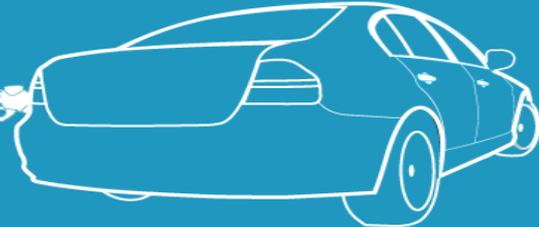
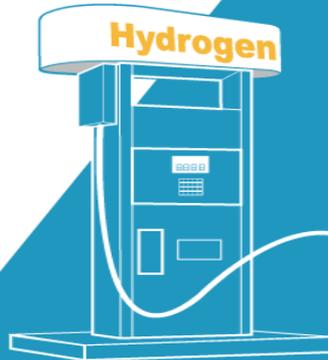
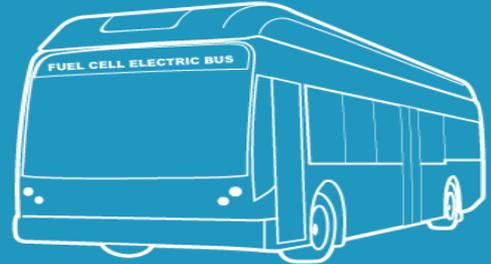
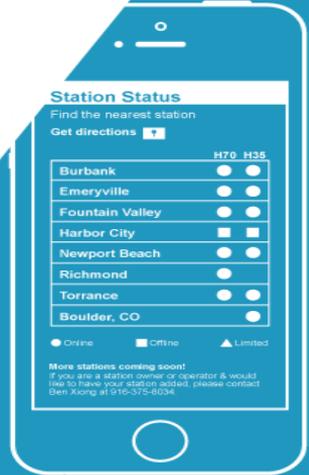


FCEVs and H₂ in California

Keith Malone
Legislative Outreach and Communications
Santa Barbara County Air Pollution Control District
June 2015





Who we are

Air Liquide

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

FirstElement

General Motors

Office of Governor Edmund G. Brown Jr.

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

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

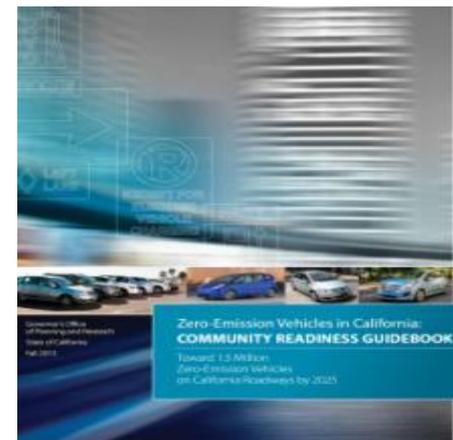
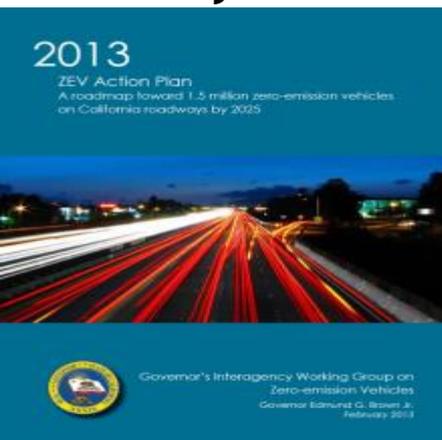
University of California, Berkeley

Volkswagen



California ZEV Action Plan

- By 2015: California major metropolitan areas “ZEV-ready” with infrastructure and streamlined permitting
- By 2020: California ZEV infrastructure can support up to 1 million vehicles
 - Including widespread use of ZEVs for freight and public transit
- By 2025: Over 1.5 million ZEVs in California



Visit www.caftp.org/toolkits/cities to download the ZEV Action Plan



California is taking the lead



Funding

For at least 100 H₂ stations through California Energy Commission, readiness grants



ZEV Action Plan

Agency actions to enable FCEVs and BEVs



ZEV Manager

Governor appointee to help with planning and permitting for H₂ and charging stations



State Fire Marshal

Including hydrogen and FCEVs in state training guidelines



Weights & Measures

Setting standards for certifying dispensers

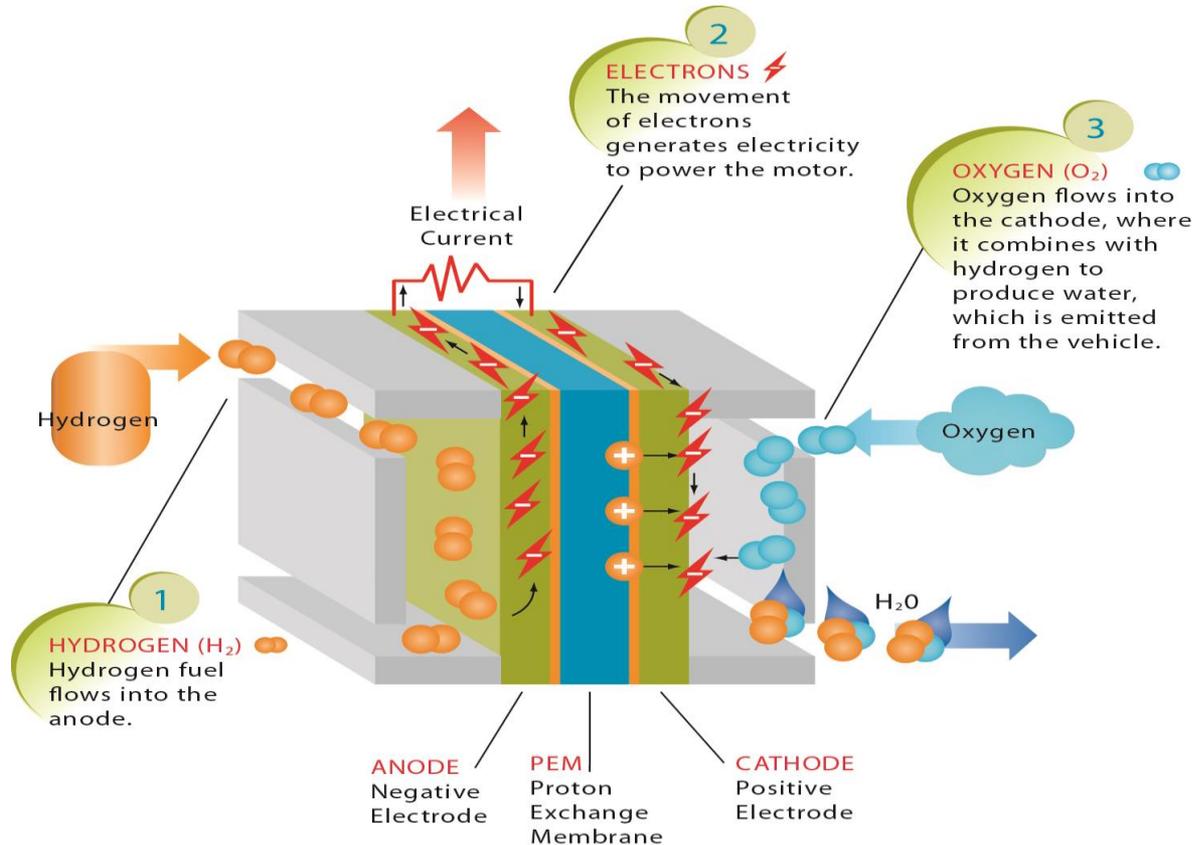


Evaluation

Survey of OEM deployment plans

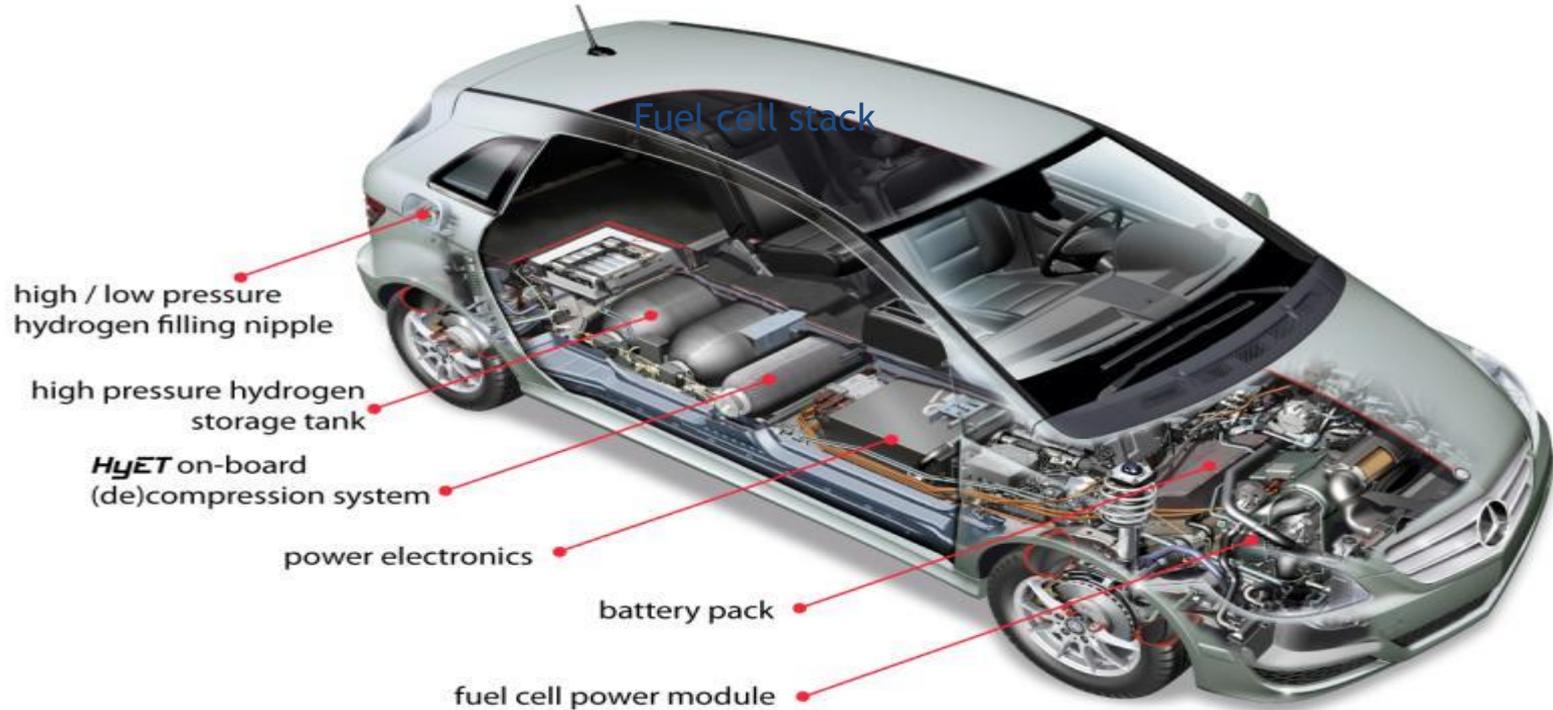


How a fuel cell works





FCEVs are electric vehicles





Today in California

- Honda, Hyundai and Mercedes lease cars
 - 300+ FCEVs on the road
- Toyota introducing the Mirai; Honda in 2016
 - Many automakers will come to market
- 3 transit agencies operate buses
- 8 open stations
 - 40+ stations in development



**BE PART OF THE
NEXT BIG THING**

Because of your interest in our Fuel Cell Vehicle, we'd like to invite you to an exclusive research event. Your feedback will help researchers understand what customers expect from alternative fuel vehicles.

Take our survey to find out if you qualify for the in-person event.* If you do qualify and take part, you'll be compensated for your time and participation.

Take survey 

Prototype vehicle shown with optional equipment. Production model may vary.

More than cars...





Fuel cell buses and trucks

- 19 fuel cell buses
- >1.5M miles in service
- >2.5M passengers carried
- Bus roadmap
- MD/HD roadmap
 - In process



AC Transit, Oakland, CA
13 buses



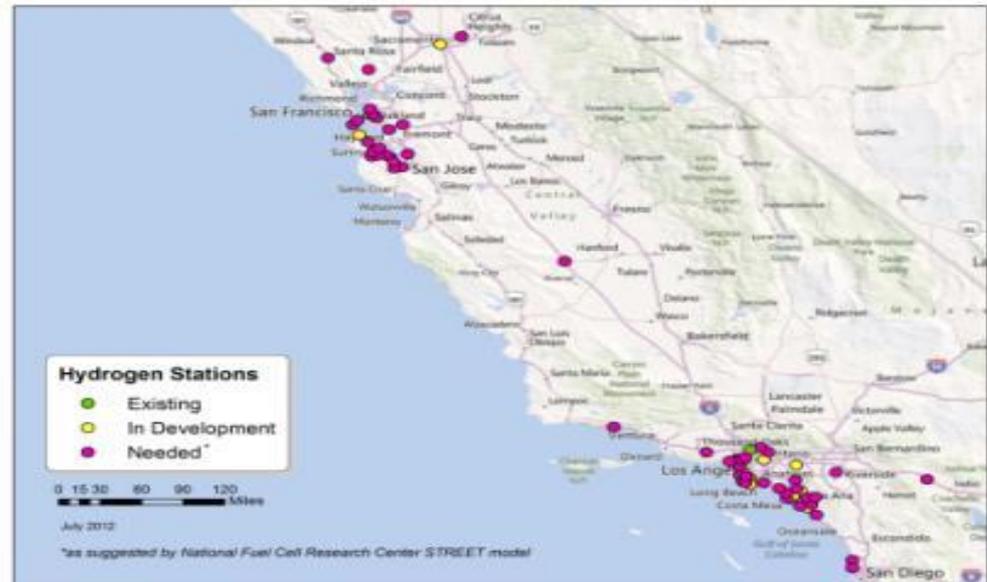
SunLine Transit, Coachella Valley, CA
5 buses
7 more on the way



Stations must come first

- 68 stations provide coverage to enable market launch
 - Supports customer convenient fueling in early markets
 - Enables travel throughout early market regions and state
- 100 stations to support market growth

Map of 68 Hydrogen Fueling Stations:
Existing, In Development
and Needed





Hydrogen stations



Emeryville: H₂ from solar electrolysis and liquid delivery



Newport Beach: H₂ reformation



Fountain Valley: H₂ from wastewater



Harbor City: H₂ gaseous delivery

Southern CA Hydrogen Stations

Open

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

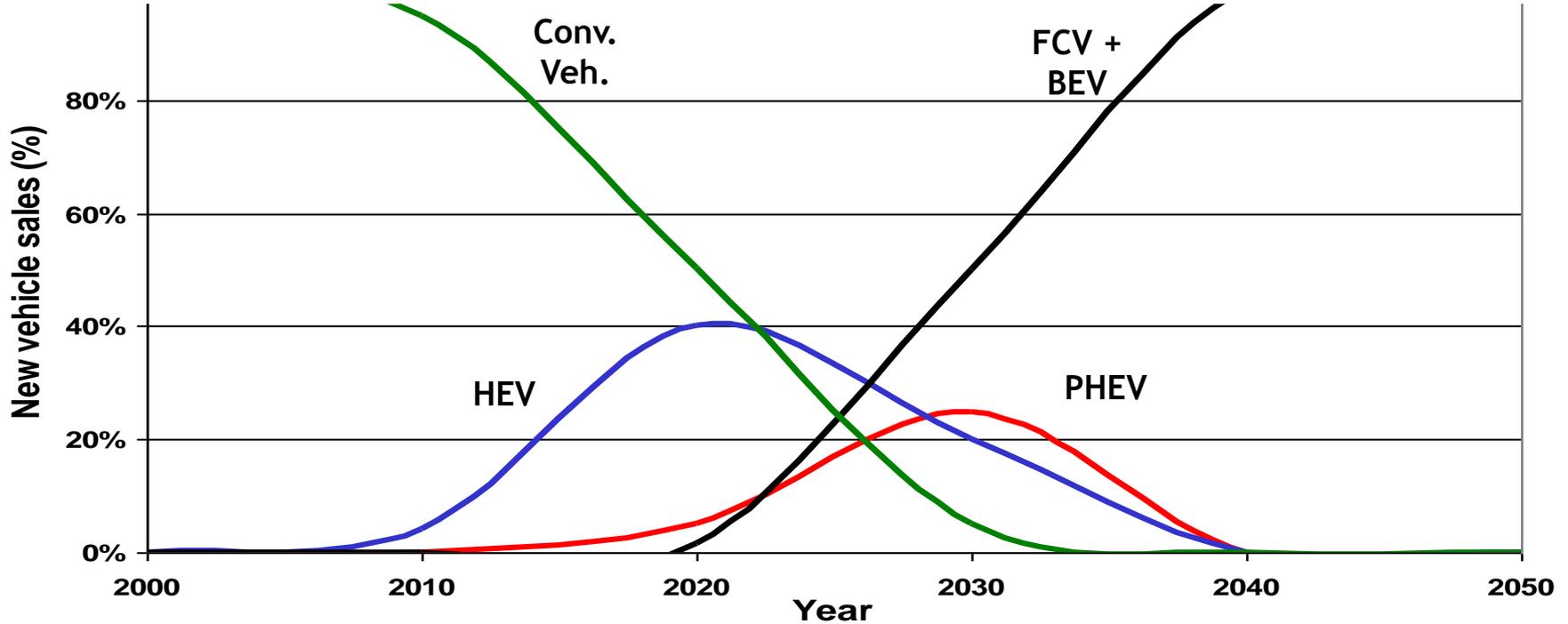
In Development

- Anaheim
- Chino (upgrade)
- Diamond Bar (upgrade)
- Irvine - UC Irvine (upgrade)
- Irvine - Walnut Ave.
- Lawndale
- Los Angeles - Cal State LA
- Los Angeles - West LA 2
- Los Angeles - Woodland Hills
- Los Angeles - Beverly Blvd.
- Mission Viejo
- Redondo Beach
- San Juan Capistrano
- Santa Monica
- *Coalinga
- Costa Mesa
- La Canada Flintridge
- Laguna Niguel
- Lake Forest
- Long Beach
- Los Angeles - LAX (upgrade)
- Los Angeles - Lincoln Blvd.
- Los Angeles - Hollywood Blvd.
- Ontario
- Orange
- Pacific Palisades
- *Riverside
- *San Diego
- *Santa Barbara
- South Pasadena
- *Not shown on map



California Fuel Cell Partnership
www.cafcp.org/stationmap

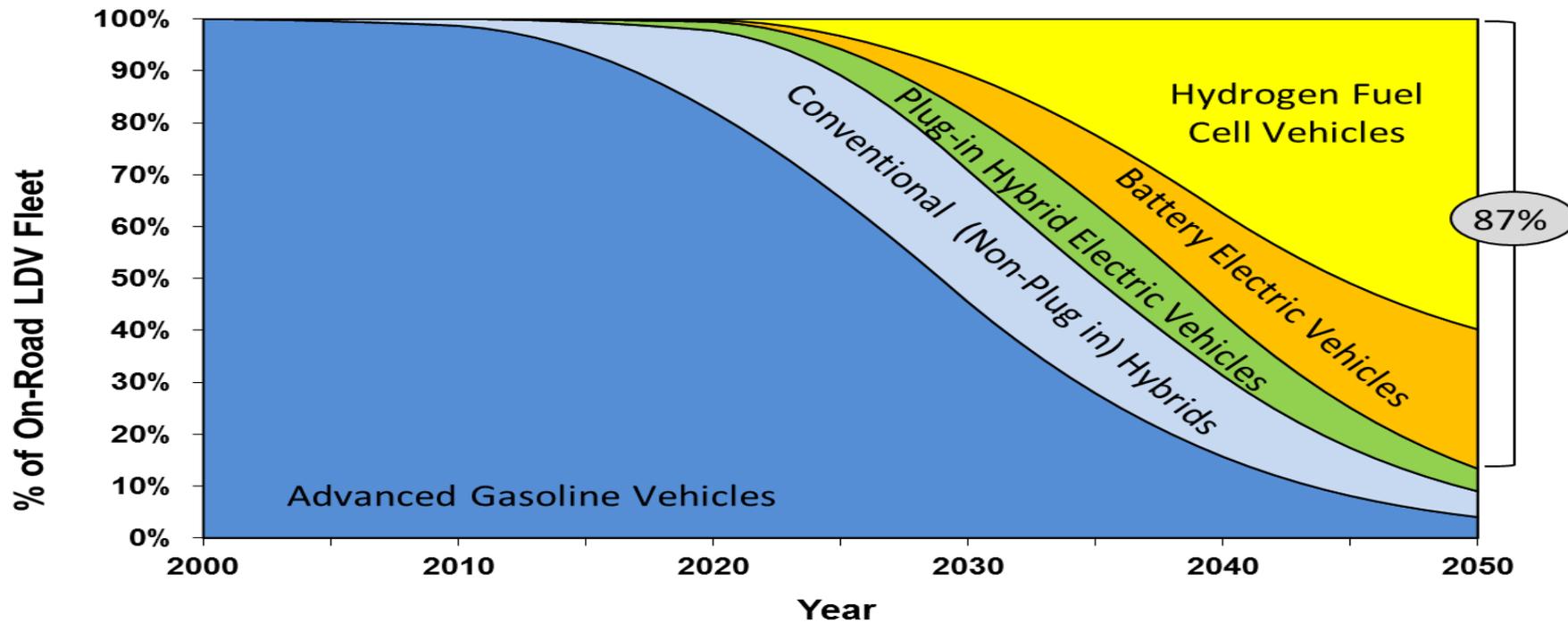
MEETING 2050 GOALS: NEW PASSENGER VEHICLE SALES



ZEV sales reach 100% by 2040, but on-road fleet is still mixed: ZEVs are 87% of on-road fleet in 2050



Meeting GHG Goals





Next H2 station locations

- CaFCP automaker members' suggestions
 - Identifies next 19 stations
 - Two categories: primary priority, secondary priority
- Locations include
 - Thousand Oaks/Agoura Hills
 - Ventura/Oxnard



We're here to help

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California Fuel Cell Partnership

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