



Clean Fuels Program Advisory Group Meeting

Stationary

Hydrogen Fueling Infrastructure

August 29, 2012



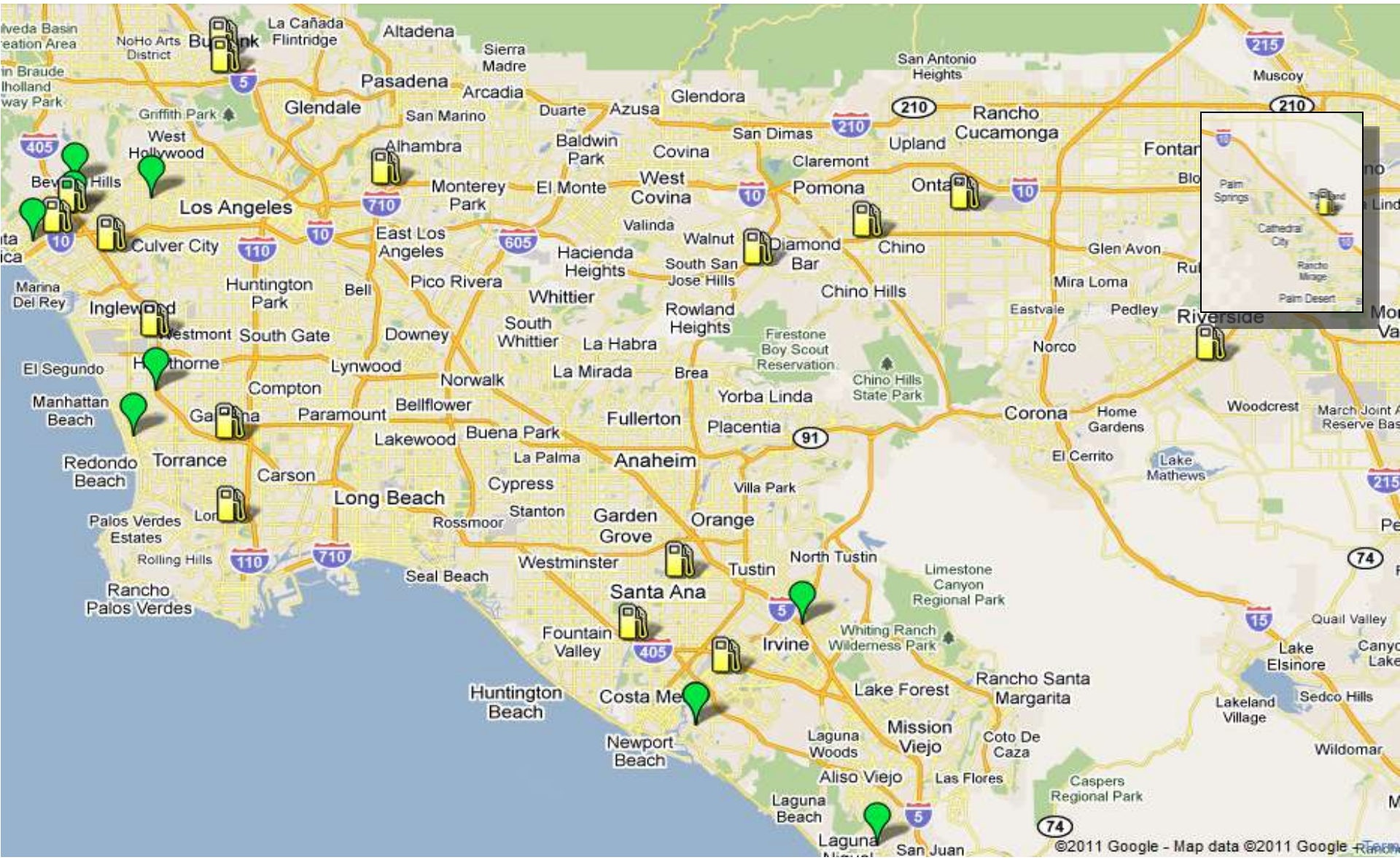
Larry Watkins
Technology Advancement Office

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	<u>\$1,107,000</u>
.TOTAL	\$7,604,451

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

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 Niguel \$250k in cost-share



Retail Stations Still Needed



Shell Newport Beach



Shell Hydrogen — Santa Monica



CalState LA



Mebtahi-Chevron, Harbor City

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



Hydrogen Infrastructure Incentive Funding

- What defines the optimal hydrogen station location?
- What is the best approach for selecting site locations for stations in the future?
- How should incentive funding provided by government be structured?
- Leverage CEC funds to allow it to fund more stations for a given amount of funding.
 - Long-term financing, interest-only, bonds, tax credits
 - Revenue support; tiered payments, loan guarantees

