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Honda's View on H₂ Infrastructure Needs

February 17, 2009

For Input to CEC AB118 Investment Plan

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FCX Clarity

○ First Customers

- First deliveries in July, 2008 (five to-date)
- Customers include: H.S. Principal, D.A., Actress, etc.
- Selection process: geography, driving patterns, access to infrastructure



○ First Fuel Cell Vehicle Dealership Network

- Three Official Clarity/FCX dealerships: Santa Monica, Torrance, and Costa Mesa
- Clarity dealership responsibilities:
 - Sales, Service, Parts, Customer Relations



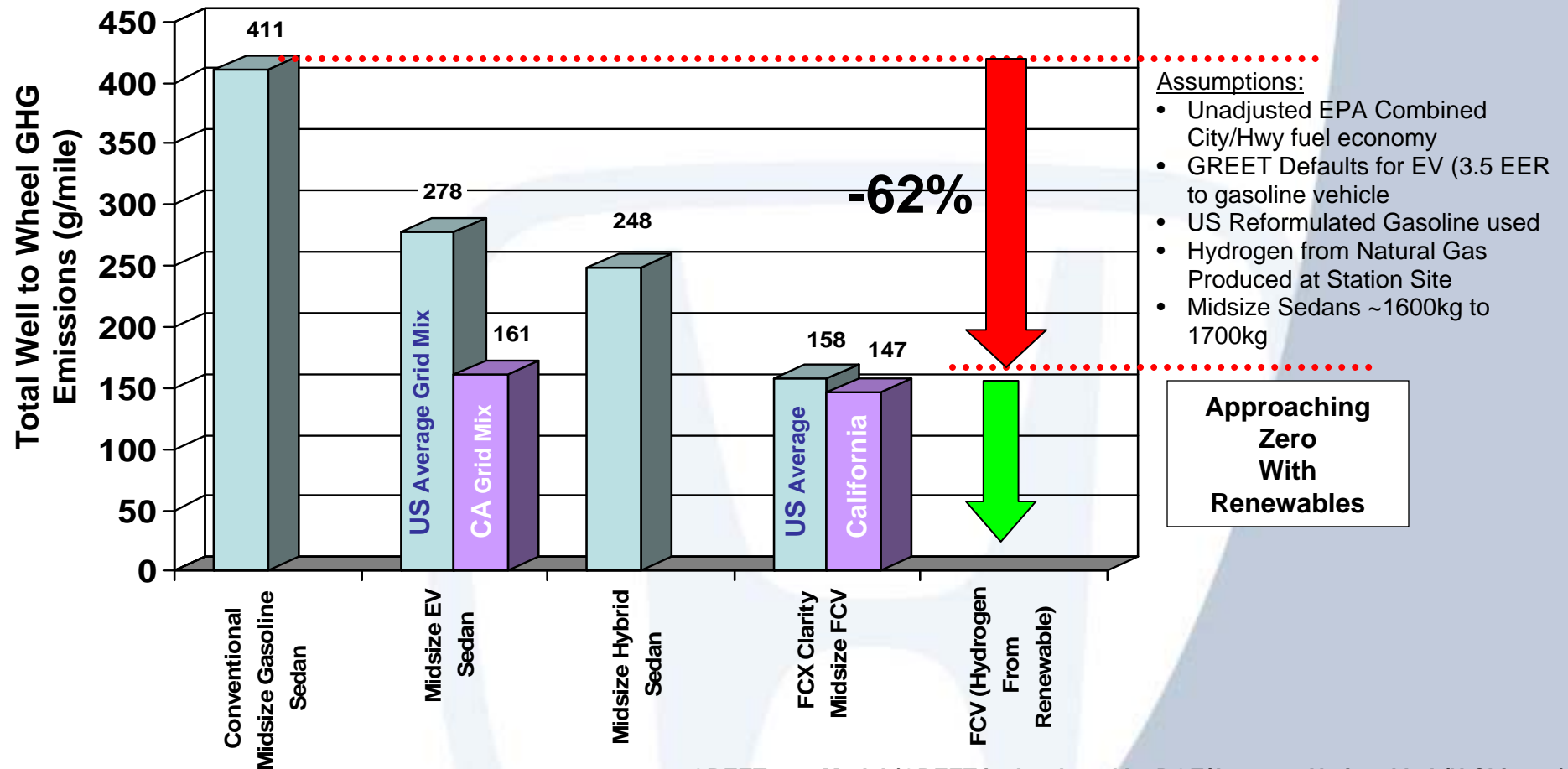
○ Fuel Cell Production

- Dedicated FC Production: Exclusive Clarity factory
- Dedicated FC stack production, with Honda-unique manufacturing equipment



Well to Wheel Emissions for Midsize Sedan

- Midsize Fuel Cell Sedan can achieve over 60% reduction in CO₂ using Natural Gas to produce Hydrogen
- 40% less CO₂ than BEV Sedan on U.S. Avg. Grid Mix



GREET 1.8a Model (GREET is developed by DOE/Argonne National Lab/U.Chicago)

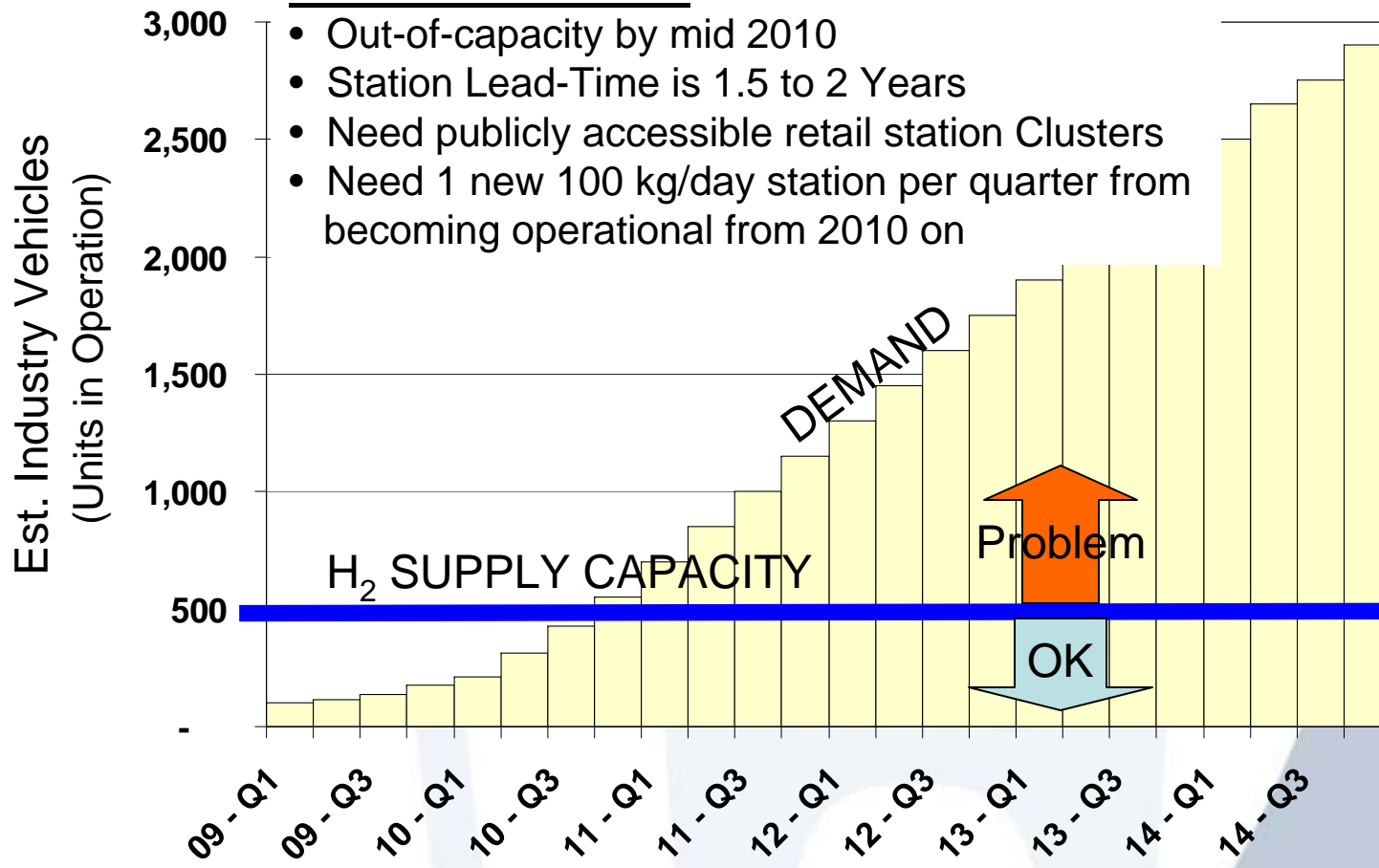
FC Vehicle – Estimated Industry Volumes

Calendar Year	New Vehicles	Units in Operation
2009	Hundred	Hundreds
2010	Hundreds	Hundreds
2011	Hundreds	Hundreds
2012	Hundreds	Thousands
2013	Hundreds	Thousands
2014	Thousand	Thousands
2015+	Thousands	Thousands

LA Basin H₂ Station Capacity vs Demand

H2 Station Concerns:

- Out-of-capacity by mid 2010
- Station Lead-Time is 1.5 to 2 Years
- Need publicly accessible retail station Clusters
- Need 1 new 100 kg/day station per quarter from becoming operational from 2010 on



Shifting the Infrastructure Paradigm

Chasing H₂ Infrastructure

Station Technology (DOE)

Early Fleet Research (AQMD)

University Effort (UCI/UCD)

Marketing

- Target Customers
 - Demographics
 - Mind-Set
 - Station proximity

Market Driven

Market-Driven Fundamentals:

- Building Hydrogen Communities
- Target Customers
 - Demographics
 - Mind-Set
 - Emotional Appeal
- Sustainable Markets
 - “Neighbors tell neighbors”

“Market Driven” Infrastructure

- **Begin with Markets**

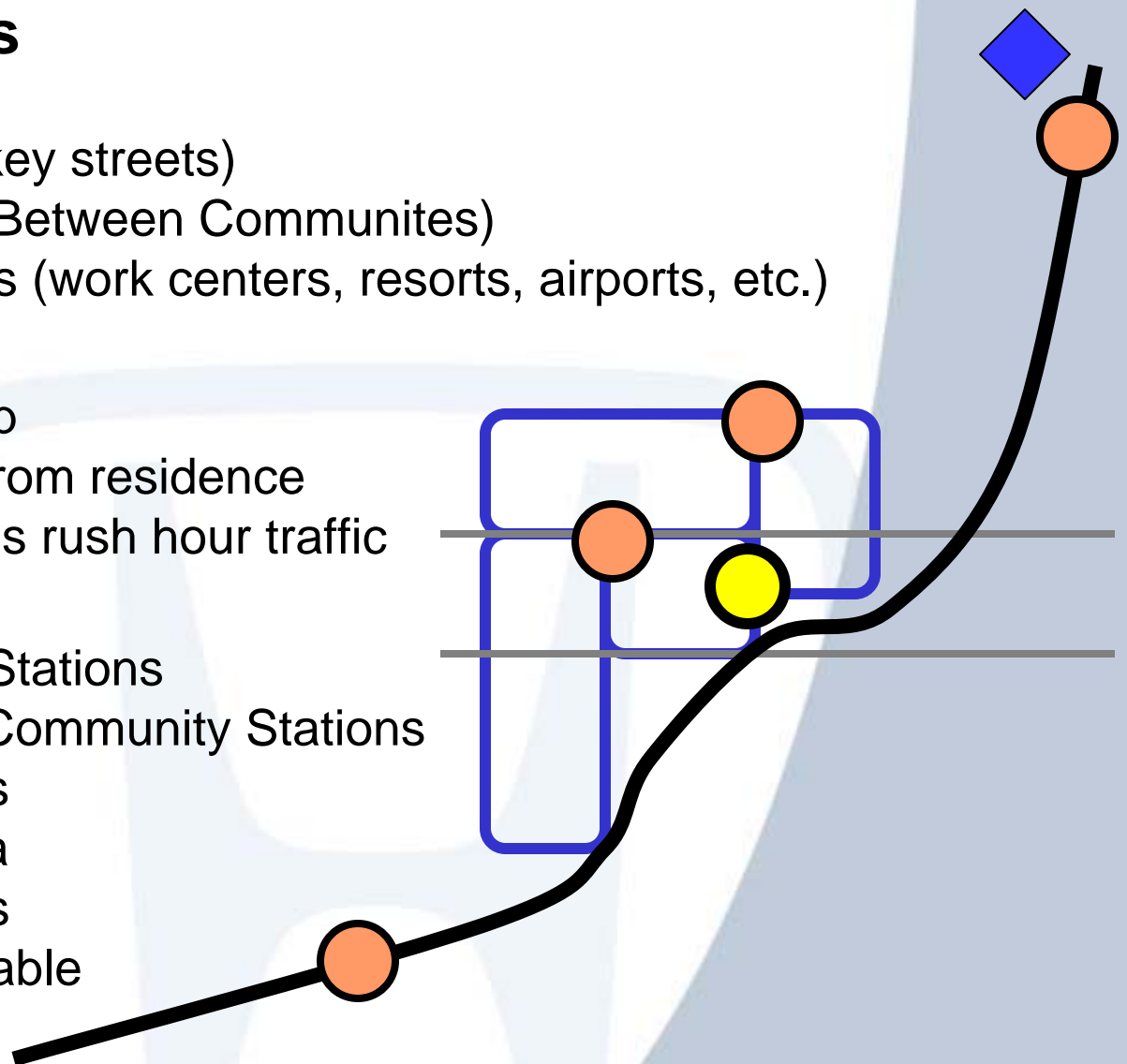
- Identify Communities
- Consider Corridors (key streets)
- Consider Highways (Between Communities)
- Consider Destinations (work centers, resorts, airports, etc.)

- **“Cluster Concept”**

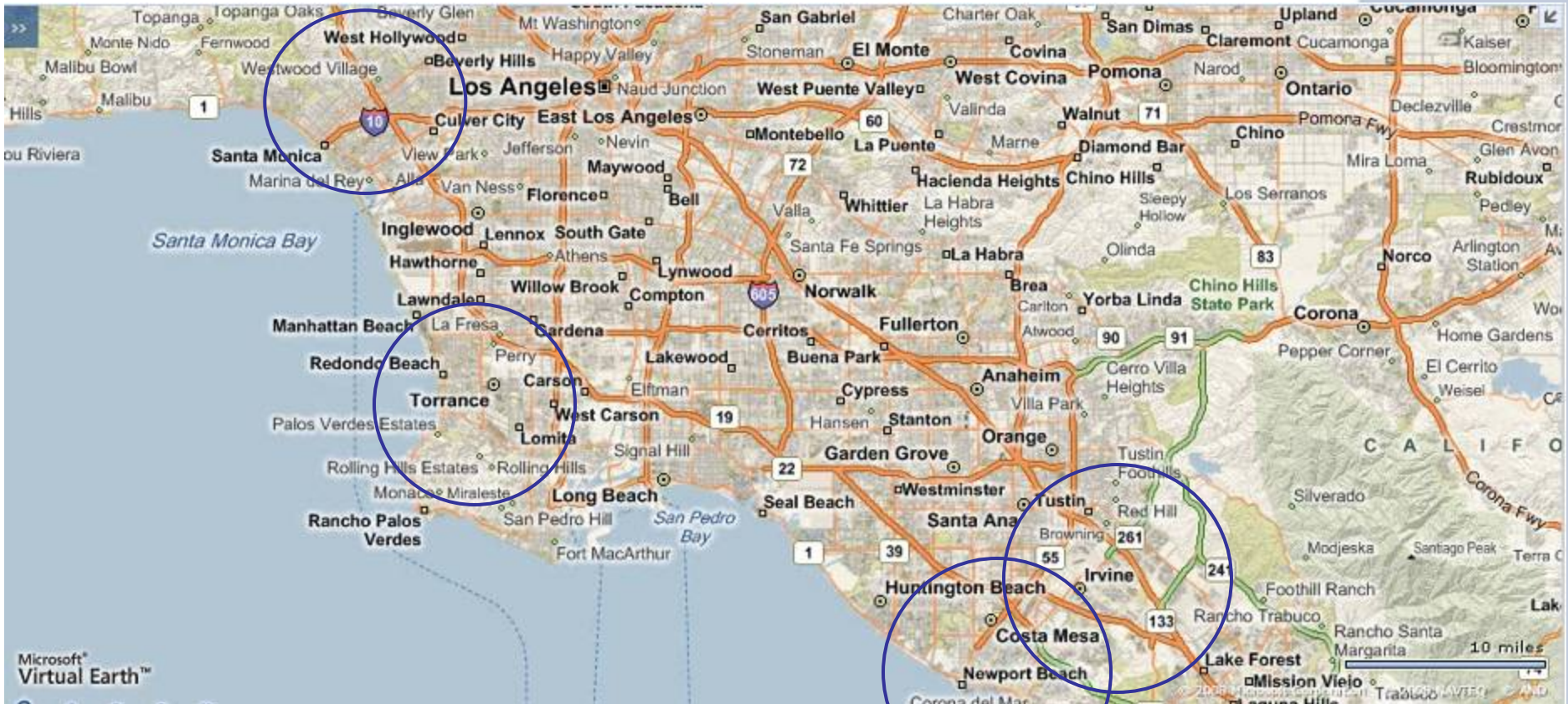
- Redundancy / Backup
- Primary - 5 minutes from residence
- Backup - ≤ 15 minutes rush hour traffic

- **Consider Stations**

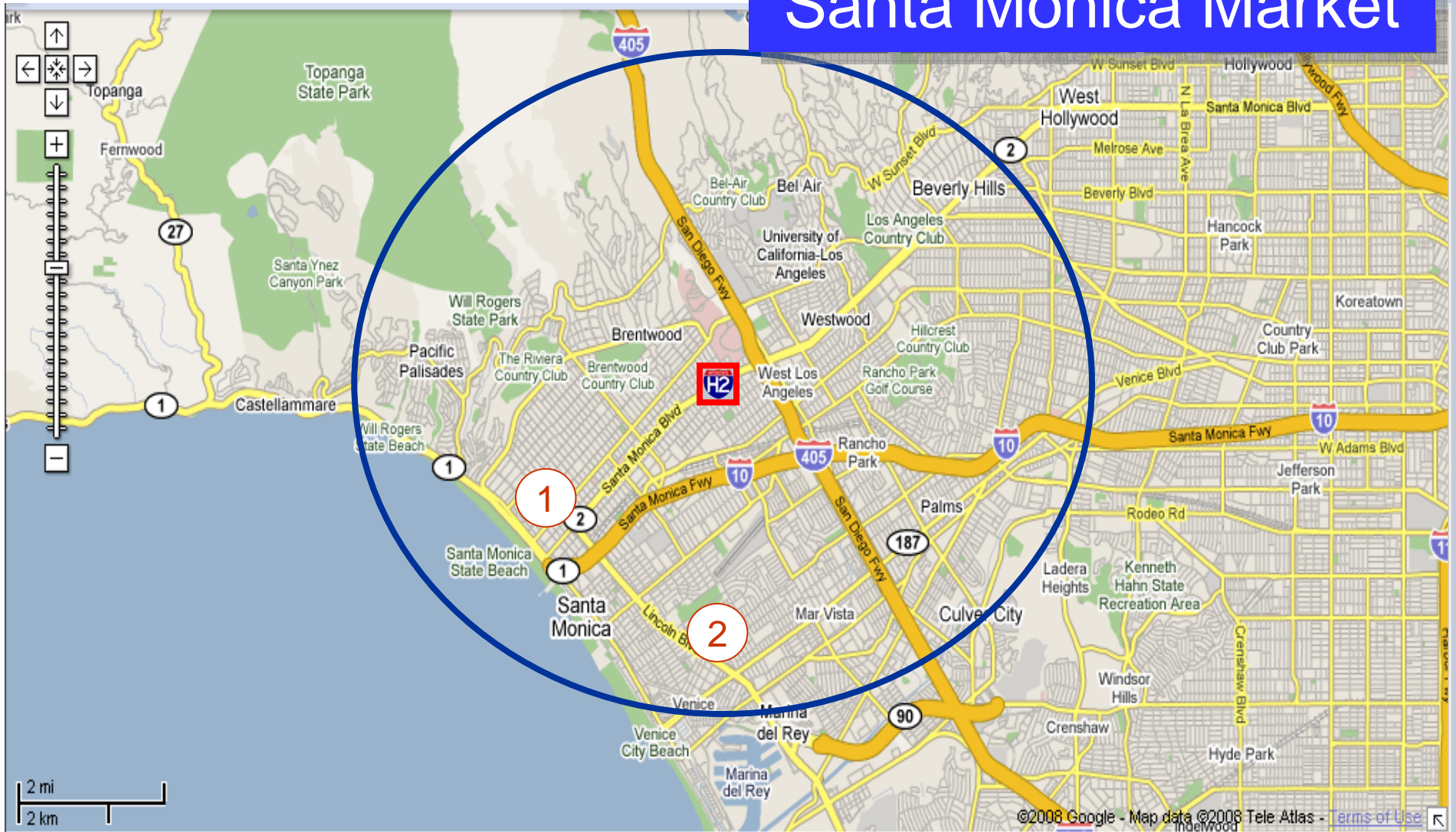
- “Marquee” or Image Stations
- Smaller Convenient Community Stations
- Destinations & Nodes
- Mix of 35 and 70 mpa
- Diverse Technologies
- Diverse Sizes, Scaleable



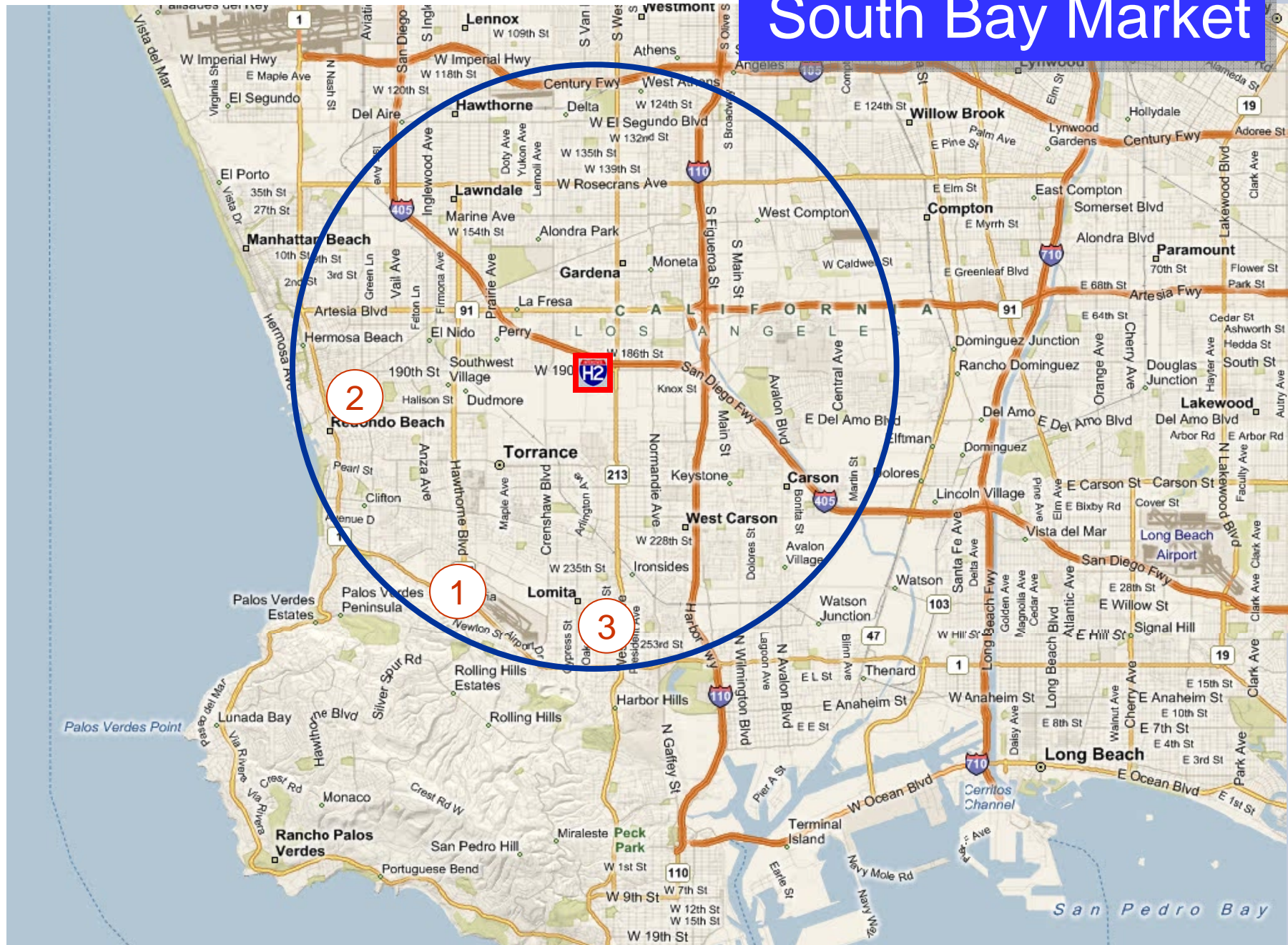
LA Markets with the highest H_2 / Clarity Interest



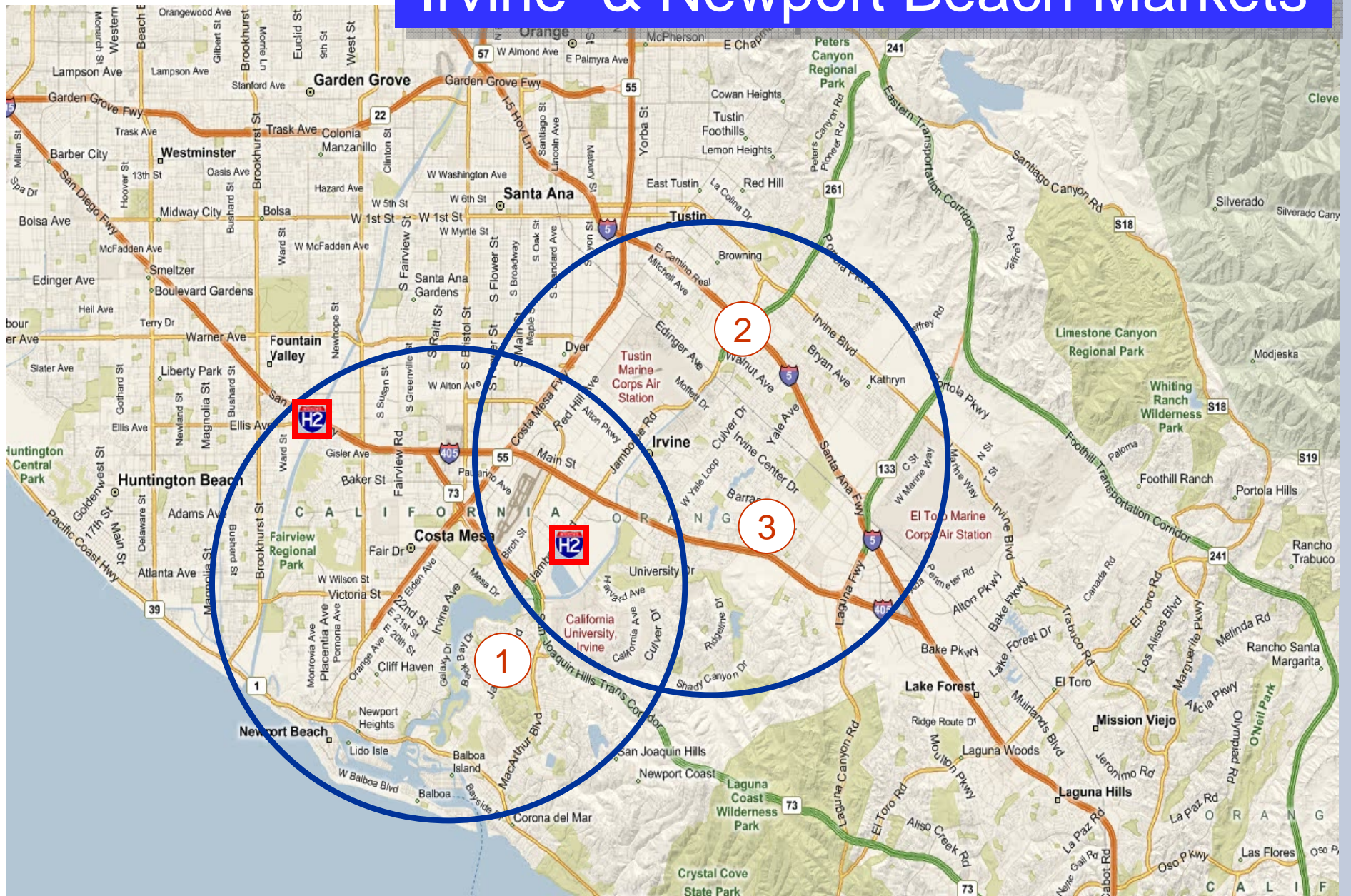
Santa Monica Market



South Bay Market



Irvine & Newport Beach Markets



H₂ Station Infrastructure Funding Needs

H2 Station Funding Needs:

- 1 new 100 kg/day station coming on-line per quarter beginning from mid-2010
- Stations need to be clustered in early “Hydrogen Communities” where demand is expected
- Stations need to be “Retail Oriented”
 - Good ingress, egress
 - Well Lit, Clean, visibility from the street
 - On Well-traveled Streets
- “Semi-Permanent” Stations are OK if:
 - “Mobility” is hidden
 - Separate Pump and Dispenser that is permanent is OK

HONDA

The Power of Dreams

