



4/15/2021

Retail Hydrogen Fueling Station Network Update

Ben Xiong, Keith Malone, Dave
Park



CaFCP Members



— 20+ years of collaboration —



New members





CaFCP Station Map & SOSS

California FUEL CELL PARTNERSHIP
 HOME CARS STATIONS BENEFITS BUSES & TRUCKS RESOURCES
 Map Satellite
 Download Station List
 Search by Zip Code or Address
 List Stations
 Filter By
 © CALIFORNIA FUEL CELL PARTNERSHIP
 Managed by Frontier Energy
 SOSS | 916.371.2870
 3300 Industrial Blvd, Suite 1000, West Sacramento, CA 95691

California FUEL CELL PARTNERSHIP
 HOME CARS STATIONS BENEFITS BUSES & TRUCKS RESOURCES
 Map Satellite
 Download Station List
 Search by Zip Code or Address
 List Stations
 Filter By
 RETAIL - PROPOSED
 Folsom
 13397 Folsom Boulevard
 Folsom, CA 95630
 Details +
 RETAIL - OPEN
 Citrus Heights
 Open - Retail
 6141 Greenback Lane
 Citrus Heights, CA 95621
 Details +
 RETAIL - OPEN
 Sacramento
 Open - Retail
 3510 Fair Oaks Boulevard
 Sacramento, CA 95864
 Details +
 RETAIL - IN PERMITTING
 San Jose - Bernal Road
 Planning Approval
 101 Bernal Road
 San Jose, CA 95119
 © CALIFORNIA FUEL CELL PARTNERSHIP
 Managed by Frontier Energy
 SOSS | 916.371.2870
 3300 Industrial Blvd, Suite 1000, West Sacramento, CA 95691

California FUEL CELL PARTNERSHIP
 LOGIN | SIGN UP
 Station Status
 Update: Hydrogen Distribution and Supply in California
 Online Limited Offline Refresh Unknown
 Open Retail Stations H70 H35

Anaheim	●		Air Liquide
Berkeley (New)	■		Shell Hydrogen
Campbell	●	●	TRUE ZERO
Citrus Heights	●		Shell Hydrogen
Costa Mesa	●	■	TRUE ZERO
Del Mar	●	●	TRUE ZERO
Diamond Bar	●	●	AIR PRODUCTS
Emeryville	●	●	MESSER
Fairfax-LA	■	■	AIR PRODUCTS
Fountain Valley (New)	●	●	TRUE ZERO
Fremont	●	●	TRUE ZERO
Harris Ranch	●	●	TRUE ZERO
Hayward	●	●	TRUE ZERO

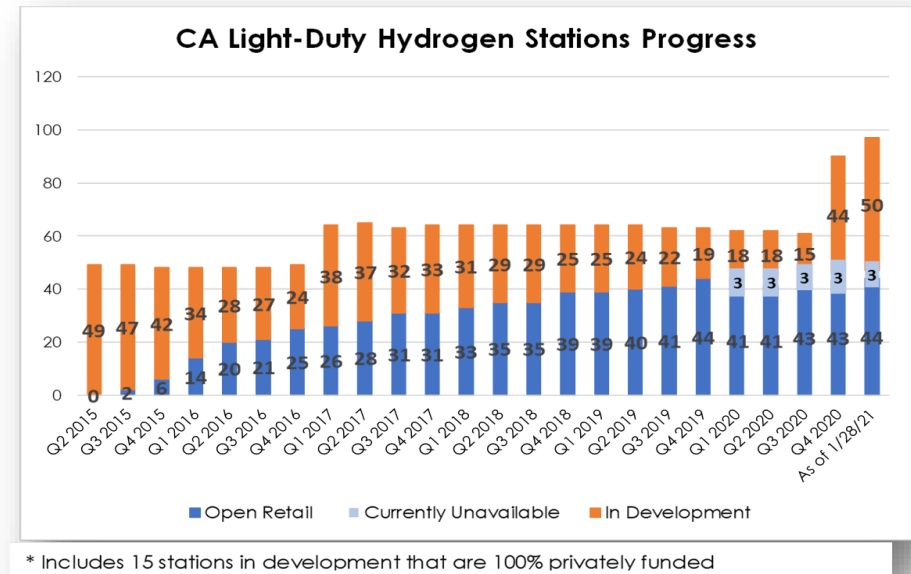
<http://cafcp.org/stationmap>

<http://m.cafcp.org>



An Expanding Hydrogen Station Network

- California Energy Commission hydrogen station funding (GFO 19-602)
- 114 stations funded over several years
 - 30 stations funded in first batch
- Breakdown of all stations funded
 - Shell - 51
 - First Element - 49
 - Iwatani - 14
- Iwatani will also build six additional stations not funded by this GFO.



Source: Governor's Office of Business and Economic Development



Retail Hydrogen Stations & Network Health

New Stations Opened

- Mission Hills
- Sunnyvale

Commissioning Schedule

- Campbell
- Studio City
- Sherman Oaks
- Placentia
- Concord
- Aliso Viejo



Stations currently unavailable

- Ontario
- Riverside
- Newport Beach
- Berkeley
- SF Harrison St

Iwatani station announcement

- Seven stations being built with private funds
- Six that were originally listed in GFO 19-602
- Plus one more



H2 stations list - https://cafc.org/sites/default/files/h2_station_list.pdf



By the Numbers

	Numbers as of August 1, 2020	Total
*FCEVs—Fuel cell cars sold and leased in US		8,475
FCEBs—Fuel cell buses in operation in California		48
***Hydrogen stations available in California		42
Fuel cell buses in development in California		7
Fuel cell shuttles in development in California		4
**Retail hydrogen stations in development in California		15

*Vehicle sales data from Baum and Associates. Sales data is based on car sales sold by a dealer to a retail or fleet customer. [FCEV Sales Data sheet](#)

FCEB Source: AC Transit, Orange County Transportation Authority (OCTA), SunLine Transit, UC Irvine

Hydrogen station source: Air Liquide, Air Products, GO-Biz, ITM Power, Iwatani, Shell, True Zero

**Stations in development is based on stations planned for light-duty hydrogen fuel cell vehicles following applicable standards. See below for a listing of California funded stations.

***Open for retail and available to light-duty hydrogen fuel cell vehicles following applicable standards. A listing of California funded stations can be found [here](#).

	Numbers as of April 1, 2021	Total
FCEVs—Fuel cell cars sold and leased in US*		9,961
FCEBs—Fuel cell buses in operation in California		48
Fuel cell buses in development in California		7
Hydrogen stations available in California**		45
Retail hydrogen stations in <i>construction</i> in California***		9
Retail hydrogen stations in <i>permitting</i> in California***		38
Retail hydrogen stations in <i>proposed</i> in California***		16
Retail hydrogen stations in <i>funded</i> , but not in development in California***		72
Total retail hydrogen stations in development in California***		135
Retail truck hydrogen stations in construction in California		3
Retail truck hydrogen stations in <i>funded</i> , but not in development in California****		5



H2 Supply and Distribution

- <https://m.cafcp.org/> (SOSS) is your friend
- Hydrogen supply is and has been challenging
 - Wholesale hydrogen supply constraints
 - Capital equipment technical challenges (compressors, POS, distribution trailers)
 - High demand for licensed carriers
- Wholesale Activity
 - New hydrogen liquifier plants coming online as early as this summer
 - New hydrogen production plants coming online in early 2022
 - Industrial gas companies are exploring more long-term production capacity
- Retail Activity
 - More stations- both publicly and privately funded
 - Higher capacity, multiple fueling position stations
 - Faster station development time, ala *GoBiz Hydrogen Station Permitting Guidebook*

https://www.reddit.com/user/toyotausa/comments/mnnglh/were_jackie_saeed_and_daniel_from_the_toyota/



California H2 stations in 2020, 2025 and 2030

100 

hydrogen stations by **2020**.
Funded by Assembly Bill 8 (2013).

BY 2020

Funded
Light Duty

200 

hydrogen stations by **2025**,
pursuant to the Governor's 2018
ZEV infrastructure Proposal.

BY 2025

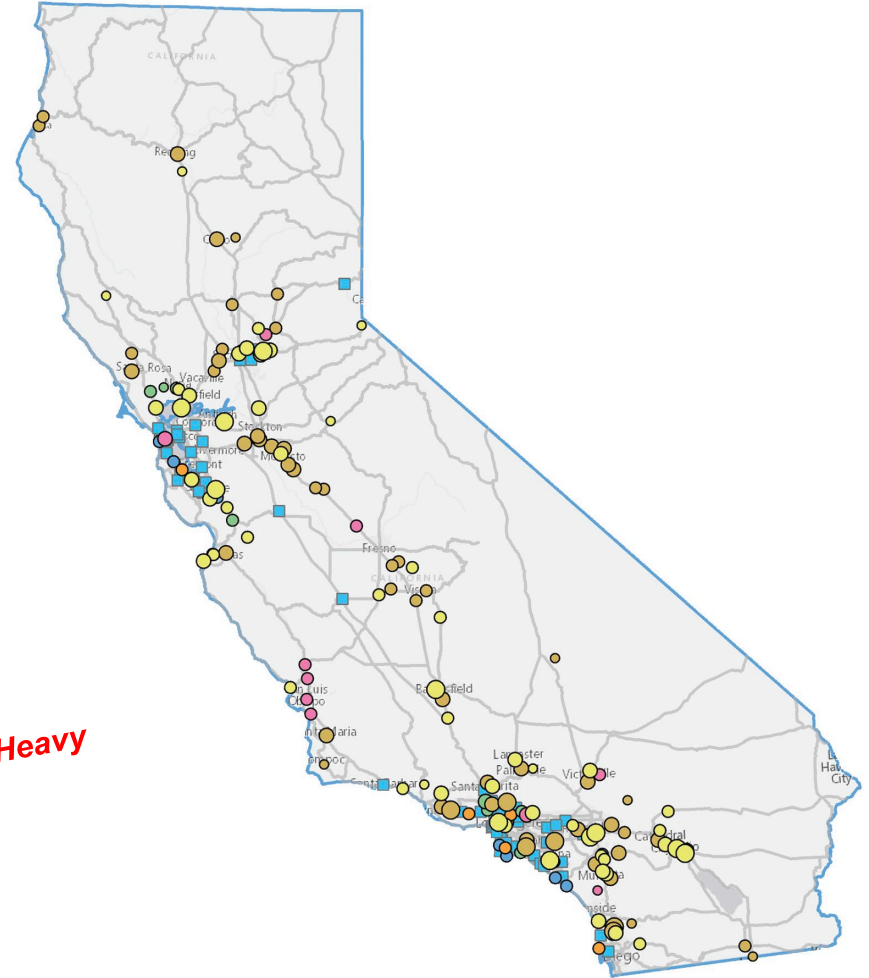
Planned
Light Duty

1000 

hydrogen stations by **2030** with favorable
market conditions and state policies pursuant
to the CAFCP 2030 vision. Will support
1,000,000 fuel cell electric vehicles.

BY 2030

Envisioned
Light, Medium and Heavy



Governor's goal of 5,000,000 zero-emission vehicles by 2030.



Cars! (and vans!)



Stellantis says hydrogen fuel cell vans to hit Europe by end of 2021

By Gilles Guillaume

2 MIN READ



PARIS (Reuters) -Carmaker Stellantis said on Wednesday it will begin deliveries in Europe of its first medium-sized vans powered by hydrogen fuel cells by the end of 2021.

2021 Renault Master ZE Hydrogen



Riversimple



Segway



Hydrogen & Fuel Cell Activity – U.S.

yahoo/finance

Michael Andretti on going green with hydrogen fuel

February 1, 2021

Team owner, racecar driver, and entrepreneur Michael Andretti on the Andretti's Group's recent foray into hydrogen fueling.



Red Bull and ORECA to build Le Mans hydrogen car for 2024

Gary Watkins 25/01/2021

Like Comments

Red Bull Advanced Technologies will partner with French constructor ORECA to produce the chassis for the new hydrogen class set for introduction at the Le Mans 24 Hours in 2024.



© LAT images: Red Bull and ORECA to build Le Mans hydrogen car

YOU MAY LIKE
taboola

1.8 weeks
national
LA Time

The Ma
Game o
Taanga:

Former
and Fig
Stanbe:

EDITORS' PICK | Feb 23, 2021, 11:06am EST | 3,528 views

California And Texas Vie To Be America's Hydrogen Capital



Jim Magill Contributor @ Sustainability

I write about energy and emerging technologies in the energy sector.

Follow



Bloomberg

Plug Power Plans North America's Largest Green Hydrogen Plant

David R. Baker - 2/25/2021



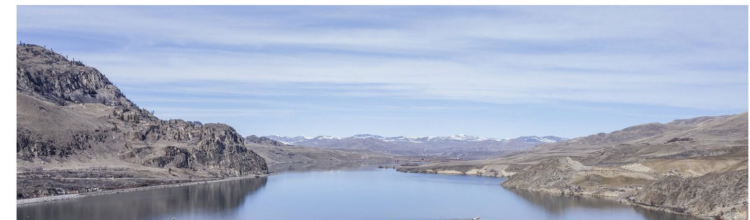
RELATED QUOTES

PLUG +3.18% ▲

(Bloomberg) -- Plug Power Inc. will build the continent's biggest green hydrogen plant in New York state, as the company once known for selling forklifts aggressively moves into producing the clean-energy fuel.

It was an old apple orchard. Now it could be the future of clean hydrogen energy in Washington state

April 15, 2021 at 6:00 am | Updated April 16, 2021 at 9:28 am





Hydrogen & Fuel Cell Activity – U.S.



New Energy and Industrial Technology Development Organization (NEDO)

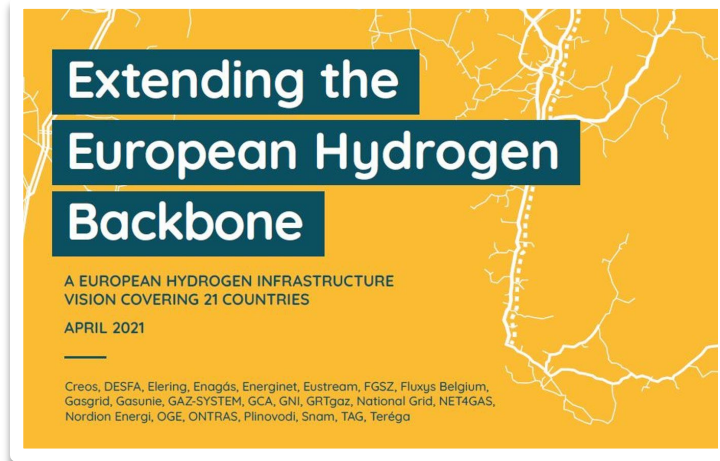


Los Angeles Times ad by NEDO



Hydrogen & Fuel Cell Activity - Global

Europe



Hydrogen Council



109+ members

China



- 30 countries with hydrogen roadmaps
- 228 large-scale hydrogen projects
- 85% located in Europe, Asia, and Australia.



Heavy Duty: Bus & Truck

Light duty needs heavy duty; heavy duty needs light duty

Fuel Cell Electric Trucks

- Advanced Clean Fleet rule
- Fueling infrastructure projects
 - 4 Heavy-duty H2 stations
 - Long Beach, Ontario, Wilmington and West Sacramento (see map)
- CARB & CEC HD ZEV funds
 - Drayage GFO NOPA
 - Retail H2 stations NOPA
 - Some offer HD FCET fueling



The Other Electric Bus

Innovative Clean Transit rule

- California transit on zero-emission pathway
- Zero Emission Rollout Plans submissions continue
- Hydrogen fueling RFPs
 - Golden Empire (Bakersfield)
 - North County (San Diego)



SARTA joins project to test more efficient systems for hydrogen powered vehicles

Edd Pritchard The Repository
Published 3:59 p.m. ET Apr. 7, 2021

[View Comments](#) [f](#) [t](#) [e](#) [r](#)



Kit Conrad, SARTA chief executive officer, discusses the mobile hydrogen refueling system that the transit authority will be testing over the next three months. SARTA is the first agency to use the system. Julie Venetti Botos



Energy Observer



CaFCP online briefing on
Energy Observer
May 5, 2pm (Pacific)
Register at www.cafcp.org/events



- Long Beach: April 23 to 27
- San Francisco: May 1 to 5
- Hawaii: May 23 to 31
- Tokyo: July 21 to August 15

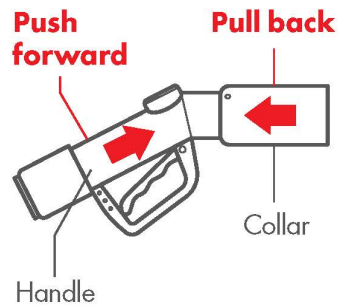


Nozzle Freeze

NOTICE: During periods of high humidity or increased use, the nozzle may become frozen and difficult to disconnect from the vehicle. If this occurs, **DO NOT POUR WATER OR SPRAY ANY CHEMICALS ON THE NOZZLE** as this may damage it.

Prior to fueling, wipe down the nozzle with a lint-free cloth.

If the nozzle becomes frozen, pull the collar back with one hand while pushing forward on the handle. This may help release the nozzle locking mechanism and aid removal.



Placing the nozzle back in the dispenser holster will start an air dryer mechanism, which assists in drying the nozzle. The sound of the air dryer is normal.



References

- **KEY DOCUMENTS**

- California Fuel Cell Revolution - <https://cafcp.org/sites/default/files/CAFCCR.pdf>
- CA Governor's Executive Order B-48-18 - <https://www.gov.ca.gov/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/>
- U.S. Hydrogen Road Map (full report) - <https://cafcp.org/sites/default/files/Road%2BMap%2Bto%2Ba%2BUS%2BHydrogen%2BEconomy%2BFull%2BReport.pdf>
- Fuel Cell Bus Road Map - <https://cafcp.org/sites/default/files/2019-CaFCP-FCEB-Road-Map.pdf>
- Hydrogen Council-Path to hydrogen competitiveness A cost perspective (full study) - https://cafcp.org/sites/default/files/Path-to-Hydrogen-Competitiveness_Full-Study-1.pdf
- CTE Guide for Deploying Zero-Emission Buses
<http://cte.tv/guidebook-release/>
- Zero Emission Bus Rollout Plans in California – www.cafcp.org/resources: key word is rollout
- Hydrogen Station Permitting Guidebook - <https://www.businessportal.ca.gov/zero-emission-vehicle-program/zev-resources/>

- **CAFCP PAGES**

- Station Map – www.cafcp.org/stationmap
- SOSS – <http://m.cafcp.org>
- Resources – www.cafcp.org/resources
- News clips – www.cafcp.org/news



Keith Malone

kmalone@cafcp.org

Ben Xiong

ben.xiong@cafcp.org

Dave Park

dpark@cafcp.org



Powered by the fastest molecule on earth!™