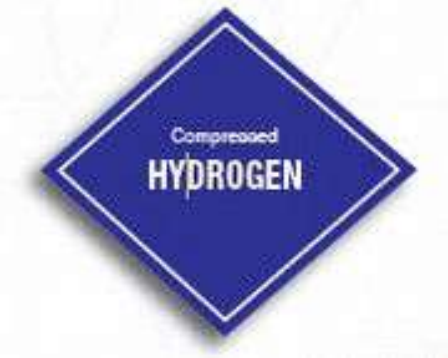


Clean Fuels Program Advisory Group Meeting

Stationary

Hydrogen Fueling Infrastructure

February 8, 2012

Larry Watkins
Technology Advancement Office

AQMD Support for H2 Infrastructure

Original five cities	$1,916,000
Five cities contract extension	1,079,000
Burbank O&M*	200,000
Torrance Pipeline	489,051
Fountain Valley	750,000
UCI support	1,063,400
CEC Awards to APCI	1,000,000
Diamond Bar station	1,107,000
TOTAL	$7,604,451

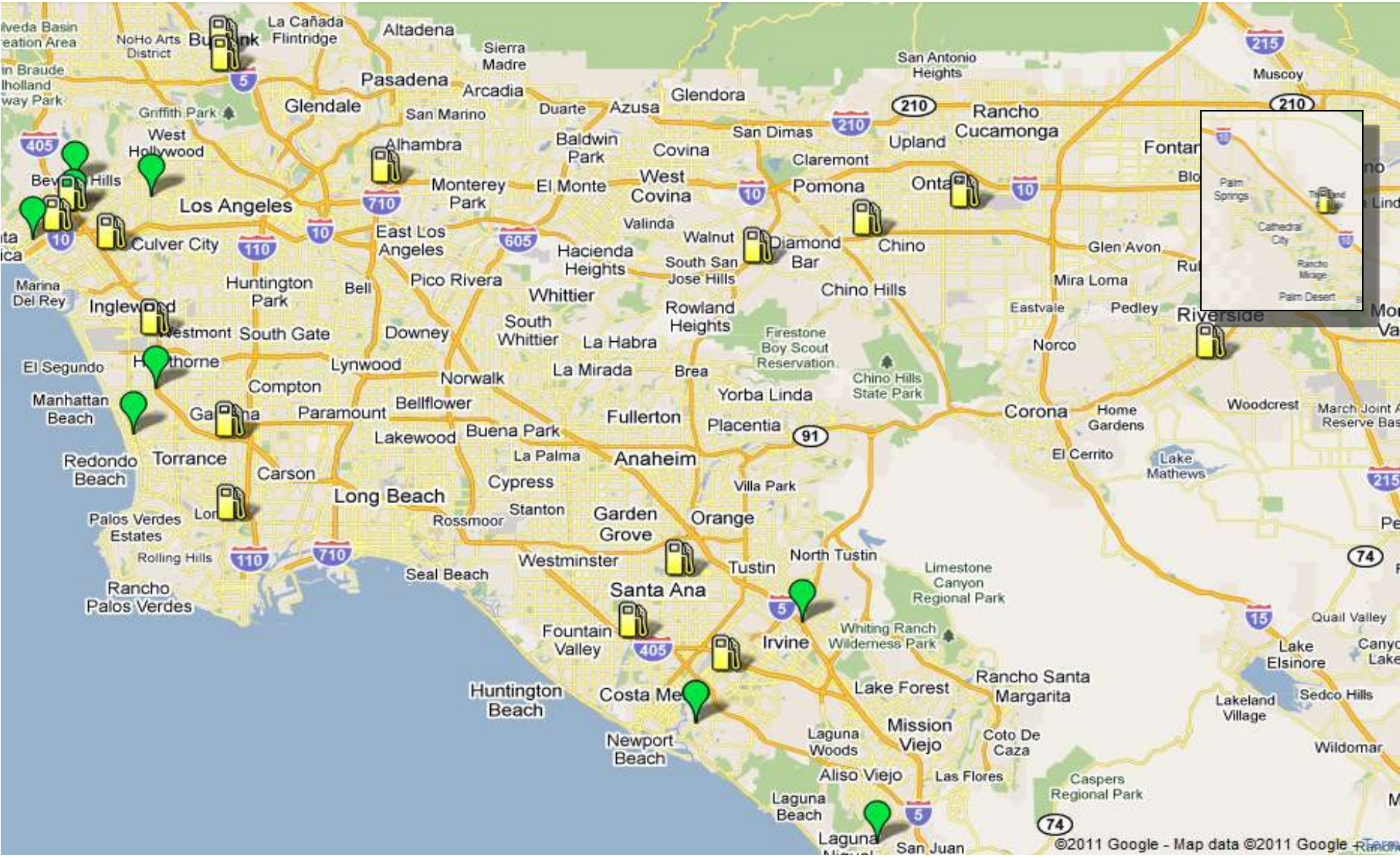
*(also $300k from CARB & $360k from DOE)

Stationary and Mobile Fuel Cells

- California Fuel Cell Partnership
- CA Stationary Fuel Cell Collaborative
- Bridge to transportation and renewable feedstock

Courtesy of FCE and APCI

Hydrogen Fueling Stations
Current and Planned



AQMD Hydrogen Station

- AQMD hydrogen fueling needs have increased with vehicle growth
- 24 kg/day current capacity
- 150 kg/day new station capacity
- 350 and 700 bar
- CEC AB 118 funding for APCI built Station at AQMD – 18 months

Fountain Valley Project

- Orange County Sanitation District
- Use digester gas as feedstock
- Molten Carbonate Fuel Cell
  - Produces electricity, hydrogen
  - Waste heat is recovered

- Hydrogen is dispensed from a refueling station for fuel cell powered vehicles
- 100% renewable source of energy and hydrogen
  - 100 kg/day of hydrogen

- $750,000 AQMD cost; $8.7 million total project cost

Other AQMD Funded Hydrogen Stations

- Burbank
  - $860k funding from ARB, NREL & AQMD
  - 350 & 700 Bar, 20kg/day, MBZ, GM, Hyundai
- University of California, Los Angeles
  - Shell Culver City equipment, Burbank electrolyzer
- California State University, Los Angeles
- Linde, Laguna Nigel $250k in cost-share

Retail Stations Still Needed

Shell Newport Beach


Shell Hydrogen – Santa Monica

CalState LA

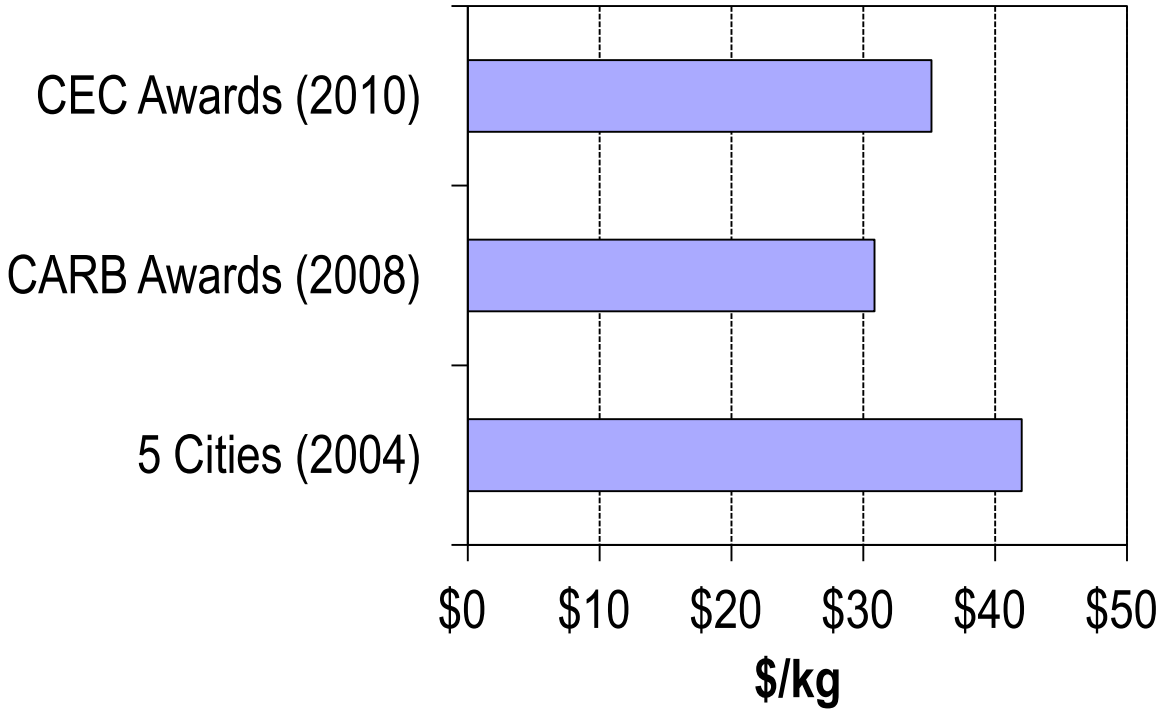
Mebtahi-Chevron, Harbor CIty

Courtesy of CARB

CA Station Costs

Highly variable depending on

- Technology
- Renewables
- Capacity
- Number
- Production vs. Delivery



Hydrogen Vehicle and Infrastructure Summary

- Southern California is primary market
- Infrastructure and vehicles must be deployed together
- Early deployments highly dependent on government support (no business case)
- Infrastructure is critical for early success and further deployments
- Need to re-engage Federal government

Clean Fuels Outlet Regulation

- ZEV regulation -technology forcing piece of the ACC program
  - Push mfg's to produce ZEVs & PHEVs
  - 2018 - 2025 model years to ensure fleet turnover for 2050
  - Applies only to ZEVs and ZEV fuels.
  - Adds regulatory review for PEVs.
  - Changes regulated party to producer/importers of gasoline
  - Add a lower regional activation trigger (10,000 SCAB)