fuel Cells—Clean and Reliable Energy," *NCSL WebBrief* (March 2011). Available at www.ncsl.org/default.aspx?tabid=22352.
10. Webinar Presentation: "Fuel Cells for Supermarkets" (April 4, 2011). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/resource/webinar-recording-fuel-cells-for-supermarkets-wmv.
11. Publication: Timothy Lipman, *An Overview of Hydrogen Production and Storage Systems with Renewable Hydrogen Case Studies* (May 2011). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/resource/an-overview-of-hydrogen-production-and-storage-systems-with-renewable-hydrogen-case-studies.
12. Presentations: Several at Stationary Fuel Cell Finance and Investment Summit, San Diego, CA (May 3–5, 2011).
13. Presentation: "Hydrogen Education State Partnership Program," DOE Annual Merit Review, Crystal City, VA (May 20, 2011).
14. Publication: Charles Kubert and Warren Leon, *Hydrogen Production and Storage* (June 2011). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/resource/hydrogen-production-and-energy-storage.
15. Webinar Presentations: "Fuel Cells and Renewable Portfolio Standards" (June 9, 2011). Available at www.cleanenergystates.org/projects/hydrogen-and-fuel-cells/hydrogen-and-fuel-cell-resource-library/resource/webinar-presentations-fuel-cells-and-renewable-portfolio-standards.