



9/01/2022

Retail Hydrogen Fueling Station Network Update

Ben Xiong, Keith Malone, David Park



CaFCP Members



— 20+ years of collaboration —



New Members

Associate Members

AMERESCO
Green • Clean • Sustainable



FUSION-FUEL™



SYMBIO
A FAURECIA MICHELIN HYDROGEN COMPANY



StratosFuel



UCR CE-CERT



Upcoming Events

September 19-22, Anaheim, CA

[RE+ Power](#)

September 19-21, Anaheim, CA

[Zero Emission Bus Conference](#)

September 20-22, Anaheim, CA

[Center for Hydrogen Safety](#)

[Americas Conference](#)



CaFCP Station Map & SOSS



STATIONS BENEFITS BUSES & TRUCKS MEMBERS RESOURCES

Search by Zip Code or Address

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

Map data ©2022 Google, INEGI Terms of Use

RSHIP
earth!™

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

California Hydrogen
LOGIN | SIGN UP

Station Status

Online
 Limited
 Offline
 Refresh
 Unknown

Open Retail Stations	H70	H35	
Aliso Viejo	<input type="radio"/>		TRUE ZERO
Anaheim	<input type="radio"/>		TRUE ZERO
Baldwin Park (New)	<input type="radio"/>		TRUE ZERO
Campbell - East Hamilton Ave	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Campbell - Winchester	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Citrus Heights	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Concord	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Costa Mesa - Bristol St	<input type="radio"/>		TRUE ZERO
Costa Mesa - Harbor Blvd	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Del Mar	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Diamond Bar	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Emeryville	<input type="radio"/>	<input type="radio"/>	MESSER
Fairfax-LA	<input type="radio"/>	<input type="radio"/>	TRUE ZERO
Fountain Valley	<input type="radio"/>	<input type="radio"/>	TRUE ZERO

<http://cafcp.org/stationmap>

<http://m.cafcp.org>



Retail hydrogen station network in California



14,198

Fuel Cell cars sold in the US

54

Stations available

47

Stations in development

70

Stations *funded*, but not in development



3

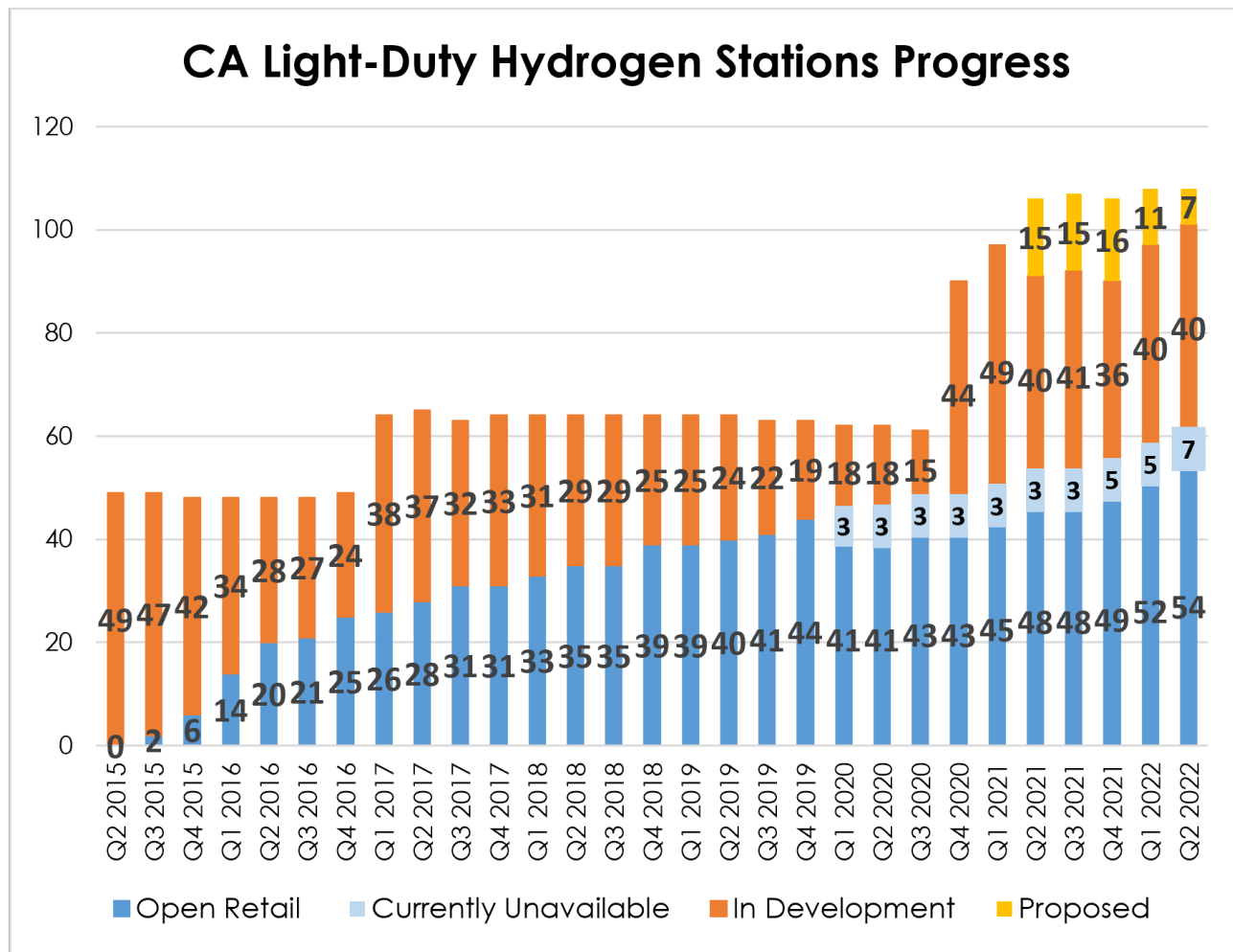
Truck stations available

9

Truck stations in development



An Expanding Hydrogen Station Network



* Includes 15 stations in development that are 100% privately funded



Retail Hydrogen Stations & Network Health

Latest Stations to Open

- Burbank – N. Hollywood Way
- Cupertino
- San Jose – Bernal Road
- San Jose – Snell Ave
- Berkeley (reopen)

In Commissioning

- Anaheim
- San Diego – Mission Center
- Santa Ana
- Seal Beach
- Woodside

Stations Currently Unavailable

- SF Harrison St – End of 2022
- SF Mission St – Mid-September 2022
- Palo Alto – End of 2022
- LAX – End of 2022
- Mountain View
- Ontario



Station Improvements are Ongoing

- H2 supply mostly resolved; Air Liquide Nevada Production Plant online;
- Hydrogen price;
- H2 retail deliveries vastly improved;
- Station short fill issues are much improved;
- Durability improvements continue

Hydrogen production- Air Liquide Nevada Plant opening





Grant Awards: Zero-Emission Transportation Manufacturing

- FirstElement Fuel: Hydrogen Station Development grant: \$9.2 million
- Symbio One North America: Hydrogen Fuel Cell Manufacturing and Training Facility; \$9.1 million
- Wiggins Lift Company: Electrified forklift technology development; \$8.1 million
- California Energy Commission GFO 21-605, Zero-Emission Transportation Manufacturing notice of proposed awards, \$184.6 million awarded



CARB Advanced Clean Cars II regulation

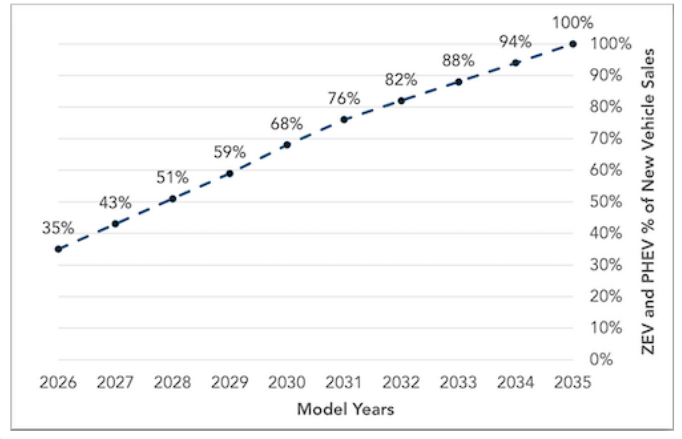


California moves to accelerate to 100% new zero-emission vehicle sales by 2035

CARB approves first-in-nation ZEV regulation that will clean the air, slash climate pollution, and save consumers money

October 28, 2021

2020 Mobile Source Strategy



October 2021

Hydrogen Station Network Self-Sufficiency Analysis per Assembly Bill 8

2030

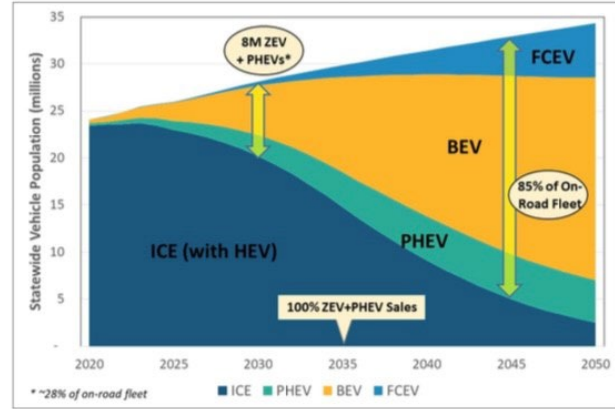
Up to \$300 Million State Support

90% Funded by Industry

CARB Self-Sufficiency Analysis

“The rationale for this assumption reflects increasing FCEV adoption as hydrogen fueling infrastructure expands and a subset of the vehicle market that will still require frequent fast refueling, particularly in larger vehicle classes.”

Figure 15 – Statewide Light-Duty Vehicle Technology Penetration in the On-Road Fleet





Fuel cell vehicles, light and medium

Hopium Machina



THE KOREA ECONOMIC DAILY

Companies Korean Investors Deals Markets Culture

Automobiles

Hyundai CEO says on track for hydrogen-fueled NEXO's new model

The carmaker unveils hydrogen-powered police bus and four-wing drone during an exhibition for hydrogen technologies

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



BMW Ready to Hydrogen SUV and Porsche May Follow

But the two German automakers would take very different approaches.

Mastering the Nordschleife with hydrogen

08/18/2022 | In a study, Porsche Engineering has examined the potential of hydrogen combustion engines. The result is a high-performance powertrain with emissions at the same level as ambient air.

BMW GROUP | MINI | ROLLS-ROYCE MOTOR CARS LTD.

< Back | INNOVATION | 31.08.2022 | © 4 Min.

BMW GROUP PRODUCES FUEL CELL SYSTEMS.

Heavy-duty trucks



White paper Sustainable Fuels in Trucking

“TA plans to be a leader in providing EV charging stations and hydrogen refueling for trucks at its over 275 travel centers as the industry adopts these sustainable fuels.”



National Hydrogen Mobility Strategy

Bosch Is Investing \$200 Million To Make Fuel Cells For Hydrogen Trucks In South Carolina

ALTERNATIVE POWER | HYDROGEN FUEL CELL

Kenworth fuel cell interest 'amazing' as hydrogen combustion also gains ground

Tom Quimby, CCJ senior editor
Aug 17, 2022 | Updated Aug 22, 2022

Nikola Announces Locations of Three California Hydrogen Dispensing Stations, Continued Scaling of Infrastructure





The Other Electric Bus

samTrans | Select Language

Trip Planner | Live Map | Service Alerts | Schedules

SamTrans to Purchase 30 Zero-Emission Buses

06/07/2022

The SamTrans Board of Directors voted this month to replace 30 diesel buses with 20 battery electric buses (BEB) and 10 Hydrogen-fuel cell electric buses (FCEB). This purchase helps move SamTrans planned full conversion of the fleet from a projected to 2038 to 2034.

Humboldt Transit AUTHORITY

Humboldt Transit Authority Awarded \$38.7M Grant for Fuel Cell Electric Buses

SR 22-308, Attachment 1

AC TRANSIT
ZERO EMISSION PROGRAM

Zero Emission Transit Bus Technology Analysis

Volume 3
REPORT PERIOD : JULY 2021 – DECEMBER 2021
Published June 22, 2022

Icons: Fuel pump, Fuel pump with lightning bolt, Water drop, Lightning bolt, Water drop with lightning bolt.

66 Fuel Cell buses in operation in CA

103 Fuel Cell buses in development in CA



Hydrogen & Fuel Cell Activity – U.S.

Alliance for **R**enewable **C**lean
Hydrogen **E**nergy **S**ystems

WISHH:
**Western Inter-States
Hydrogen Hub**

**Governor Hochul Announces Maine
and Rhode Island Join Multi-State
Agreement to Propose a Regional
Clean Hydrogen Hub**



Pacific Northwest Hydrogen Association

CA -- NV? AZ?

NM, CO, UT & WY

NY, NJ, MA, CT, ME & RI

WA -- OR? ID?



Greater St. Louis and
Illinois Regional Clean
Hydrogen Hub
Industrial Cluster



Inflation Reduction Act of 2022

- \$737 Billion investment into Energy Production and Manufacturing and Health Care
- Clean Heavy-duty Vehicles: \$1 billion rebate/grant program
- Zero-emission Port Equipment and Climate Action Plans: \$3 billion in rebates/grants
- US Postal Service: \$1.3 billion for ZEV fleet + \$1.7 billion for ZEV infrastructure
- Automotive ZEV Tax credit increase: \$7,500 new ZEV purchase; \$4,000 used ZEV purchase
- Commercial ZEV Tax credit: Up to 15% of the cost, with a per-vehicle limit of \$7,500 for vehicles less than 14,000 lbs and \$40,000 for larger vehicles
- Clean Hydrogen Production Tax Credit:
 - 10-year production tax credit for clean hydrogen, with a corresponding election to claim the investment tax credit in lieu of the production tax credit
 - Base tax credit = \$0.60 per kg of clean hydrogen produced under 0.45 kg CO₂e per kg hydrogen produced;
 - Tax credit 5x multiplier (i.e., up to \$3 per kg) for projects if certain prevailing wage/apprenticeship and other requirements are satisfied..
 - Storage tax credit at 30% for construction projects completed before 2025
 - Possibility that hydrogen producers can combine tax credits with renewable power generation tax credits



Hydrogen & Fuel Cell Activity - Global



Europe risks losing green hydrogen funding to US, industry leader says

ft.com • 3 min read

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

Bloomberg

Subscribe



Politics

Germany Taps 'Boundless' Fuel Potential in Canada Hydrogen Deal

- Scholz and Trudeau ink agreement in wind-rich coastal province
- First shipments could reach Europe's biggest economy by 2025



Olaf Scholz and Justin Trudeau hold a joint news conference in Montreal on Monday. *Photographer: David Kawai/Bloomberg*



IHS Markit now a part of

S&P Global



Current electrolyzer manufacturing capacity could quadruple by 2025 as OEMs scale facilities in the face of rising demand



CNBC

WATCH LIVE

CLIMATE

Amazon strikes green hydrogen deal with fuel cell maker Plug Power, sending shares up



CaFCP Resources

Key Documents

- Truck Vision – <https://cafc.org/truckvision>
- 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>

CAFCP PAGES

- Station Map – www.cafc.org/stationmap
- SOSS – <https://m.cafc.org>
- By the Numbers – www.cafc.org/by_the_numbers
- Resources – www.cafc.org/resources
- News clips – www.cafc.org/news
- Upcoming Events – www.cafc.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>



Keith Malone
kmalone@cafcp.org

Ben Xiong
bxiong@cafcp.org

Dave Park
dpark@cafcp.org

Powered by the fastest molecule on earth!™