



**SF** Environment

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A Department of the City and County of San Francisco

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Presenter:

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Project ID: 61860

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# Advancing Fuel Cell Electric Vehicles in San Francisco and Beyond

City and County of San Francisco



# 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\*:  
\$123,770

\* As of 3/31/17

### Barriers

- Complexity of permitting and inspection processes among multiple Authorities Having Jurisdiction (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 (CAFCP)
- Business Council on Climate Change (BC3)

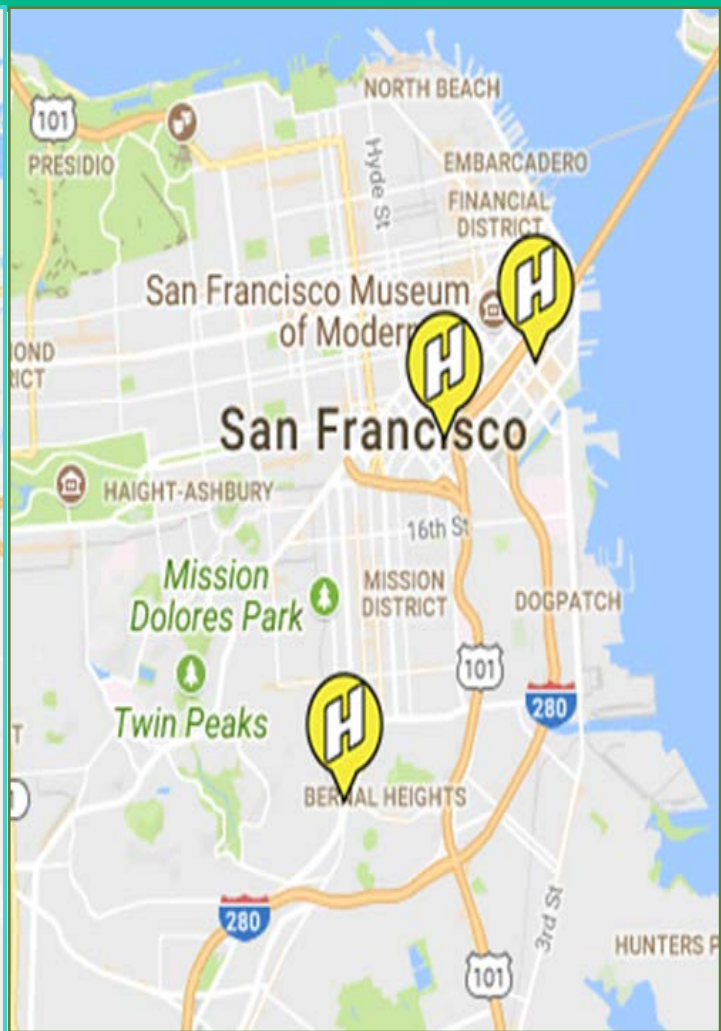
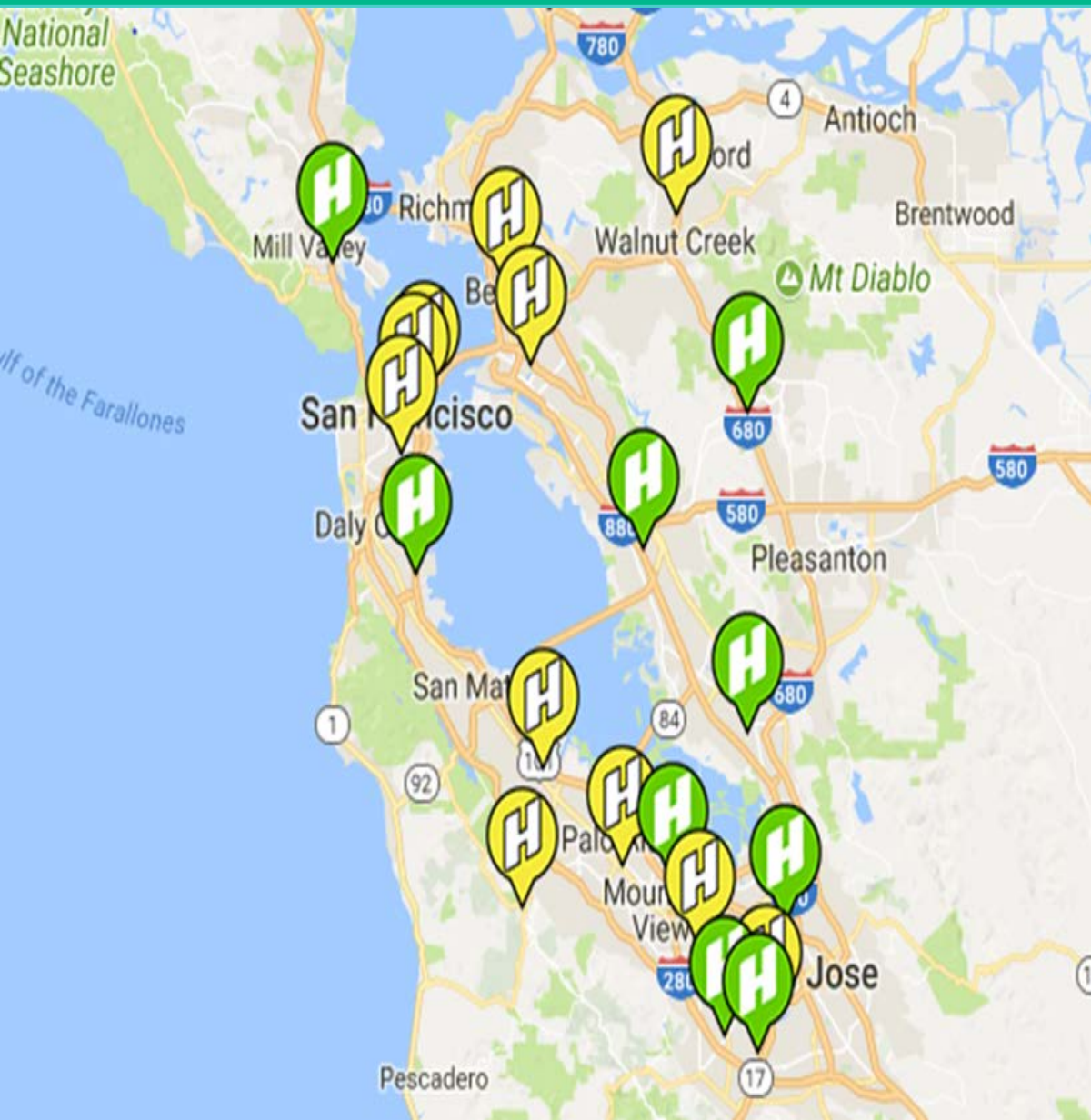
# Relevance: Supporting Roll Out of Station Network



## Project Objectives:

- Provide community outreach and technical assistance to station developers in areas of station development
- 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



Green = Open to public  
Yellow = In development

# Approach



## **Permitting Best Practices**

- Work with San Francisco Planning Department to facilitate and document permitting and inspection process, and provide technical assistance and information as needed
- Work with Bay Area 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**

- Provide specialized training for permitting, inspection, and code officials
- Organize first responder safety training in multiple cities
- Provide education and ride-and-drive events for decision makers and general public

# Approach



## **Community Awareness**

- Community workshops in station development areas
- Special events
  - Earth Day
  - National Drive Electric Week
  - EV Week in conjunction with Fleet Week
- Event partnering opportunities with the California Fuel Cell Partnership
- SunShares Workshops

## **Driving Market Demand**

- Leverages SunShares, a proven group procurement program to reduce cost and complexity of zero-emission vehicle purchases for consumers
- Implemented with partner outreach and workshops across the Bay Area

# Approach



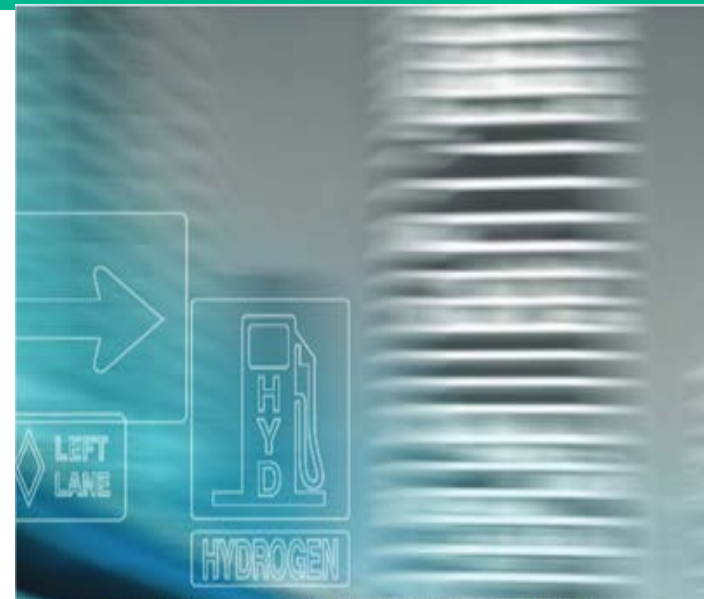
<b>Date</b>	<b>Milestone/Deliverables</b> (as of March 31, 2018)	<b>Complete</b>
12/31/16	Execute contracts and agreements between partners	100%
3/31/17	Identify training schedule, venues, and materials.	100%
6/30/17	Station Development: Document Permitting Process	80%
9/30/17	Go/No Go Decision: Develop and implement ZEV/FCEV group-buy program	100%
12/31/17	Develop educational workshop / webinar series for local government officials and general public	100%
3/31/18	Permitting Process	75%
6/30/18	Community Engagement	70%
9/30/18	Reporting and Dissemination	70%

# Accomplishments and Progress



## Permitting Best Practices

- Conducted outreach to planning departments in AHJs with proposed stations. Provided access to the Hydrogen Station Permitting Guidebook and H2Tools, and offered ongoing technical and problem-solving assistance.
- Coordinated technical assistance for station developers to advance permitting applications.
- Held *Webinar for Code Officials* in partnership with the Governor's Office of Business Development (GO-Biz) and CAFCP. Invitations sent to over 700 Bay Area planning, building, inspection, and sustainability officials, as well as industry contacts and Clean Cities Coalitions in California, and in states participating in the Northeastern Hydrogen Station Network.
- Held *Regional Briefings* in San Jose and San Francisco to provide education and contact with industry, regulators, and funders.



### Zero-Emission Vehicles in California: Hydrogen Station Permitting Guidebook

Best practices for planning,  
permitting, and opening  
a hydrogen fueling station





# Accomplishments and Progress



## Education and Training

<b>Topic</b>	<b>Audience</b>	<b>Dates</b>
Webinar for Code Officials on Hydrogen & Fuel Cells	Building Officials; Planning, Safety and Fire, Sustainability Staff	July 17, 2017
Briefing on Fuel Cell Electric Vehicles and Hydrogen Station Development—San Jose and San Francisco	Elected officials; planning, safety and code officials and staff; non-governmental organizations	January 23 & 26, 2018
Community Engagement—Berkeley	Community Members in vicinity of station	March 30, 2018
Hydrogen/FCEV safety for first responders—South Bay and North Bay	Train-the-Trainer Sessions	August 2018
Community Engagement—San Francisco (three sites)	Community Members in vicinity of stations	September 2018

# Accomplishments and Progress



## Education and Training

- Monthly Newsletter
- 350 Subscribers
- Subscribe:  
<https://tinyurl.com/h2bayarea>
- Posted with updated project information to San Francisco Clean Cities Coalition webpage:  
<http://www.cleancitiesf.com/>



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**SF** Clean Cities

## San Francisco Clean Cities Hydrogen and Fuel Cell Electric Vehicle Newsletter

### Governor Brown Sets New Targets for Zero-Emission Vehicles

California Governor Jerry Brown announced last month the signing of a new [executive order](#) that sets a new goal of having 5 million zero-emission vehicles (ZEVs) on California's roads by 2030. This new executive order builds on Gov. Brown's original goal of having 1.5 million ZEVs in California by 2025.

# Accomplishments and Progress



## Community Awareness

### 2017

- Presidio Trust – Presentation and Test Drive, June 19
- Advanced Automotive Battery Conference and Expo, June 20-22
- SEMICON WEST Conference, July 10-13
- Intersolar North America, July 12-13
- National Drive Electric Week (NDEW), September 23
- East Bay Regional Park District Green Expo, October 4
- EV Week in conjunction with Fleet Week, San Francisco, October 6-7

### 2018

- San Francisco Earth Day 2018 Festival & Climate Rally, April 21
- Global Climate Action Summit, September 12-14
- National Drive Electric Week, September 16



# Accomplishments and Progress



## SunShares Group Procurement Program

- Managed by Business Council on Climate Change (BC3)
- BC3 members include: Google, Facebook, LinkedIn, Salesforce, Genentech, CH2M, Autodesk, the GAP, Whole Foods, Wells Fargo, Kaiser Permanente
- Available to BC3 member employees, friends, and family, *and* residents of the nine-county Bay Area
- SunShares for residential solar began in 2011
- BEVs added in 2015
- FCEVs added in 2016
- More information and sign up: [BayAreaSunShares.org](http://BayAreaSunShares.org)



Bay Area SunShares

## SunShares 2017

- Featured Toyota Marai
- 1,500 people signed up for information on solar and vehicle discounts
- 15 workshops attended by 672 people conducted across the Bay Area
- SF Clean Cities Coalition presented hydrogen/FCEV information

# Accomplishments and Progress



## Dissemination

- In partnership with Dr. Tim Lipman from the UC Berkeley Transportation Sustainability Research Center to present an *Update on Hydrogen in the Bay Area and Beyond* at the Fifth Annual Bay Area AltCar Expo.
- In partnership with Nick Barilo from the Hydrogen Safety Panel, presented a workshop on Hydrogen Fuel Cells and Fuel Cell Electric Vehicles: Emerging Applications and Safety Management at the Green Transportation Summit and Expo.



# Accomplishments and Progress



## Reviewer Comments

*“The team should consider broadening the collaborations to include other entities that have a long history in hydrogen behavior and safety (e.g., the Hydrogen Safety panel, H<sub>2</sub>USA, FCHEA, and ISO).”*

- The project team collaborated with the Hydrogen Safety Panel and UC Berkeley Transportation Sustainability Research Center to present broader technical information at conferences.

*“The project team should add scope to share learnings with other national stakeholders, particularly entities with a similar role in the Northeast states, or more broadly outside California.”*

- The project team conducted outreach to Clean Cities Coalitions around the Northeast Hydrogen Station Network in advance of the *Webinar for Code Officials*.
- The project team assisted Western Washington Clean Cities in identifying speakers for *Clean Fuels 101: Electric Vehicles and Hydrogen Fuel Cells* webinar.

# 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)**  
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)
- Hydrogen Safety Panel, Pacific Northwest National Labs (PNNL)

# Remaining Challenges and Barriers



## **Consumer Awareness**

- Lack of awareness of zero-emission vehicle technology, especially the role of hydrogen, is an ongoing barrier. Stakeholders are generally very positive once they understand the applicability/feasibility of FCEVs (all weight classes), logistics and lighting equipment, and energy production/storage.

## **Reduced Incentives for FCEVs in 2017**

- \$8,000 Federal Tax Credit expired 12/31/16, making FCEVs less competitive than BEVs.

## **Harmonizing or Streamlining Permitting Across AHJs**

- Although standardization has helped reduce barriers to installing solar and EV charging stations, AHJs have unique approaches and political challenges to permitting gaseous fueling stations.



# Proposed Future Work



<b>Date</b>	<b>Milestone/Deliverables (as of March 31, 2018)</b>
6/30/18	Community Engagement
9/30/18	Reporting and Dissemination

Although the work scope called for two years, we will support a third year of the Bay Area SunShares program with outreach to FCEV manufacturers and participation in community workshops.



Bay Area SunShares

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

# Summary



- Project provides important community awareness and education for hydrogen station development and FCEV adoption in the San Francisco Bay Area and beyond.
- Project provides an extra level of technical assistance and coordination for station developers and AHJs.
- Leverages existing tools, formal and informal partnerships, and organizations to amplify and provide best practice information and outreach.
- Aligns stakeholder interests to promote cleaner fuel and energy systems.

# Thank you!



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