

HYDROGEN FUEL CELL



**PARTNERSHIP**

12/01/2022

# Retail Hydrogen Fueling Station Network Update

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Ben Xiong, Keith Malone, David Park



# H2FCP Members



PROVIDING ENERGY. IMPROVING LIVES.



— 20+ years of collaboration —



# Upcoming Events

## **ICEPAG and World Fuel Cell Conference**

December 13-15

<https://apep.uci.edu/ICEPAG2022/index.html>

# ICEPAG 2022

## **Fuel Cell Seminar**

February 7-9

[Fuel Cell Seminar](#)



## **Hydrogen Village**

March 21

Details soon

# HYDROGEN VILLAGE



# H2FCP Station Map & SOSS

STATIONS BENEFITS BUSES & TRUCKS MEMBERS RESOURCES

Search by Zip Code or Address **GO**

**List Stations**

**Hide Filters**

- Online Limited Offline Refresh Unknown
- Retail: Open
- Retail: Legacy
- Retail: In Construction
- Retail: In Permitting
- Retail: Proposed
- Retail: Unavailable
- Heavy-Duty
  - Bus
  - Truck

[View list of open stations](#)

**Download Station List**

Map Data ©2023 Google, INEGI Terms of Use

SHIP  
earth™

SOSS | 916.371.2870  
3300 Industrial Blvd, Suite 1000, West Sacramento, CA 95691  
Hydrogen Station Buyer's Guide

California Hydrogen Fuel Cell Program

LOGIN | SIGN UP

### Station Status

Online Limited Offline Refresh Unknown

Open Retail Stations	H70	H35	
Aliso Viejo	Online	TRIVE ZERO	
Anaheim	Offline	TRIVE ZERO	
Baldwin Park (New)	Online	TRIVE ZERO	
Campbell - East Hamilton Ave	Offline	Offline	TRIVE ZERO
Campbell - Winchester	Refresh	Refresh	TRIVE ZERO
Citrus Heights	Offline	TRIVE ZERO	
Concord	Online	Offline	TRIVE ZERO
Costa Mesa - Bristol St	Online	TRIVE ZERO	
Costa Mesa - Harbor Blvd	Online	Offline	TRIVE ZERO
Del Mar	Online	Online	TRIVE ZERO
Diamond Bar	Online	Online	TRIVE ZERO
Emeryville	Online	Offline	MAXIMUS
Fairfax-LA	Offline	Offline	TRIVE ZERO
Fountain Valley	Online	Online	TRIVE ZERO

<https://h2fcp.org/stationmap>

<https://m.h2fcp.org>



# Retail hydrogen station network in California



**14,435**

Fuel Cell cars sold in the US

**56**

Stations available

**45**

Stations in development

**70**

Stations *funded*, but not in development



**3**

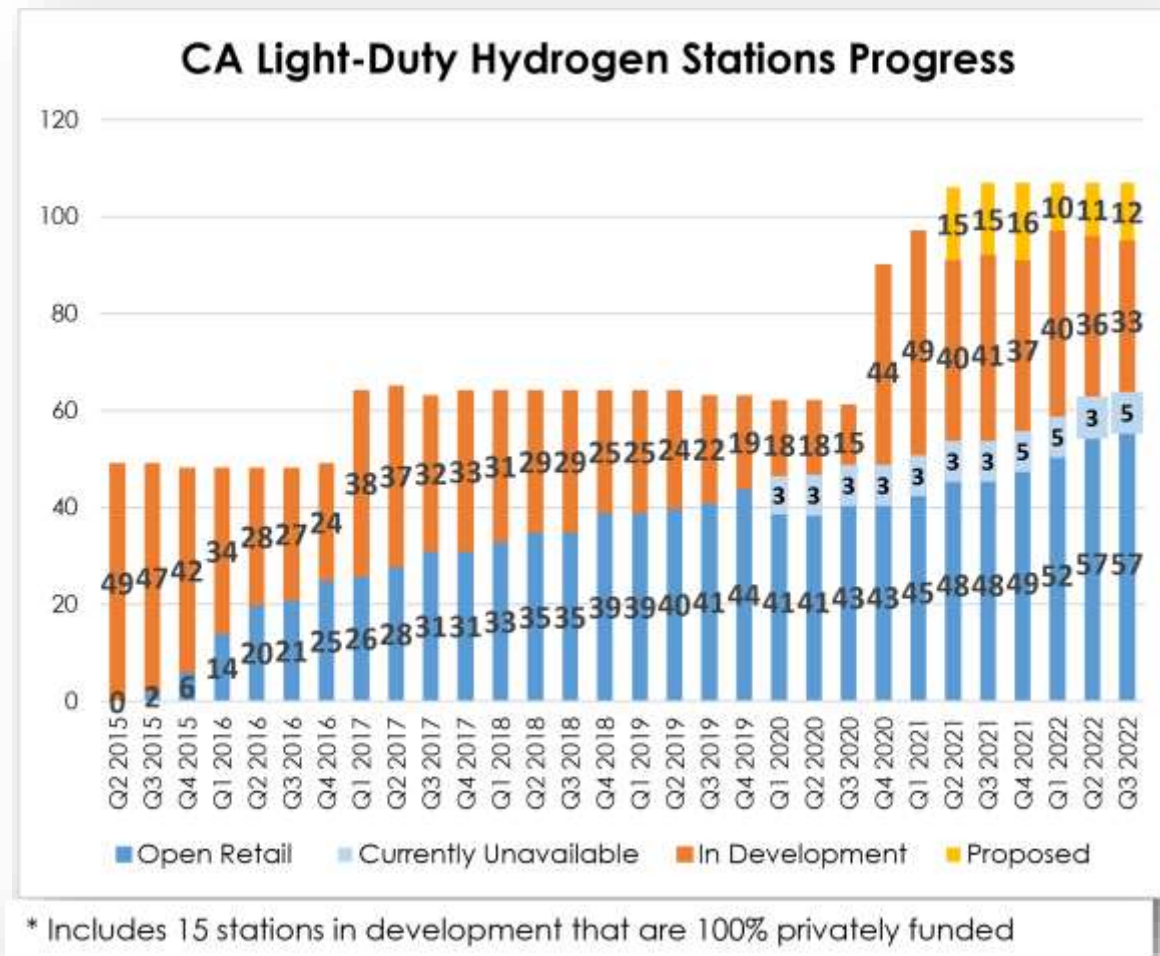
Truck stations available

**9**

Truck stations in development



# An Expanding Hydrogen Station Network





# Retail Hydrogen Stations & Network Health

## Latest Stations to Open

- Seal Beach
- SF Mission St (reopen)

## In Commissioning

- Anaheim
- Pasadena – N Allen Avenue
- San Diego – Mission Center
- Santa Ana
- Woodside

## Stations Currently Unavailable

- Cal State LA
- LAX
- Mountain View
- Ontario
- Palo Alto
- SF Harrison St



## Station Improvements are Ongoing

- H2 supply mostly resolved; Air Liquide Nevada Production Plant online;
- H2 retail deliveries vastly improved;
- Station short fill issues are much improved;
- Durability improvements continue
- Customer experience improvement is a priority

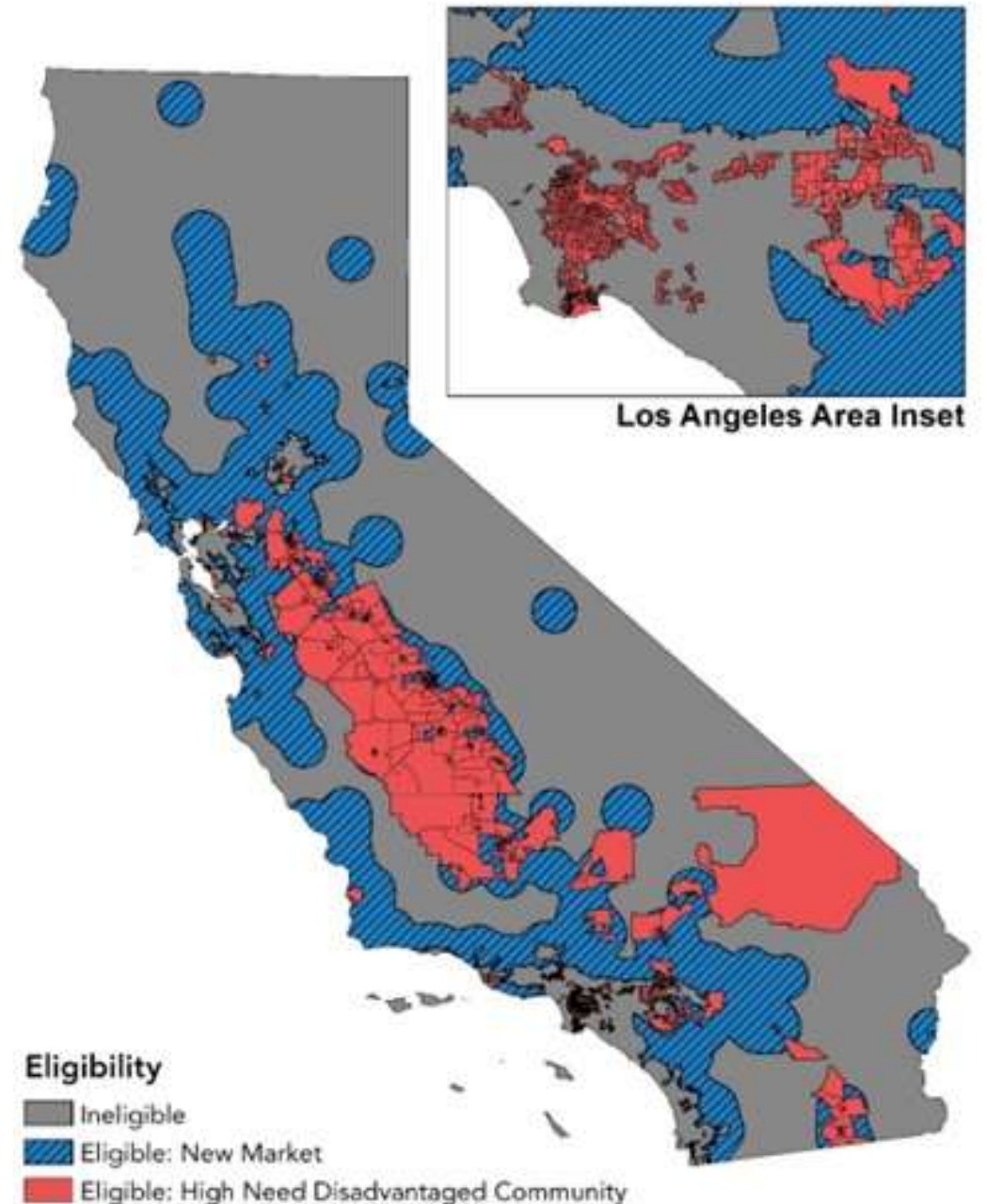


# California Energy Commission Grant Funding Opportunity 22-607 Light-duty Vehicle and Multi-use Hydrogen Refueling Infrastructure

- Submission deadline: February 3, 2023
- \$27MM available
  - \$24MM for LD Hydrogen Refueling Infrastructure
  - \$3MM for Multi-use Hydrogen Refueling infrastructure
- Minimum two fueling positions per station
- Geographic area: see map

## GFO 22-607

<https://www.energy.ca.gov/solicitations/2022-10/gfo-22-607-light-duty-vehicle-and-multi-use-hydrogen-refueling-infrastructure>





# CARB 2022 Scoping Plan for Achieving Carbon Neutrality



## Anthropogenic Carbon Emissions Reduction 85% below 1990 by 2045

- 94% decline in liquid petroleum and 86% reduction in fossil fuels
- 1,700 x's more hydrogen needed, including bio-derived hydrogen (dairy digester, woody biomass, landfill)
- Infrastructure to support electrified transportation, hydrogen fueling and battery charging
- Renewable hydrogen implemented across the energy ecosystem (e.g., transportation, long duration energy storage)
- Promote private investment in the ZEV transition





# Honda To Begin U.S. Production of Fuel Cell Electric Vehicles in 2024



- Based on the all-new Honda CR-V (6th generation)
- Production in Ohio, known for building small volume, specialty vehicles like the Acura NSX supercar
- First commercial FCEV to adopt a plug-in feature for EV driving



# Taxi fleets using fuel cell electric cars



Southern California



1. Brussels, Belgium - **Taxi Verts**
2. The Hague, Netherlands - **Noot Passenger Transport**
3. London, England – **Green Tomato Cars**
4. Madrid, Spain - **Federación Profesional del Taxi de Madrid (FPTM)**
5. Copenhagen, Denmark – **DRIVR**
6. Paris, France – **HYPE**
7. Berlin, Germany – **SafeDrive**
8. Southern California - **StratosShare**



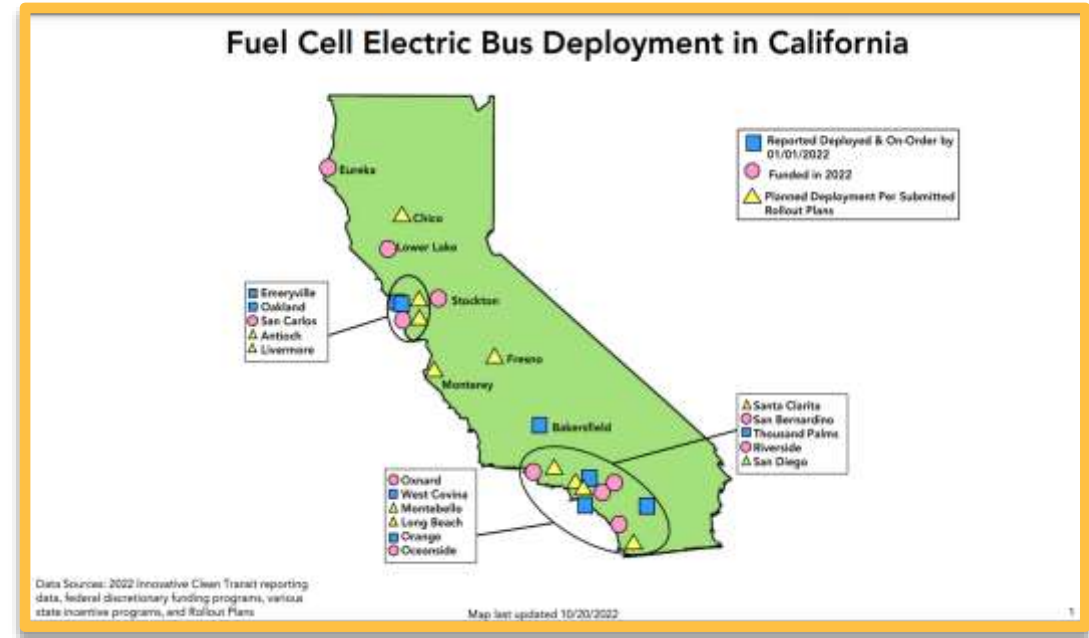
# Hyperion XP-1 and Hyper:Fuel Mobile Station



Station rollout announced for 2023



# The Other Electric Bus



More than 2,100 fuel cell electric buses planned for the future. (Not all agencies have reported yet.)



# Heavy-duty trucks

XCIENT Fuel Cell Fleet Racks  
Up 5 Million km, Reinforcing  
Hyundai's Hydrogen  
Leadership

USA - English ▾



## H2FCP truck automaker members

1. Cummins
2. Cellcentric
3. Hyundai
4. Daimler Truck  
North America
5. Hyzon
6. Nikola Motor
7. Toyota

“The ZANZEFF program  
successfully  
demonstrated that  
hydrogen fuel cell electric  
trucks provide an  
excellent long-range  
transportation solution  
with operations similar to  
diesel.”



## H2FCP National Hydrogen Mobility Strategy



# Community hydrogen hubs – CA's Central Valley



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**Toyota and Chevron support Valley CAN on fuel cell electric vehicle pilot program in San Joaquin Valley**  
*First-of-its-kind program will replace old, conventional vehicles with certified pre-owned, zero-emission hydrogen-fueled cars to local Valley residents*

**Fusion Fuel and Electus Energy Announce Exclusive Agreement to Develop a 75 MW Green Hydrogen Project in Bakersfield, California**



**SoCalGas Joins Ford to Reduce Emissions with Cutting Edge F-550 Super Duty Hydrogen Fuel Cell Electric Truck**



Fresno solar-to-hydrogen production

LOCAL NEWS

**Kern Community College District unveils California Renewable Energy Laboratory**

\$50 million in state funding



# Hydrogen & Fuel Cell Activity – U.S.

**Phoenix Hydrogen Hub LLC Project  
Invited into Phase II of U.S. Department  
of Energy \$1.3 Billion Loan Application  
Process**

## **New Mexico Is Bucking to Become a Hydrogen Power Player**

Several hydrogen and fuel-cell companies are eyeing New Mexico, which hopes to nab a chunk of federal funding to establish itself as a hub for the alternative fuel and related technologies.

HOUSTON  
BUSINESS JOURNAL

## **HyVelocity Hub adds energy giants, research groups to bid on DOE hydrogen hub funding**

## **California**

**Alliance for Renewable Clean  
Hydrogen Energy Systems**







# Hydrogen & Fuel Cell Activity - Global

## 'Made in America' fight clouds EV gains

By ARIANNA SKIBELL | 11/29/2022 06:00 PM EST

Presented by Chevron



President Joe Biden drives a Ford F-150 Lightning truck in Dearborn, Mich., last year. | Evan Vucci/AP Photo

An escalating trade spat between the United States and Europe threatens to overshadow the Biden administration's gains on the electric vehicle front.

Department of Energy  
**President Biden Invokes Defense  
Production Act to Accelerate Domestic  
Manufacturing of Clean Energy**

JUNE 6, 2022

The US Inflation Act, signed by President Biden last week, entails very clear, simple and at the same time massive incentives for more renewable energy.

-Jorgo Chatzimarkakis, CEO,  
Hydrogen Europe

## Interview – The Geopolitics of Hydrogen

“...it is expected that clean hydrogen may significantly alter bilateral energy ties in the Indo-pacific region.”



# H2FCP Resources

## Key Documents

- California Fuel Cell Bus Census – <https://ww2.arb.ca.gov/sites/default/files/2022-10/FCEB-Deployment-Map.pdf>
- Truck Vision – <https://h2fcp.org/truckvision>
- CARB 2022 Scoping Plan for Achieving Carbon Neutrality <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>
- CARB 2020 Mobile Source Strategy - <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>
- CARB Self-Sufficiency Study - <https://ww2.arb.ca.gov/resources/documents/hydrogen-station-self-sufficiency-report>

## H2FCP PAGES

- Station Map – <https://h2fcp.org/stationmap>
- SOSS – <https://m.h2fcp.org>
- By the Numbers – [https://h2fcp.org/by\\_the\\_numbers](https://h2fcp.org/by_the_numbers)
- Resources – <https://h2fcp.org/resources>
- News clips – <https://h2fcp.org/news>
- Upcoming Events – <https://h2fcp.org/events>

## Additional Resources

- CEC GFO 21-605 NOPA – <https://www.energy.ca.gov/solicitations/2022-03/gfo-21-605-zero-emission-transportation-manufacturing>
- Inflation Reduction Act – <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/15/by-the-numbers-the-inflation-reduction-act/>
- H2 Matchmaker – <https://www.energy.gov/eere/fuelcells/h2-matchmaker>

We're creating transformative change  
for a brighter, healthier future.

Join the revolution.



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