The Emerging Fuel Cell Electric Vehicle Market

California
FUEL CELL
PARTNERSHIP

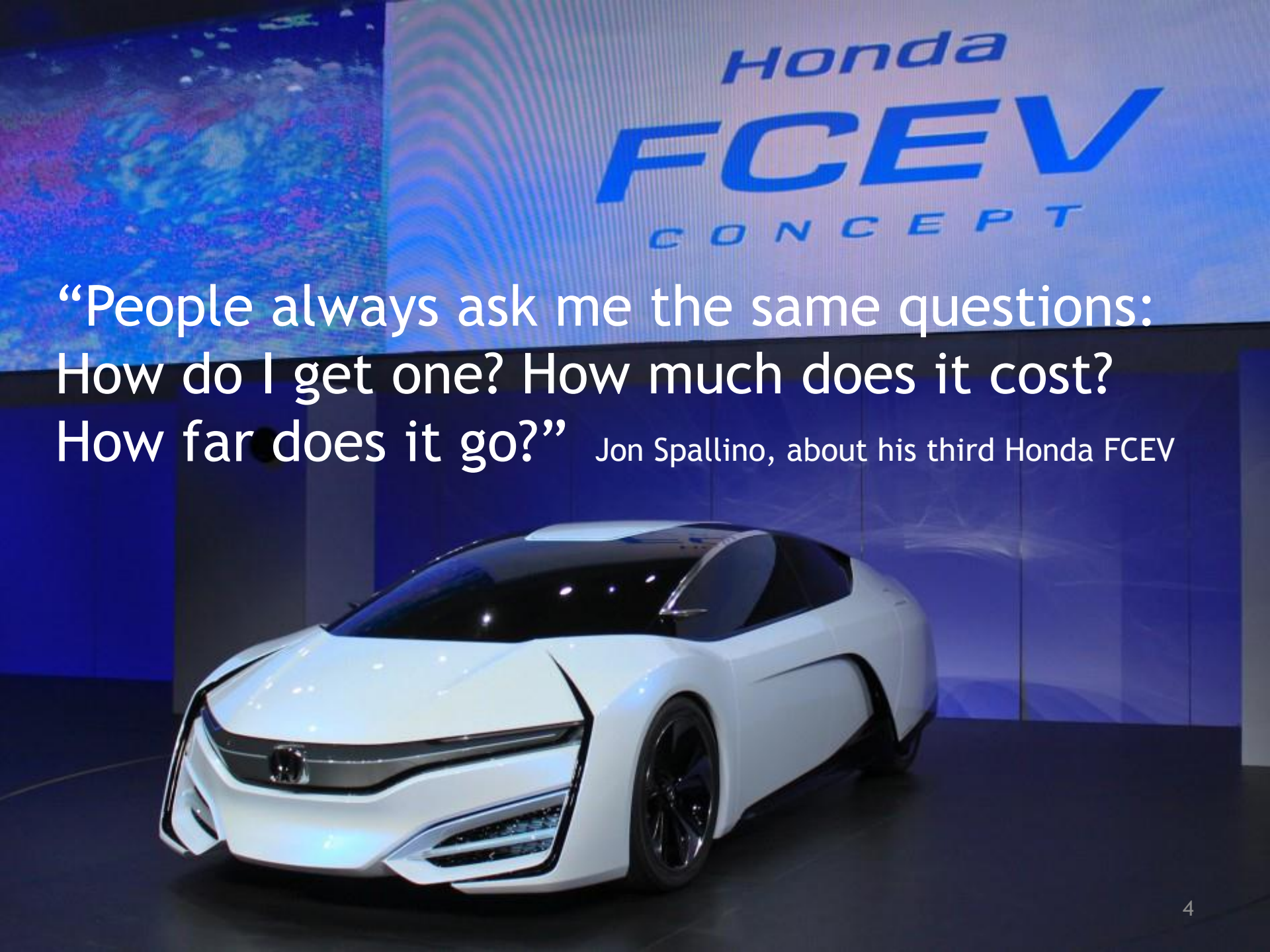
DRIVING FOR THE FUTURE

“Fuel cells are making the shift from a research project to a real consumer choice.”

John Krafcik, Hyundai President/CEO

“Fuel cell electric vehicles will be in our future sooner than many people believe, and in much greater numbers than anyone expected.”

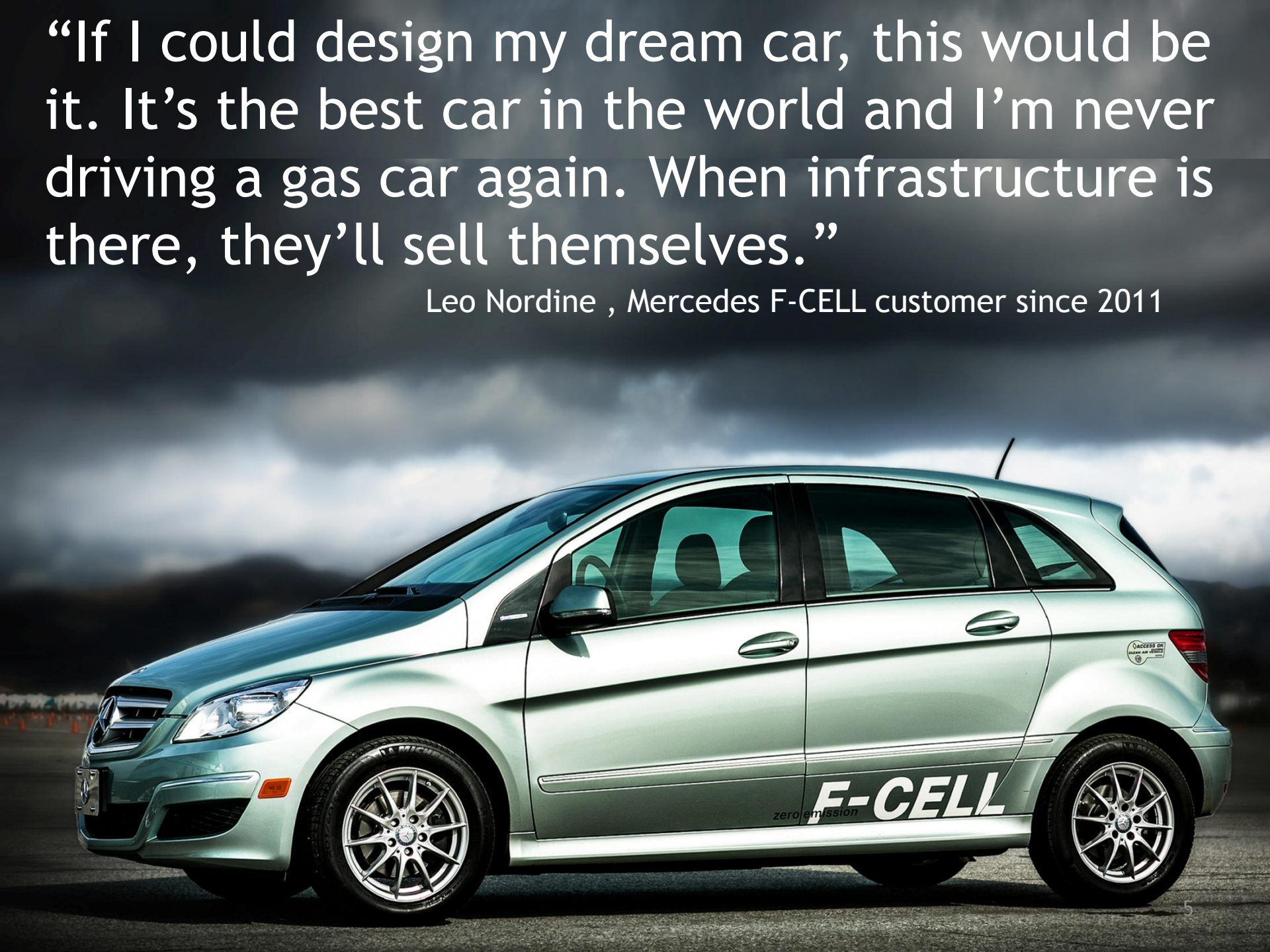
Bob Carter, Toyota Sr. VP of Automotive Operations



"People always ask me the same questions: How do I get one? How much does it cost? How far does it go?" Jon Spallino, about his third Honda FCEV

“If I could design my dream car, this would be it. It’s the best car in the world and I’m never driving a gas car again. When infrastructure is there, they’ll sell themselves.”

Leo Nordine , Mercedes F-CELL customer since 2011



What is infrastructure?

Production → Delivery → Stations

January 2015

Northern CA Hydrogen Stations

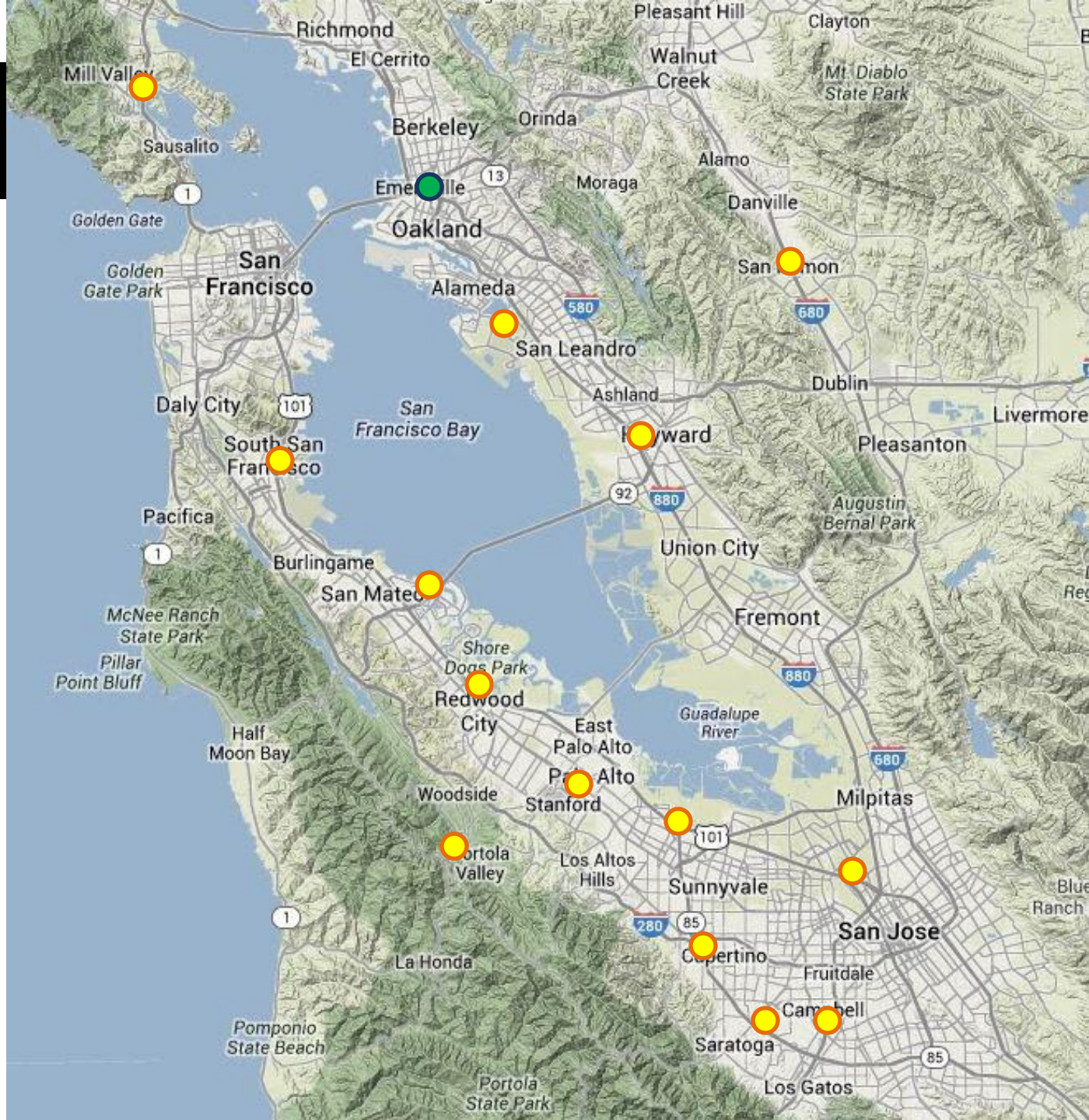
Open

Emeryville – AC Transit

In Development

Campbell
Cupertino
Foster City
Hayward
Mill Valley
Mountain View
Oakland
Palo Alto
Redwood City
*Rohnert Park
San Jose
San Ramon
Saratoga
South San Francisco
*Truckee
*West Sacramento
Woodside

**Not shown on map*



California FUEL CELL PARTNERSHIP
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January 2015

Southern CA Hydrogen Stations

Open

Burbank
Fountain Valley - OCSD
Irvine - UC Irvine
Los Angeles - Harbor City
Newport Beach
*Thousand Palms - SunLine Transit
Torrance

In Development

Anaheim
Chino (upgrade)
*Coalinga
Costa Mesa
Diamond Bar (upgrade)
Irvine - UC Irvine (upgrade)
Irvine - Walnut Ave.
La Canada Flintridge
Laguna Niguel
Lake Forest
Lawndale
Long Beach
Los Angeles - Beverly Blvd.
Los Angeles - Cal State LA
Los Angeles - LAX (upgrade)
Los Angeles - Lincoln Blvd.
Los Angeles - Hollywood Blvd.
Los Angeles - West LA 2
Los Angeles - Woodland Hills
Mission Viejo
Ontario
Orange
Pacific Palisades
Redondo Beach
*Riverside
*San Diego
*Santa Barbara
San Juan Capistrano
Santa Monica
South Pasadena

*Not shown on map

California Fuel Cell Partnership
DRIVING FOR THE FUTURE
Managed by BKi

California Fuel Cell Partnership
www.cafcp.org/stationmap

Retail hydrogen stations

Hydrogen can be:

- Liquid delivery
- Compressed gas delivery
- On-site generation
- Renewable

Considerations:

- Footprint
- Cost
- Convenience
- Business case

Hydrogen-only stations

Emeryville: co-located car and bus fueling; H2 from solar electrolysis and liquid delivery

Fountain Valley: H2 from wastewater

Torrance: H2 from pipeline

Customer experience

- Convenient locations and hours
- Same process everywhere
- Fast fueling at peak hours
- No range anxiety
- Standard payment methods
- Safe and easy

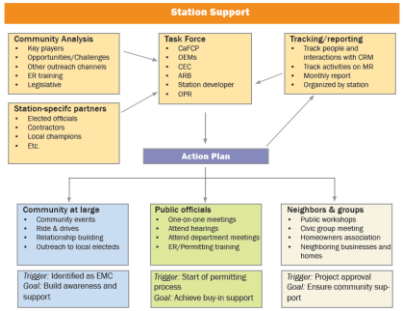
More than cars…

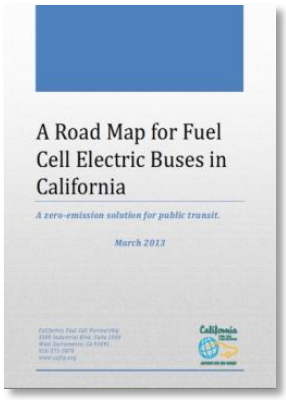
'Stratosphere 2020'

Fuel cell buses and trucks

- 16 fuel cell buses
- >1.5M miles in service
- >2.5M passengers carried
- FCEB roadmap
  - 40 bus fleets
  - 12-year operation
  - <$1M per bus
- MD/HD roadmap
  - In process

Next steps to market growth





Members

Air Liquide
Air Products
Alameda-Contra Costa Transit District *(AC Transit)*
Automotive Fuel Cell Cooperation
BAE Systems
Ballard Power Systems
Bay Area Air Quality Management District
California Air Resources Board
California Department of Food and Agriculture
California Energy Commission
California State University-Los Angeles
CALSTART
The Center for Energy Efficiency and Renewable Technologies *(CEERT)*
Center for Transportation and the Environment *(CTE)*
Daimler
Energy Independence Now
General Motors
Honda
Hydrogenics
Hyundai
ITM Power
Institute of Transportation Studies, UC Davis
Linde North America, Inc.
National Fuel Cell Research Center, UC Irvine
National Renewable Energy Laboratory *(NREL)*
Nissan
Office of the Governor
Sandia National Laboratories
South Coast Air Quality Management District
Southern California Gas Company
SunLine Transit Agency
Toyota
U.S. Department of Energy
U.S. Environmental Protection Agency
US Hybrid
University of California, Berkeley
Volkswagen

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