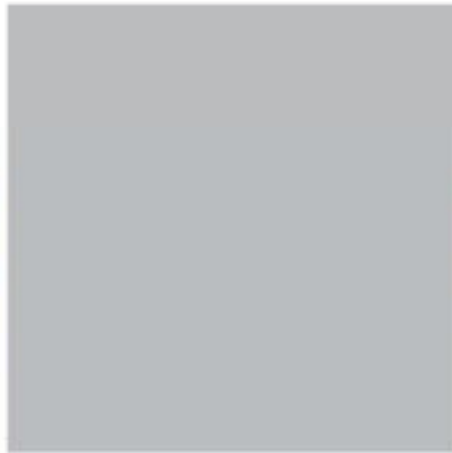


Welcome to the California Fuel Cell Partnership



Public Tour 2011



AUTOMOTIVE

Chrysler
Daimler
General Motors
Honda
Hyundai
Nissan
Toyota
Volkswagen

ENERGY

Chevron

TECHNOLOGY

AFCC

GOVERNMENT

CA Energy Commission
CA Air Resources Board
South Coast AQMD
US EPA
US DOE
US DOT

ASSOCIATE

AC Transit
Santa Clara VTA
SunLine Transit
Air Liquide
Air Products
Linde
Praxair
Ballard Power Systems
Powertech
ITS – UC Davis
NFCRC – UC Irvine
CA Dept. of Food & Ag



Activities today



Air quality



Global warming



Petroleum dependency



Fuel cell vehicles



Zero tailpipe pollution



Reduce GHGs



Sustainable, domestic fuel

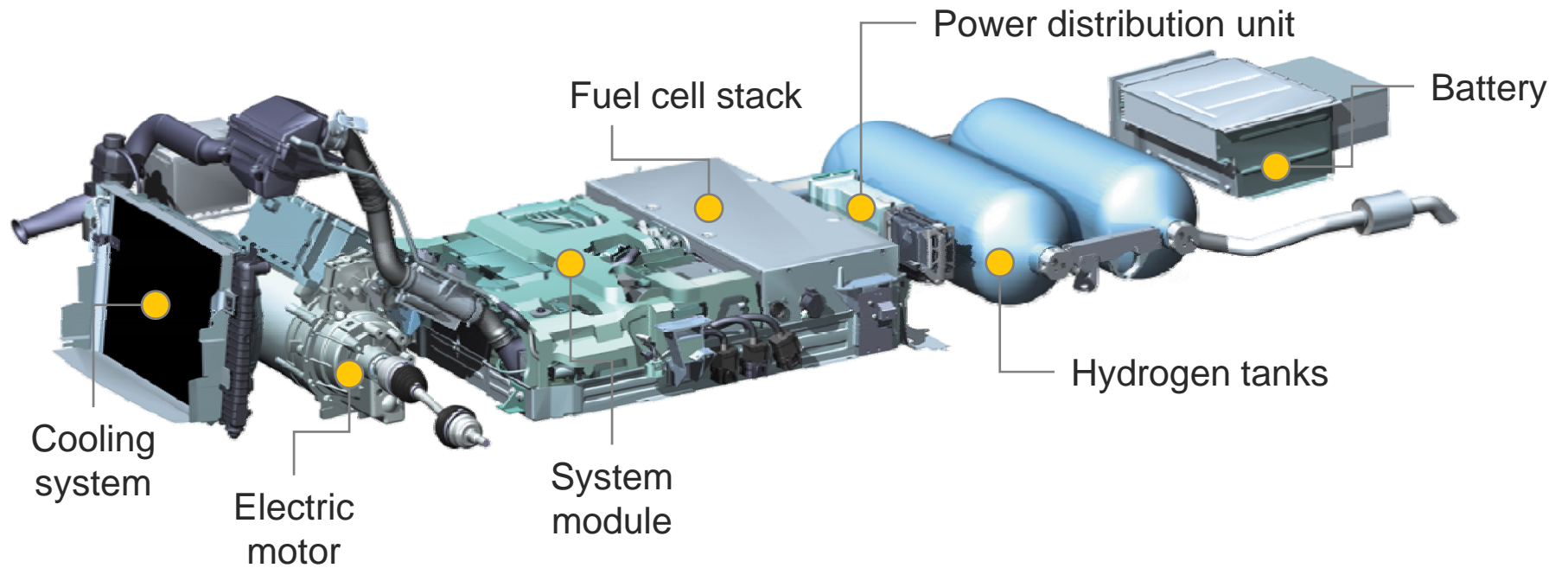


Vehicles people want to drive

How a fuel cell works



FCV system



Why hydrogen?

- ▶ Excellent energy carrier
- ▶ Nonpolluting
- ▶ Reduced GHGs
- ▶ Economically competitive
- ▶ As safe as gasoline
- ▶ Every region can make its own fuel



Where do we get H₂?

Renewable sources



*Solar, wind,
geothermal,
hydro, biomass, algae*

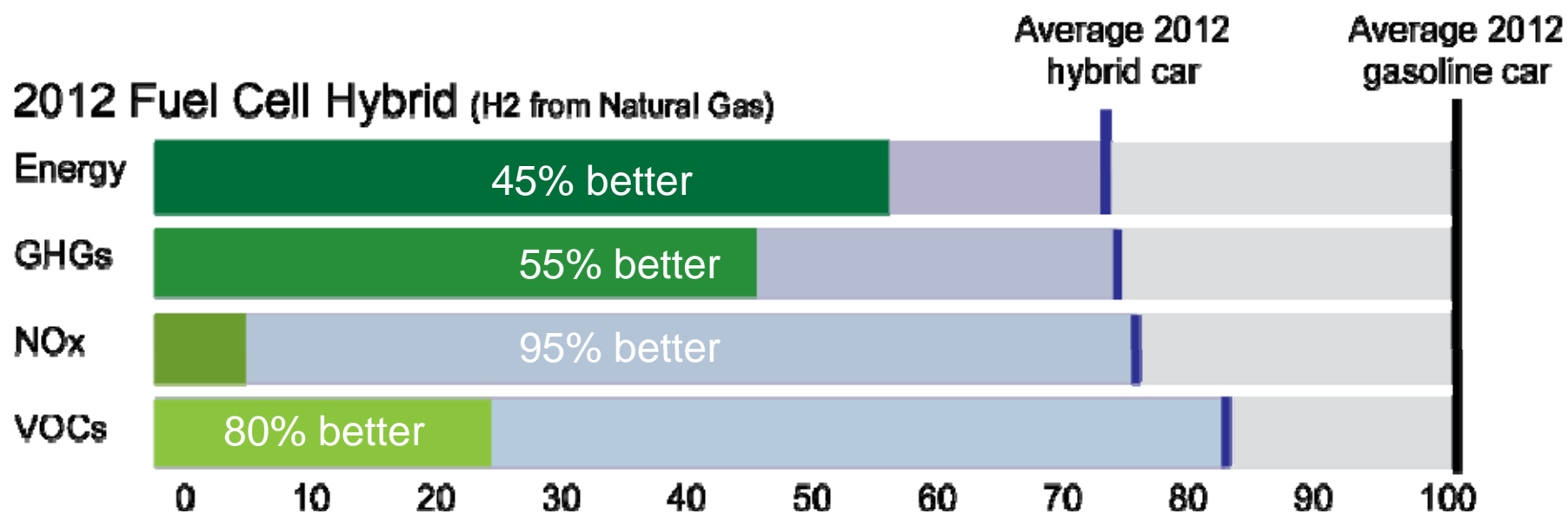
Traditional sources



*Natural gas, methane,
gasoline, nuclear, coal*



Well-to-wheels



Data from CEC-600-2007-004-REV, August 2007

FCVs & stations in California



- ▶ 466 FCVs + 21 FCBs since 1999 (as of 6/30/11)
 - 177 FCVs + 14 FCBs on the road now
- ▶ >3.7 million road miles (FCVs only)
- ▶ 22 operating stations
 - 6 public stations
 - 16 private stations
 - CaFCP station: >20,000 fueling events
- ▶ 8 stations in development
- ▶ 8 stations in planning/funding
- ▶ California is on track to have 20 public H₂ stations by early 2013

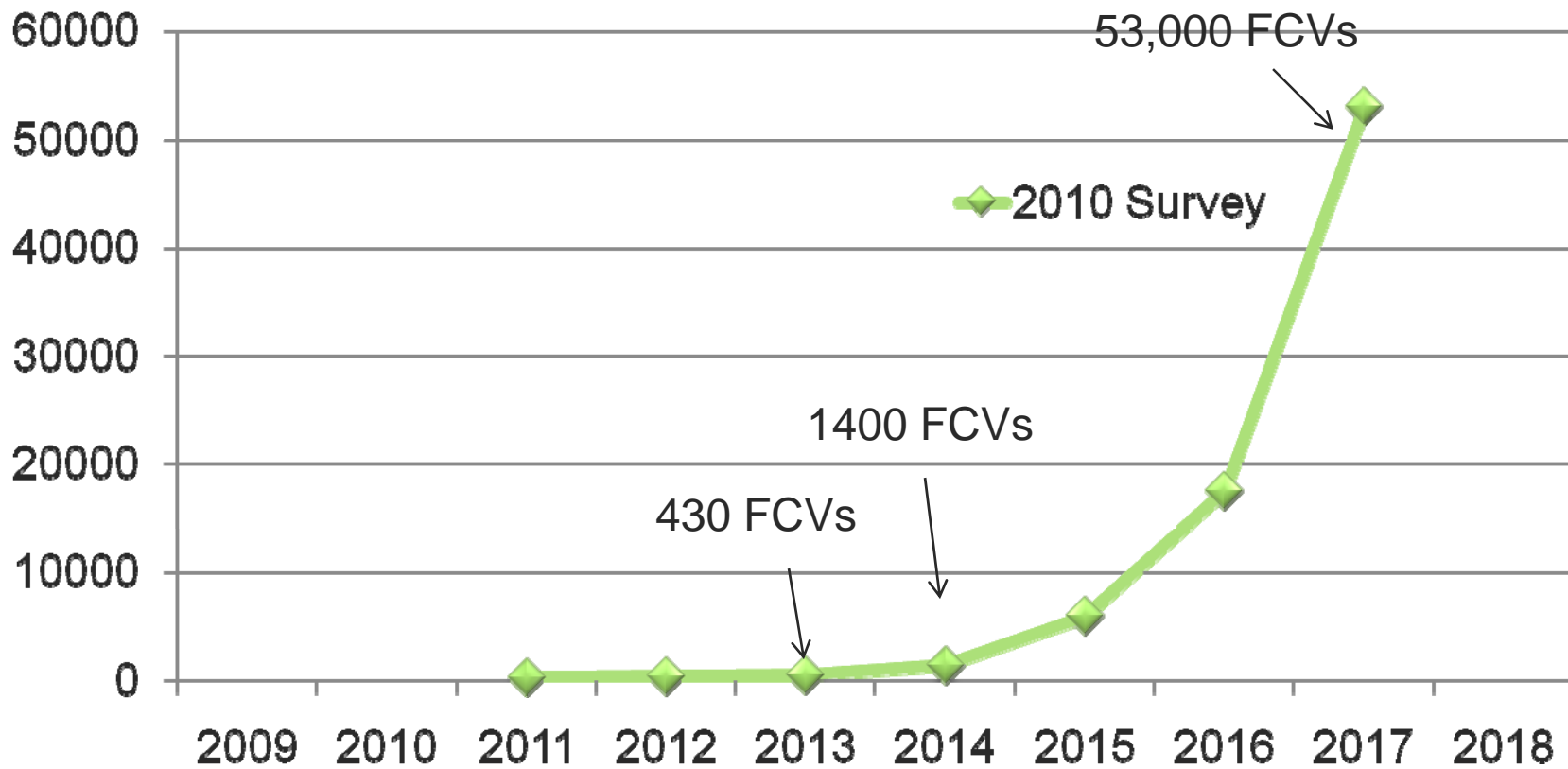


CaFCP action plan



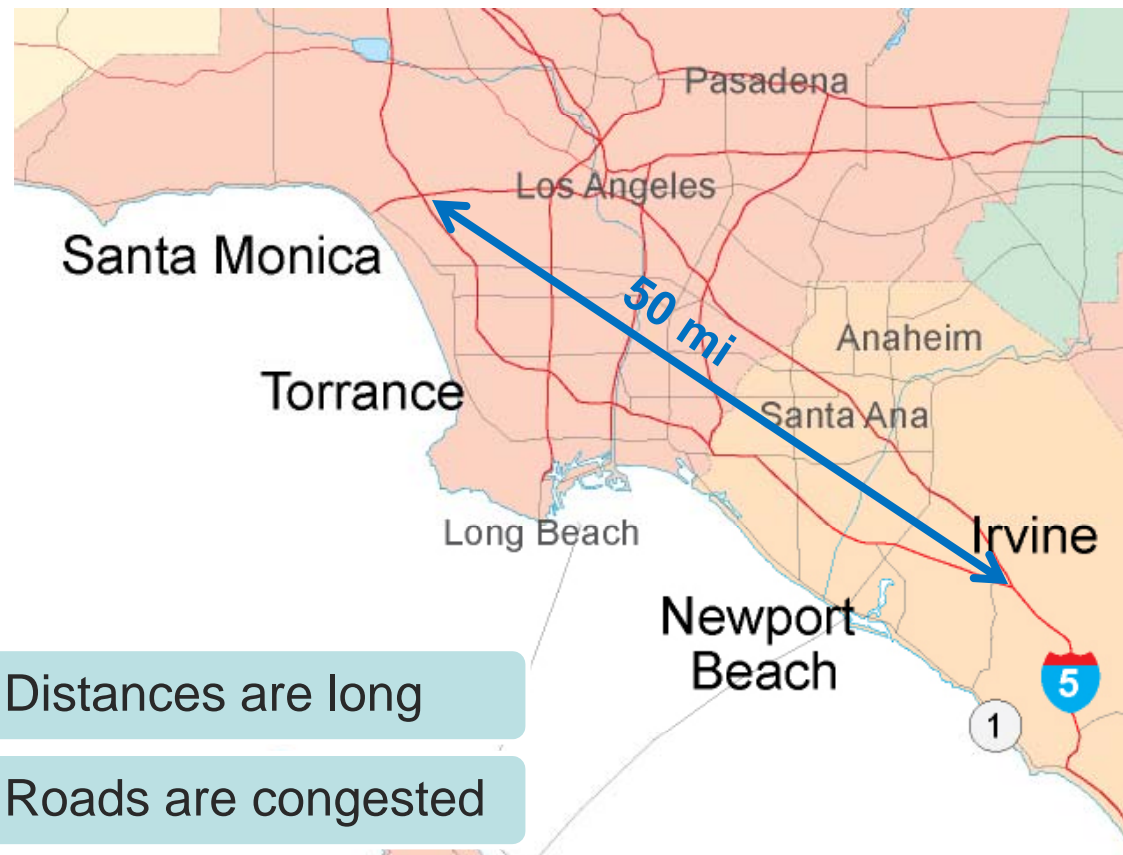
- ▶ Goal: Develop a fueling network to launch commercial market in 2015
- ▶ By 2015:
 - Thousands of passenger vehicles
 - Dozens of buses
 - Approximately 40 hydrogen stations
- ▶ To get there:
 - Build stations to support pre-commercial vehicles
 - Synchronize and augment regulations and policies
 - Complete codes and standards for retail hydrogen sales
 - Support business models developed by the private sector
 - Support early market communities

Automaker survey results*



* Survey conducted in December 2010. Results are FCVs on road in California.

Driving in Los Angeles

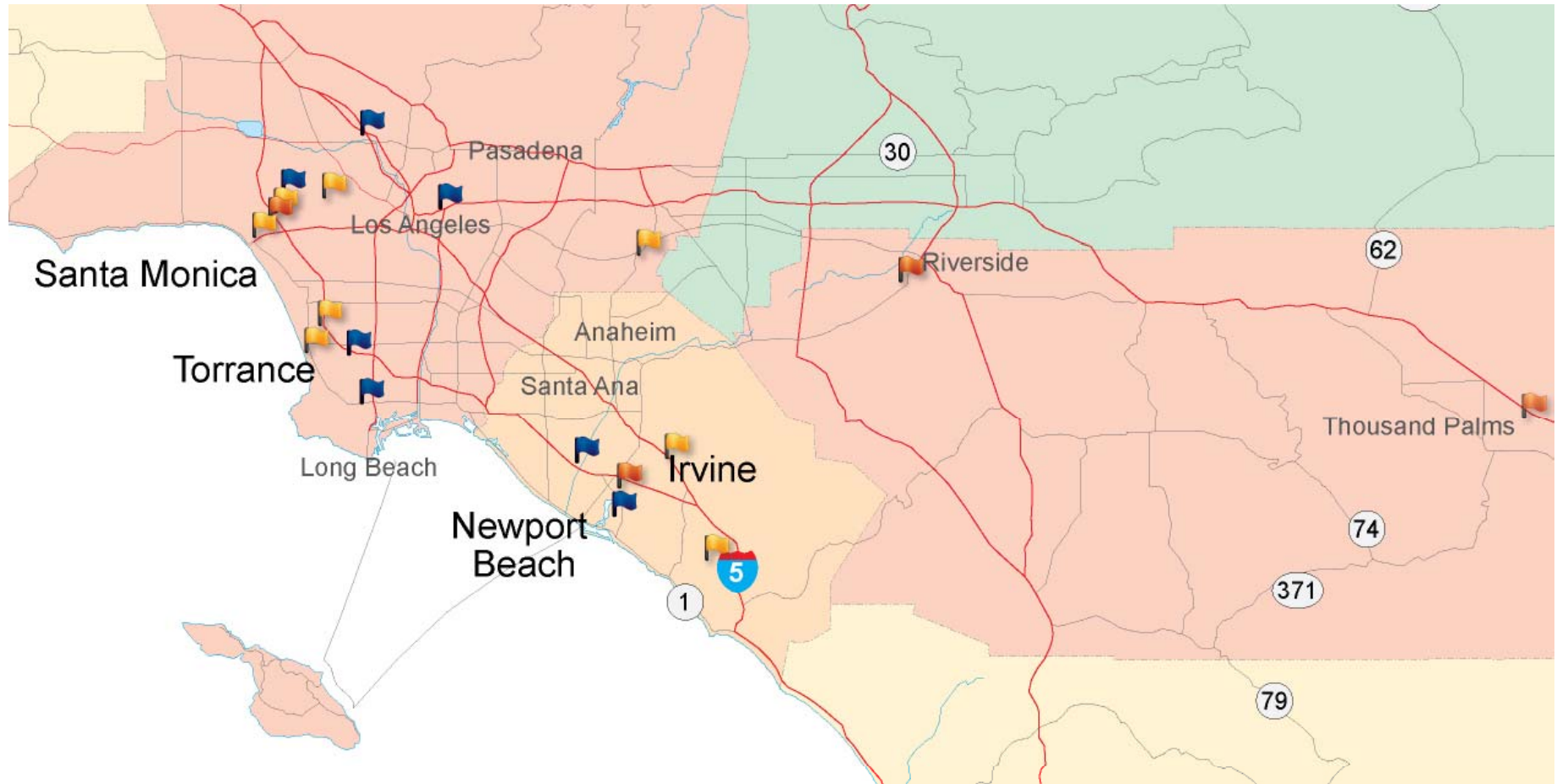


Distances are long

Roads are congested

Minimal public transit

LA-area stations by early 2013



Next-generation H₂ stations



Fountain Valley

100kg/day

Hydrogen from biogas

Opened August 2011



Los Angeles (CSULA)

60 kg/day

On-site solar electrolysis

Open Q4 2011



CaFCP actions



- ▶ Supporting codes and standards development
 - Retail sale of hydrogen as fuel by 2012
- ▶ Working with fuel marketers
 - Better understanding of business factors
- ▶ Creating customer systems
 - Vehicle authentication and station availability
- ▶ Building community support
 - Permitting, training, education and information
- ▶ Focusing on renewables
 - Workshops to evaluate adoption renewable hydrogen

Customer's point of view



- ▶ Convenient locations and hours
- ▶ Same process everywhere
- ▶ Fast fueling at peak hours
- ▶ No range anxiety
- ▶ Standard payment methods
- ▶ Safe and easy