



SF Environment

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A Department of the City and County of San Francisco

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Advancing Fuel Cell Electric Vehicles in San Francisco and Beyond

City and County of San Francisco

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Overview



Advancing Fuel Cell Electric Vehicles in San Francisco and Beyond

Timeline

- Project Start Date:
10/1/16
- Project End Date:
9/30/18

Budget

- Total Project Budget: \$499,970
 - Total Recipient Share: \$250,000
 - Total Federal Share: \$249,970
 - Total DOE Funds Spent*: \$0
- * As of 3/31/17

Barriers

- Complexity of permitting and inspection processes among multiple AHJs
- Lack of consumer awareness of hydrogen and fuel cell electric vehicles

Partners

- US Department of Energy
- California Energy Commission
- San Francisco Clean Cities Coalition
- California Fuel Cell Partnership (managed by Frontier Energy)
- Bay Area Business Council on Climate Change



Project Objectives:

- Update and harmonize best practices in permitting and inspection of hydrogen fueling stations among Bay Area Authorities Having Jurisdiction (AHJs)
- Deliver hydrogen safety and best practice education to elected officials and planning, building inspection, and public safety professionals across the Bay Area
- Increase community awareness of the availability and value of Hydrogen and Fuel Cell Electric Vehicles (FCEVs)
- Drive market demand for FCEVs through an established, public-facing group procurement program



Permitting and Inspections

- San Francisco: Continue working with local stakeholders to facilitate and document permitting and inspection process (internal departments, station developer, SF Public Utilities Commission)
- Beyond: Interview AHJs who have stations to understand constraints; document existing processes; create streamlined permitting processes that can be adopted across the Bay Area.

Education and Training

- Specialized permitting, inspection, and safety training to stakeholders in multiple cities
- Community awareness workshops in development areas
- High-level education and ride-and-drive events for decision makers and general public

Approach



Community Awareness

- Community workshops in station development areas
- Special events
 - National Hydrogen Day
 - Earth Day
 - EV Week
- Partnering opportunities via SF Clean Cities Coalition
- SunShares Workshops

Driving Market Demand

- Leverages SunShares, a proven group procurement program to reduce cost and complexity of ZEV purchases for consumers
- Implemented with series of 30 workshops across the Bay Area

Approach



| Date | Milestone/Deliverables (as of March 31, 2017) | Complete |
|-------------|---|-----------------|
| 12/31/16 | Execute contracts and agreements between partners | 100% |
| 3/31/17 | Identify training schedule, venues, and materials. | 100% |
| 6/30/17 | Station Development: Document Permitting Process | 75% |
| 9/30/17 | Go/No Go Decision: Develop and implement ZEV/FCEV group-buy program | 70% |
| 12/31/17 | Develop educational workshop / webinar series for local government officials and general public | 50% |
| 3/31/18 | Permitting Process | 30% |
| 6/30/18 | Community Engagement | 25% |
| 9/30/18 | Reporting and Dissemination | 10% |



Accomplishments and Progress

- Notice of proposed award on May 20, 2016
- Project performance period began October 1, 2016
- Project kick off meeting on December 9, 2016

This project was not reviewed last year



Accomplishments and Progress

SunShares Group Procurement Program



Bay Area SunShares

- Managed by Business Council on Climate Change (BC3)
- BC3 members include: Google, Facebook, LinkedIn, Salesforce, Genentech, CH2M, Autodesk, the GAP, Whole Foods, Wells Fargo
- Available to BC3 member employees, friends, and family, *and* residents in the nine-county Bay Area
- SunShares for residential solar began in 2011
- EVs added in 2015

SunShares 2016

- FCEVs added
- 30 workshops conducted across the Bay Area
- SF Clean Cities Coalition presented hydrogen/FCEV information
- Four Toyota Mirais sold during the four month program!



Accomplishments and Progress

Preapplication Meeting with San Francisco Code Officials and Hydrogen Station Developer (July 2016)

Meeting Participants:

- San Francisco Department of Environment
- San Francisco Planning Department
- Department of Building Inspection
- Bureau of Fire Prevention – Fire Plan Check Section
- UC Berkeley Transportation Sustainability Research Center
- Station Developer (Shell)
- Center for Transportation and the Environment
(Developer's Consultant)
- Governor's Office of Business and Economic Development
(invited)

Accomplishments and Progress



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SF Clean Cities

Introducing the SF Clean Cities Hydrogen and Fuel Cell Electric Vehicle Newsletter

Did you know that there are now several models of fuel cell electric vehicles (FCEVs) operating on hydrogen fuel available in California? These cars have similar range and fueling operations as gasoline cars, but **emit only water**, making them true **zero-emission vehicles** (ZEVs). ZEVs, which also include battery electric vehicles, are essential to ensuring California **improves air quality** while **reducing the impacts of the climate crisis** to protect human health and the economy.

There are now over **1,000 FCEVs** and **26 hydrogen stations** operating in California, with **50 expected to be operational by the end of 2017**. The State currently requires **33% of hydrogen fuel come from renewable sources**, such as solar or wind electrolysis.

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Accomplishments and Progress

Outreach and Education Training Schedule

| Topic | Audience | Begins | Frequency |
|--|---|---------------|--------------------------------------|
| Hydrogen Safety for Permitting Authorities | Building Officials; Planning, Safety and Fire, Sustainability Staff | Summer 2017 | Multiple sessions at AHJs |
| Hydrogen and FCEVs for Decision Makers | Elected officials, Department/Division Leaders, General Public | Fall 2017 | Two sessions North Bay and South Bay |
| Community Engagement | Community Members in vicinity of stations | Fall 2017 | As needed |
| Hydrogen/FCEV safety for first responders | First responders | Summer 2018 | Multiple sessions at AHJs |



Accomplishments and Progress

Community Awareness

2016

- 30 consumer facing workshops through SunShares
- EV Week in October: two-day ZEV ride-and-drive featuring the Toyota Mirai

2017

- Earth Day Celebrations with CaFCP
- First Element Bay Area FCEV Earth Day Tour
- Alt-Car Expo, Oakland
- Advanced Automotive Battery Conference (ride-and-drive)
- 30+ Sunshares Workshops
- EV Week (in conjunction with Fleet Week SF in October)



Collaborations

Funded Collaborations

California Fuel Cell Partnership (Frontier Energy)

- Outreach and Education, Permitting, Technical Assistance

San Francisco Clean Cities Coalition

- Project Coordination

Business Council on Climate Change (BC3)

- Manages SunShares group procurement

Non-Funded Collaborations

- Governor's Office of Business and Economic Development (GO-Biz)
- UC Berkeley Transportation Sustainability Research Center (TSRC)
- Northern California Center for Alternative Transportation Fuels and Advanced Vehicle Technologies (NorthCAT)



Remaining Challenges and Barriers

Reduced Incentives for FCEVs in 2017

- \$8,000 Federal Tax Credit expired 12/31/16
- California Vehicle Rebate Project (CVRP) government fleet rebate reduced by \$10K

Engaging Code Officials

Difficult to engage Code Officials in discussions of hydrogen station permitting in advance of an actual station application.

Proposed Future Work



| Date | Milestone/Deliverables (as of March 31, 2017) |
|----------|---|
| 6/30/17 | Station Development: Document Permitting Process |
| 9/30/17 | Go/No Go Decision: Develop and implement ZEV/FCEV group-buy program |
| 12/31/17 | Develop educational workshop / webinar series for local government officials and general public |
| 3/31/18 | Permitting Process |
| 6/30/18 | Community Engagement |
| 9/30/18 | Reporting and Dissemination |

Any proposed future work is subject to change based on funding levels

Proposed Future Work



SunShares Group Procurement Program



Bay Area SunShares

- Managed by Business Council on Climate Change (BC3)
- Available to BC3 member employees *and* residents in the nine-county Bay Area
- 30 workshops will be conducted across the Bay Area
- SF Clean Cities Coalition will present hydrogen station and FCEV information and provide technical assistance
- Toyota, Hyundai, and Honda will be invited to participate.

Any proposed future work is subject to change based on funding levels



Technology Transfer Activities

- Ongoing technical assistance via US DOE Clean Cities Coalition program
- SF Clean Cities Hydrogen and Fuel Cell Electric Vehicle Newsletter
- Case Studies
- Funding agreement calls for at least three presentations of program results at national or regional conferences. Tentative:
 - Alt Car Expo 2018 (national)
 - ACT Expo 2018 (regional)

Summary



- Project provides important community awareness and technical training for hydrogen station development and FCEV adoption in the San Francisco Bay Area
- Leverages California Energy Commission funding
- Leverages established organization—Business Council on Climate Change—and successful SunShares program to drive adoption
- Project benefits from both formal and informal partnerships to amplify impacts
- Aligns stakeholder interests to promote cleaner fuel and energy systems

Contact



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