



**SF Environment**

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A Department of the City and County of San Francisco

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Project ID SCS030  
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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

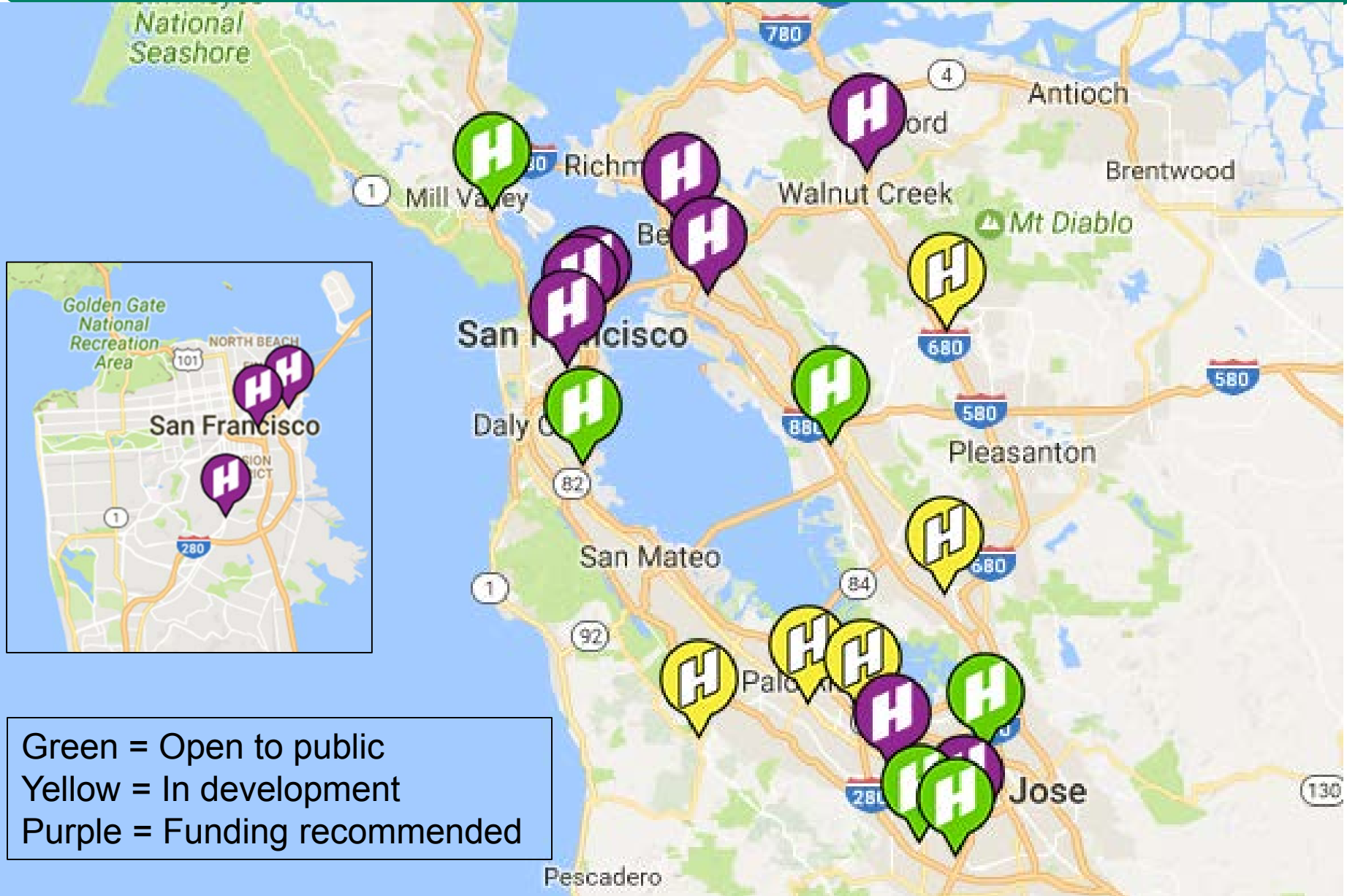


## **Project Objectives:**

- 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



# Relevance: Status of Bay Area Stations





## 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



<b>Date</b>	<b>Milestone/Deliverables</b> (as of March 31, 2017)	<b>Complete</b>
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

<b>Topic</b>	<b>Audience</b>	<b>Begins</b>	<b>Frequency</b>
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



<b>Date</b>	<b>Milestone/Deliverables (as of March 31, 2017)</b>
6/30/17	Station Development: Document Permitting Process
9/30/17	<b>Go/No Go Decision:</b> 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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