

California Energy Commission

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The Emerging Fuel Cell Electric Vehicle Market

Catherine Dunwoody
Executive Director



“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



Honda FCEV CONCEPT

“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



Status of H₂ stations today



Open Today:

- Burbank
- Emeryville
- Fountain Valley
- Harbor City
- Irvine #1
- Newport Beach
- Thousand Palms
- Torrance
- West LA #1

In Development:

- Beverly Hills
- Diamond Bar (upgrade)
- Hawthorne
- Hermosa Beach
- Irvine #2
- Los Angeles-CSULA
- San Juan Capistrano
- Santa Monica
- West LA #2
- West Sacramento
- Westwood – UCLA
- Anaheim
- Chino
- Cupertino
- Foster City
- Mission Viejo
- Mountain View
- Woodland Hills (LA)



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

Retail hydrogen stations



Hydrogen can be:

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

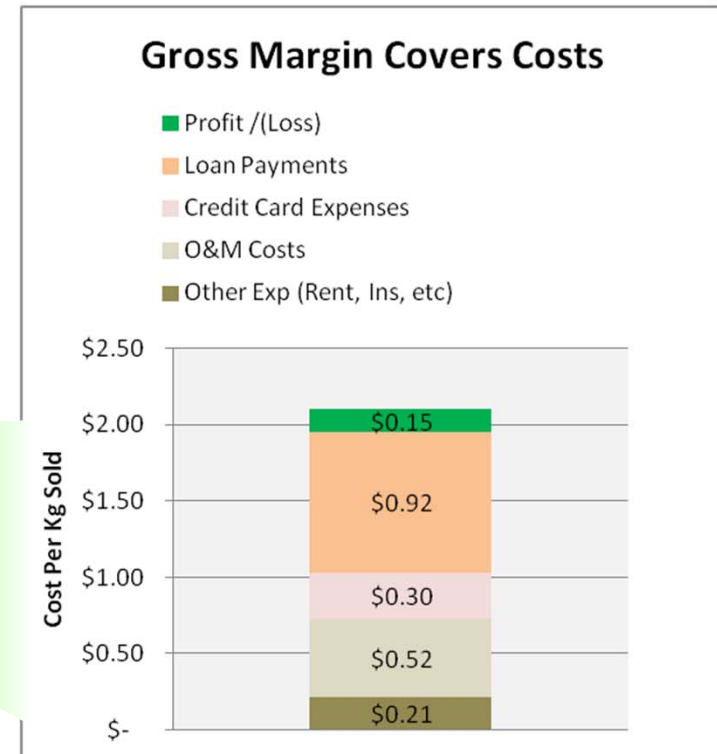
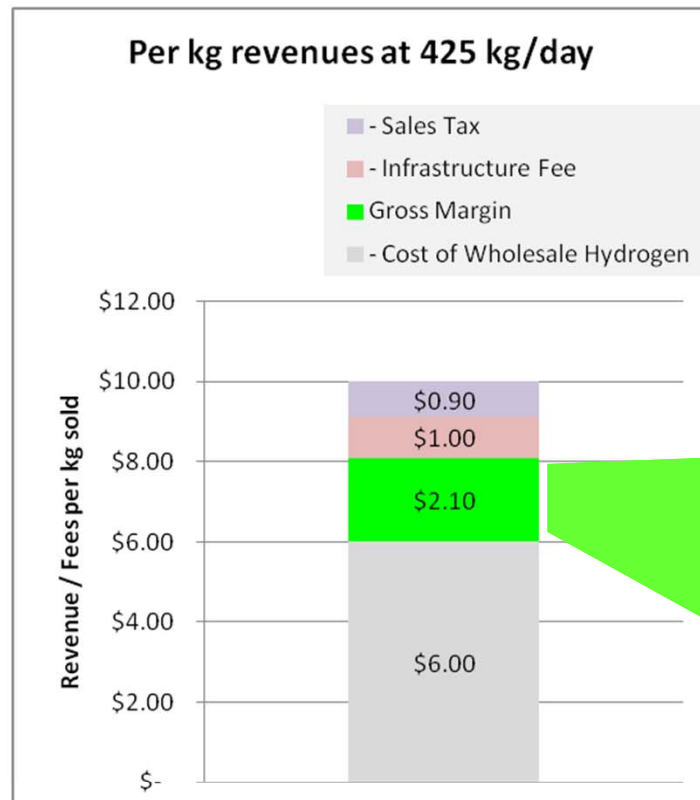
Considerations:

- Footprint
- Cost
- Convenience
- Business case





The business case for H₂



www.einow.org for the full report

Source: Ken Gunn, Caliber Consulting and

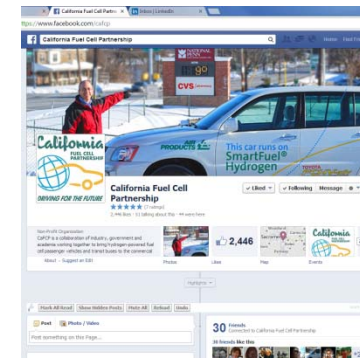
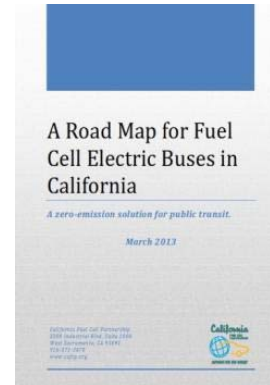
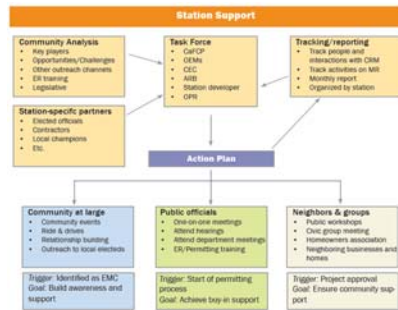


Customer experience



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

Next steps to market growth



Members

Air Liquide
Air Products
Alameda-Contra Costa Transit District
(*AC Transit*)
Automotive Fuel Cell Cooperation
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*)
Chrysler
Daimler
Energy Independence Now
General Motors

Honda
Hydrogenics
Hyundai
Institute of Transportation Studies, UC Davis
Linde North America, Inc.
National Fuel Cell Research Center, UC Irvine
National Renewable Energy Laboratory (*NREL*)
Nissan
Powertech Labs
Proton OnSite
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
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