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## VII.15 H2-FCEV Commercialization - Facilitating Collaboration, Obtaining Real World Expertise, and Developing New Analysis Tools

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Project Start Date: January 1, 2012  
Project End Date: December 31, 2016

### Overall Objective

- Facilitate and support the early commercial market launch of fuel cell electric vehicles (FCEVs) in California (CA)
- Track, synthesize, analyze and report latest hydrogen infrastructure implementation progress and challenges
- Conduct regular stakeholder meetings to present and discuss challenges and progress in a collaborative manner
- Conduct education and outreach directly to conventional fuel providers via existing networks

### Fiscal Year (FY) 2014 Objectives

- Increase participation in hydrogen-FCEV industry funding opportunities and activities
- Expand Station Operational System Status (SOSS) to a more capable platform to increase usability and early-customer confidence
- Include additional hydrogen stations in SOSS when these stations come online
- Complete a stakeholder-approved national emergency responder (ER) template to be used as guidance among U.S. Department of Energy and other ER activities
- Complete “train-the-trainer” outreach to successfully initiate the national ER template

### Technical Barriers

This project addresses the following technical barriers from the Technology Validation, Education and Outreach,

and Market Transformation sections of the Fuel Cell Technologies Office Multi-Year Research, Development, and Demonstration Plan:

Technology Validation

(D) Lack of Hydrogen Refueling Infrastructure Performance and Availability Data

(E) Codes and Standards

Education and Outreach

(A) Lack of Readily Available, Objective, and Technically Accurate Information

(C) Disconnect Between Hydrogen Information and Dissemination Networks

Market Transformation

(A) Inadequate standards and complex and expensive permitting procedures

(D) Market uncertainty around the need for hydrogen infrastructure versus timeframe and volume of commercial fuel cell application

### FY 2014 Accomplishments

#### Collaboration and Communication

- Integrated Station Profiles, Station Report Cards and other reports into a new Hydrogen Station *Smartsheet*, used by California Governor’s Office of Business and Economic Development (GO-Biz) Zero Emission Vehicle Infrastructure Project Manager to track progress of all state-funded hydrogen station development—which serves car manufacturers with coordinating the rollout of FCEVs, state agencies with assessing progress for future actions, and educating all stakeholders.
- Facilitated extensive discussions within CaFCP meetings and among industry stakeholders on CA funding programs, station development, implementation progress, challenges and needs, leading to improved request for proposal requirements that increasingly align with FCEV fueling performance requirements, future infrastructure needs and customer needs.

#### Conventional Fuel Provider Engagement

- Developed new “Stations” micro-site to meet (indicated) informational needs of fuel retailer/marketer community: <http://cafcp.org/toolkits/stations>
- Based on CaFCP input, the National Association of Convenience Stores (NACS)/Fuels Institute published an

article in NACS/FI Magazine titled “No Longer a Pipe Dream”, August 2013 edition

- Exhibited at Western Petroleum Marketers Association Conference, February 2014
- Presented on CA FCEVs and hydrogen infrastructure progress, exhibited, and conducted FCEV ride-n-drive at Society of Independent Gasoline Marketers of America Spring Conference, April 2014
- Exhibited at Pacific Oil Conference, September 2013
- Presented on CA FCEVs and hydrogen infrastructure progress at Fuels Institute, April 2014.
- Conducted one-on-one hydrogen and FCEV educational meetings with ~25 regional fuel retailers and marketers
- Facilitated stakeholder response to CA hydrogen infrastructure funding through industry outreach and discussions; with 10 different companies submitting responses for 61 different station applications (versus four companies submitting nine station applications in previous solicitation)

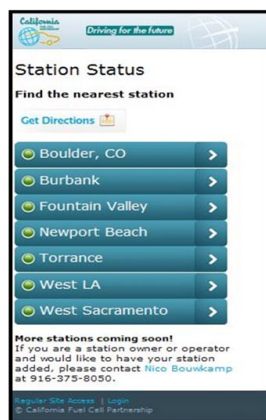


FIGURE 1. SOSS 2.0 Interface

**Consumer Confidence and FCEV Usability**

- Two new stations were added to SOSS—Emeryville and Richmond
- Secured strong automaker interest to accelerate and expand original SOSS statement of work and timeline

**National Emergency Response Program**

- Completed draft national ER training outline, including concept buy-in of major industry stakeholders
- New hydrogen-FCEV online training module added to National Fire Protection Association website, in collaboration with national outline project
- Developed new “Fire and Safety” micro-site for first responder community to meet informational needs: <http://cafcp.org/toolkits/safety>



**INTRODUCTION**

The CaFCP has worked since 1999 to bring together all stakeholders involved in the introduction of FCEVs in the market and facilitate collaboration between these. Through this collaboration, outreach communications have been harmonized, interested conventional industry stakeholders became directly engaged, consumers were educated about FCEV and hydrogen technologies, and emergency responders became better informed in their efforts to provide emergency response services.

**APPROACH**

As a public/private stakeholder group, the CaFCP approach is to leverage active participation and commitment from all sectors to advance hydrogen-FCEV commercialization.

- Collaboration and Communication Tools
  - Support shortening the implementation timeline for hydrogen stations based on conclusions drawn from average station implementation progress reported in the CA station *Smartsheet*
- Directly Engage Conventional Fuel Providers
  - Conduct hydrogen-FCEV education and outreach
  - Increase conventional fuel provider participation in hydrogen-FCEV station development, solicitations, stakeholder discussions and industry activities
- Increase Consumer Confidence and FCEV Usability
  - Expand and upgrade SOSS to become more capable and user-friendly
  - Include new hydrogen stations when online, to increase customer satisfaction with FCEVs
- Establish a Harmonious National ER Program
  - Develop a stakeholder-based national ER outline and share this with national entities involved in recommendations for ER training programs’ curriculum
  - Complete “train-the-trainer” outreach to initiate program

**RESULTS**

- Project reporting documents used by lead CA agency as basis for new station status and tracking *Smartsheet*
- Leveraged both CaFCP member and larger stakeholder meetings to facilitate collaborative discussion and progress leading to better aligned request for proposal station funding requirements for station infrastructure rollout

- Successfully reached conventional fuel retailers and marketers via four major industry conferences, with led to an interest in participating in the hydrogen FCEV industry
- 2014 California station funding solicitation saw 2.5x more respondents applying for over 6x more station projects compared to the 2013 solicitation
- Developed targeted micro-websites for fuel retailer/ marketer and fire/safety market stakeholders
- Added two additional hydrogen stations to SOSS
- Completed initial draft of national emergency response outline with buy-in from the primary industry stakeholders
- Add all recently funded CA hydrogen stations (seven in 2013, 28 in 2014) to SOSS when online
  - Work with stakeholders to upgrade SOSS platform from SOSS 2.0 (station-to-station set of assumptions/definitions) to SOSS 3.0 in which all station operators provide station information based on the same set of assumptions/definitions
- Work with ER stakeholders to complete the national emergency response outline
  - Present concept at National Fire Protection Association conference (June 2014), Continuing Challenge (September 2014), and Corona Auto-X (April 2015)
  - Conduct “train-the-trainer” sessions using the consensus national outline content
  - Conduct annual assessment and review of national program(s) to evaluate existence and consistency of content about hydrogen and FCEVs.
  - Support DOE efforts to expand use of the national emergency response outline as the source of authority on the subject, including annual reviews to expand value.

## CONCLUSIONS AND FUTURE DIRECTIONS

Significant progress has been achieved through expanded collaboration and communication across market segments, resulting in announcements by multiple car manufacturers about availability of their FCEVs to consumers. Conventional fuel providers are becoming increasingly more involved and aware, and consumers starting to see the expansion of the number of hydrogen stations. At a national level, emergency response organizations recognized the need for a cohesive and comprehensive training guidance. To continue the progress made towards the full commercialization of FCEVs in the market, more work needs to be done, as summarized in the following list of activities.

- Continue updates and further refinement of industry and station reports, including new hydrogen station *Smartsheet* – to continue coordination of FCEV manufacturer rollout strategy and work towards shortening the implementation timeline of hydrogen stations. Expand usage and awareness of *Smartsheet* to enable broader stakeholder use and value.
- Continue direct outreach to fuel retailers and marketers
  - Support NACS/Fuels Institute concept proposal to develop hydrogen-FCEV industry review related to retail fuels market (Fall 2014)
  - Leverage Los Angeles location of Pacific Oil Conference for extensive hydrogen and FCEV sessions, ride-n-drive, etc (September 2014)
    - Present at future fuel provider industry events to inform conventional gasoline station operators about hydrogen as a fuel; NACS (October 2014), Western Petroleum Marketers Association (February 2015), Society of Independent Gasoline Marketers of America Spring conference (date to be determined)

## FY 2014 PUBLICATIONS/PRESENTATIONS

1. “Stations” micro-site for fuel retailer/marketer community <http://cafcp.org/toolkits/stations>.
2. “Fire and Safety” micro-site for first responder community <http://cafcp.org/toolkits/safety>.
3. Fuels Institute article “No Longer a Pipe Dream” in August 2013 NACS Magazine: <http://www.nacsonline.com/magazine/PastIssues/2013/August2013/Pages/Feature10.aspx>.
4. Station Profiles (September/ December 2013, March / May 2014) [http://cafcp.org/sites/files/20140211\\_H2-Station-profiles.pdf](http://cafcp.org/sites/files/20140211_H2-Station-profiles.pdf).
5. “Input on the DRAFT Solicitation for Hydrogen Fuel Infrastructure - Comments of the California Fuel Cell Partnership” submitted to the California Energy Commission Docket 12-HYD-01 on 10/16/2013.
6. Presentation “H2 FCVs: Beginning the Commercial Launch” at SIGMA conference 4/9/2014.
7. Presentation “H2 FCVs: Beginning the Commercial Launch” at Fuels Institute Spring Meeting 4/15/2014.