Hydrogen Infrastructure

Air Products
Diamond Bar
new H70 nozzle & hose

Linde
San Juan Capistrano

First Element
La Canada Flintridge

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Clean Fuels Program Advisory Group
September 1, 2016

Observations

- Operational ≠ Retail definition
- Availability and Reliability increases confidence
- Throughput is increasing at retail stations
- Dispensed fuel price is steady, supported by automakers & government
- Steady pace of new hydrogen station openings

Hydrogen Station Evaluation

- CDFA/DMS Metrology evaluation of dispensers ongoing

- Fueling Protocol evaluation
  http://standards.sae.org/j2601_201407/
  using HySTEP
  https://h2tools.org/h2first/HyStEP

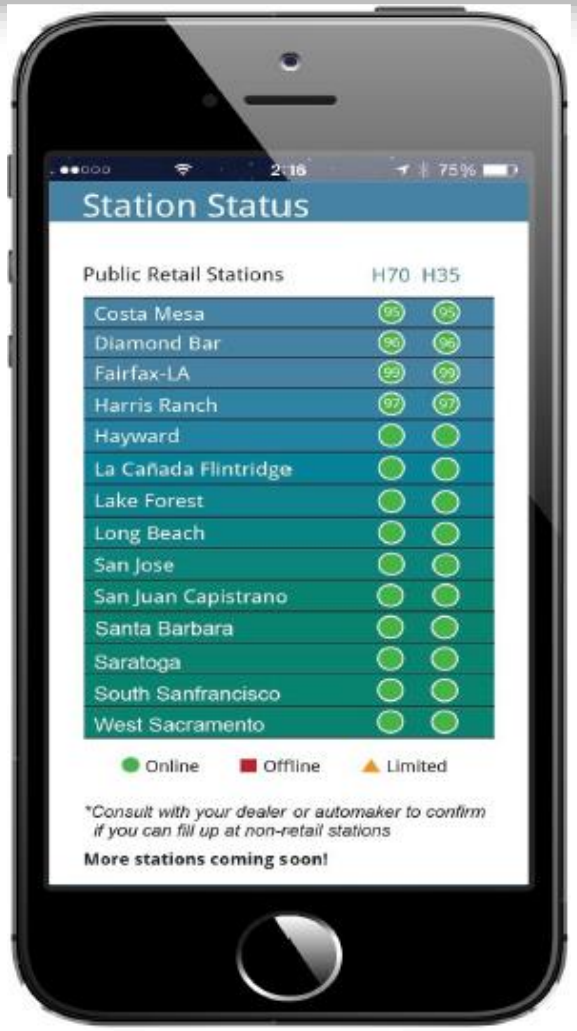
HySTEP Program

- One week test,
  sometimes repeated
- One week evaluation & review,
  sometimes repeated
- Schedule:
  Riverside
  Woodland Hills
  Anaheim

ITM
Riverside

Air Liquide
Anaheim

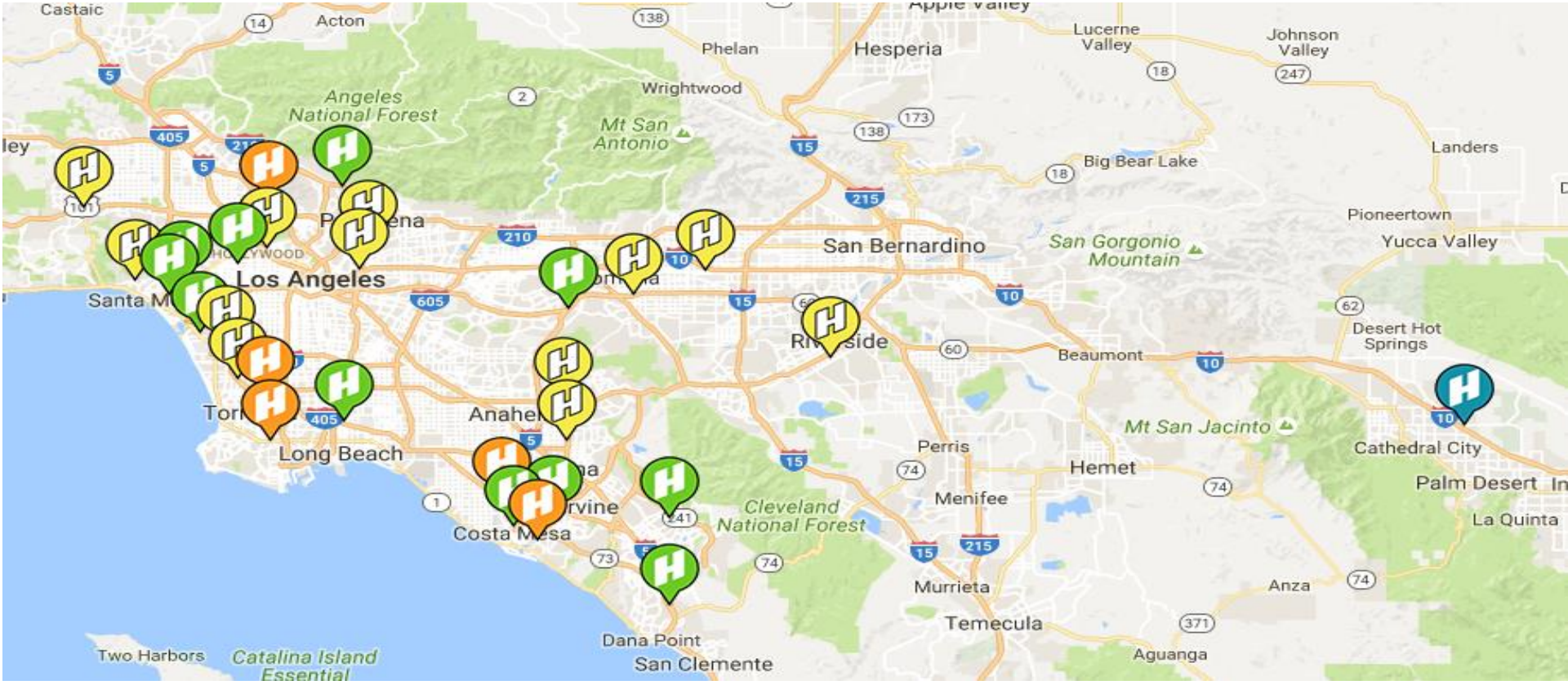
CA Hydrogen Stations



http://m.cafcp.org

- Currently, there are 21 public retail hydrogen stations operating in California
- 11 in SCAQMD
- Adding about 1 station/month
  (Revised) 2016 target –
  25 in CA, 15 in our region
- Upgrades for some non-retail stations in basin and the Coachella Valley

Hydrogen Stations



http://cafcp.org/stationmap

Retail

In Development

Non-Retail

Bus

CARB AB 8 Report

- FCV production survey – annual update
- Hydrogen supply and station development
  - ➢ About 7 stations per year + O&M funding
- GIS tools and database provides gap analysis & input to CEC co-funding process
- By 2020, hydrogen demand from FCEVs may outpace fueling capacity of publicly funded stations

California Fuel Cell Partnership

CaFCP: 2016 Annual Membership & Support:

- Bevilacqua-Knight, Inc. $135,000 total
- Website station map/status transition to retail www.m.cafcp.org
- MD/HD discussions & support
- Restructuring to increase membership

- *From 2013 to 2016, CaFCP's goals relate to Preparing for Market Launch through coordinated individual and collective effort*
  - Coordination
  - Collaboration
  - Communication

Proposed Projects

- Burbank and Newport Beach Station Upgrades
- Location changes
- Renewable Hydrogen Analysis
- Liquid Hydrogen Evaluation
  – Sandia National Lab

- Support for proposals for CEC & DOE Solicitations
- Larger capacity stations for MD & HD

HD Hydrogen Station Evaluation

- Need Codes & Standards dev
  USDOE gap analysis
  CDFA/DMS Metrology
  Fueling protocol development

- Need CA evaluation equipment
  HD dispenser metrology
  HD Fueling protocol

CA Incentives & SCAQMD Demonstrations

Federal & CA Current Incentives

- $2,500 – $7,500 PEV federal tax credit
  $4,000 FCV federal tax credit
- Up to $5,000* through CA Clean Vehicle Rebate
- CA HOV lane access continues to 1/1/19
  PHEVs capped at 85,000 (all issued)
- CA ZEV Action Plan
- 8-State ZEV Action Plan to sell 3.3M ZEVs by 2025
- CEC funding for Infrastructure; EVSE & H2
- Off-peak (TOU) electric rates

*for qualifying fuel cell vehicles

SCAQMD Demonstration Vehicles

Vehicle Type	Demonstration Vehicles In Use
Plug-In Hybrid	
2012 Toyota Prius PHV	2
Chevrolet Volts (2013+2014+2016)	3 + 2 + 1
2014 Ford Fusion & C-Max ENERGI	3
2014 VIA PHEV Chevy vans	2
Battery Electric	
2012 Toyota Rav4 EV	1
Fuel Cell	
2012 Mercedes F-Cell	2
2013 & 2015 Hyundai Tucson FCEV	1 + 1
2016 Toyota Mirai	2
Potential Additions	
Honda Clarity, Chevy Bolt	?Tbd
Plug-In Fuel Cell (Mercedes 2017)	

SCAQMD's Clean Air Choices Program

- Features the cleanest new retail passenger vehicles
- Part of the AQMD website http://www.cleanairchoices.org.
- Out of 71 models listed for 2016
  - 16 Zero Emission (2 hydrogen fuel cell & 14 battery electric)
  - 16 Advanced Technology Partial (or new Transitional) Zero Emission
    - 0 CNG
    - 7 gasoline hybrid
    - 9 plug-in gasoline hybrid
  - 39 Partial Zero Emission gasoline
- Outreach Efforts with clean and efficient vehicles
- Website updates

CleanAir CHOICES