



# TAKECHARGE

ELECTRIC VEHICLES IN THE SACRAMENTO REGION



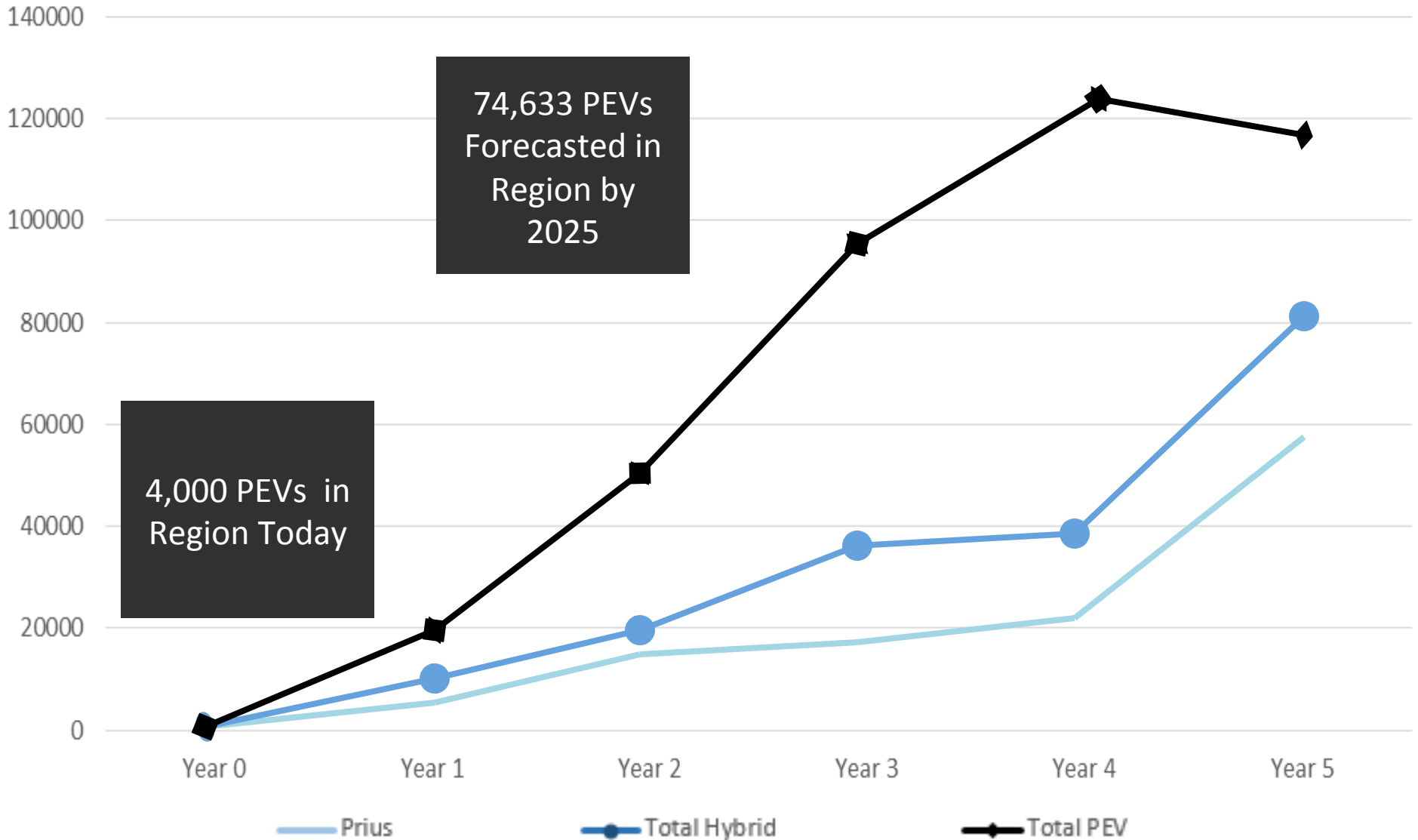
SACRAMENTO METROPOLITAN



VALLEY VISION



# Nationally, Volt and PEV Annual Sales Lead Prius and HEV Sales During First 2 Years of Rollout

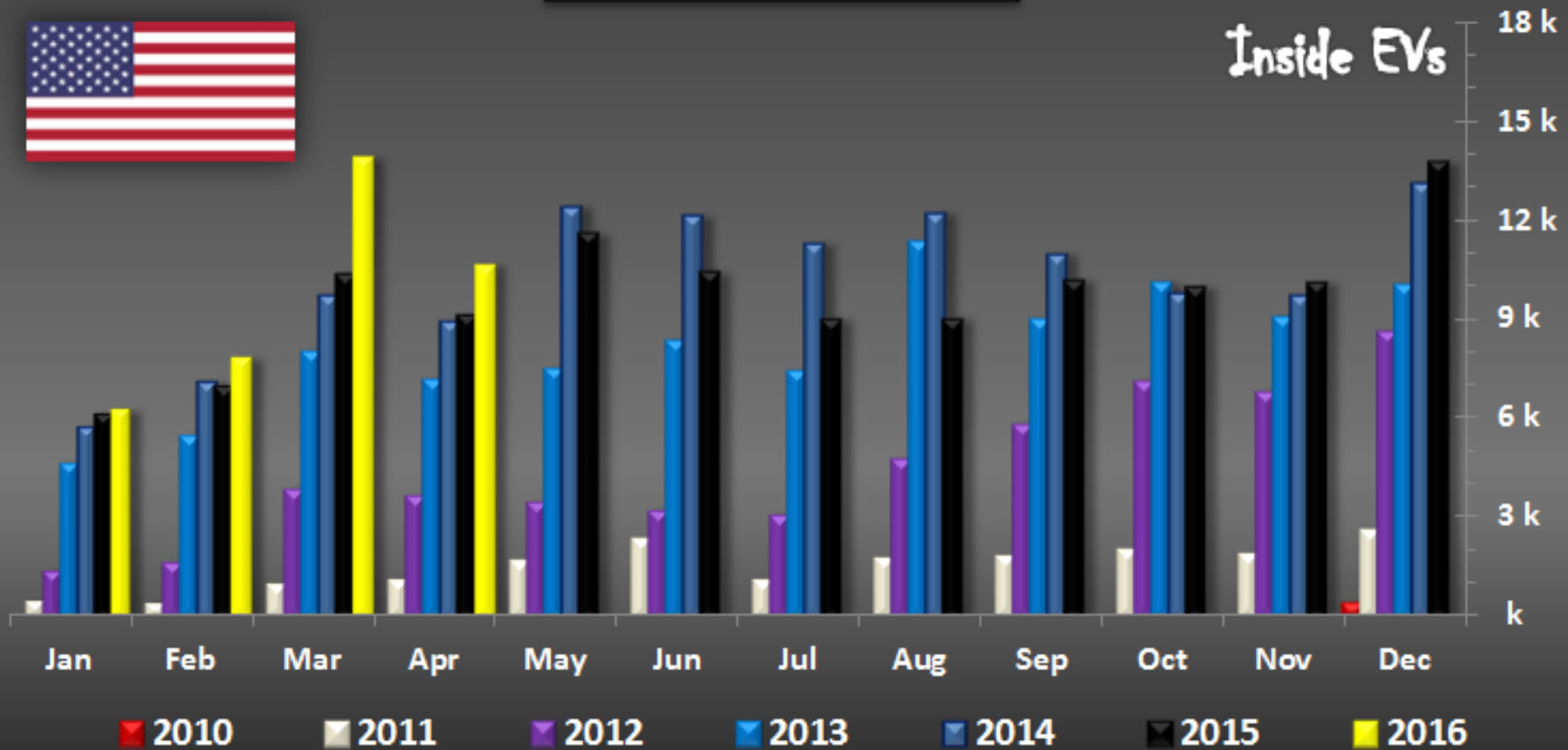


# 2016 PEV Sales in the U.S.



## U.S. Plug-In Car Sales

Inside EVs



# Who Are PEV Drivers?

## Common Driver Demographics

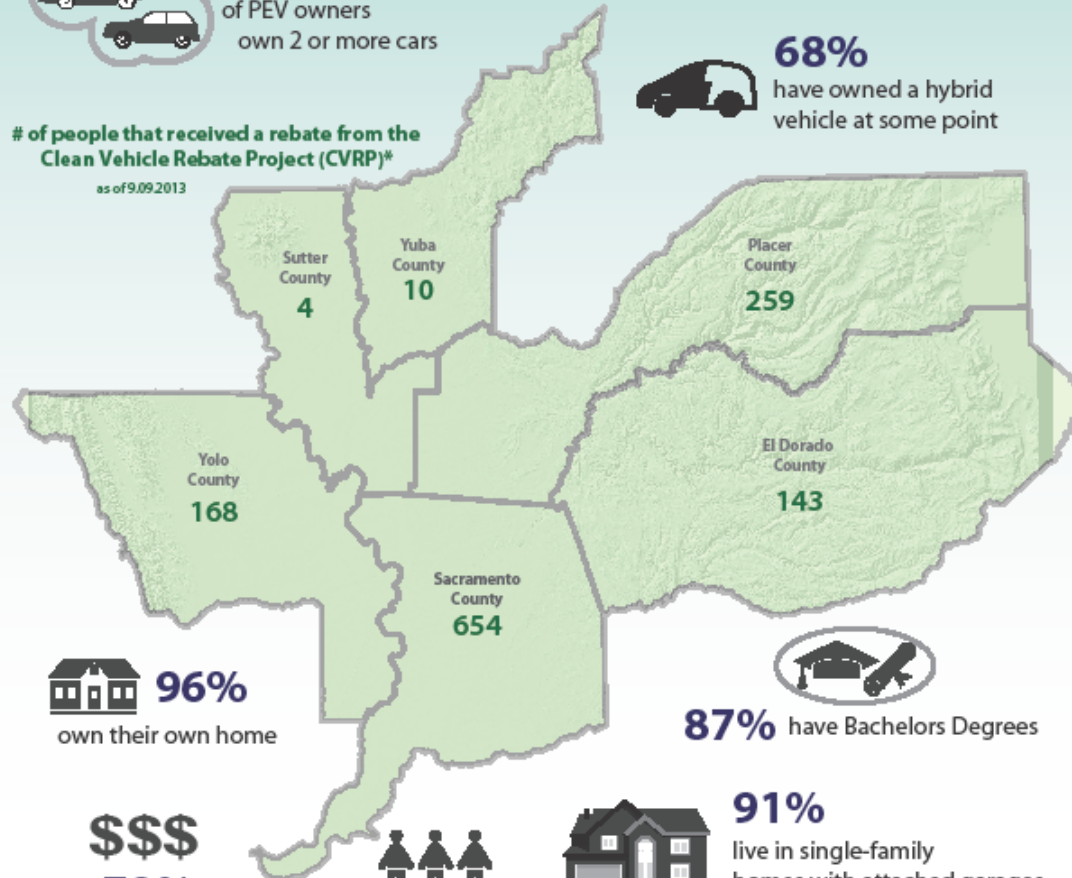


**95%**  
of PEV owners  
own 2 or more cars



**68%**  
have owned a hybrid  
vehicle at some point

# of people that received a rebate from the  
Clean Vehicle Rebate Project (CVRP)\*  
as of 9/09/2013



**96%**  
own their own home



**87%** have Bachelors Degrees

**\$\$\$**  
**79%**

have household incomes  
≥ \$100,000



**93%**  
live in a multi-  
person household



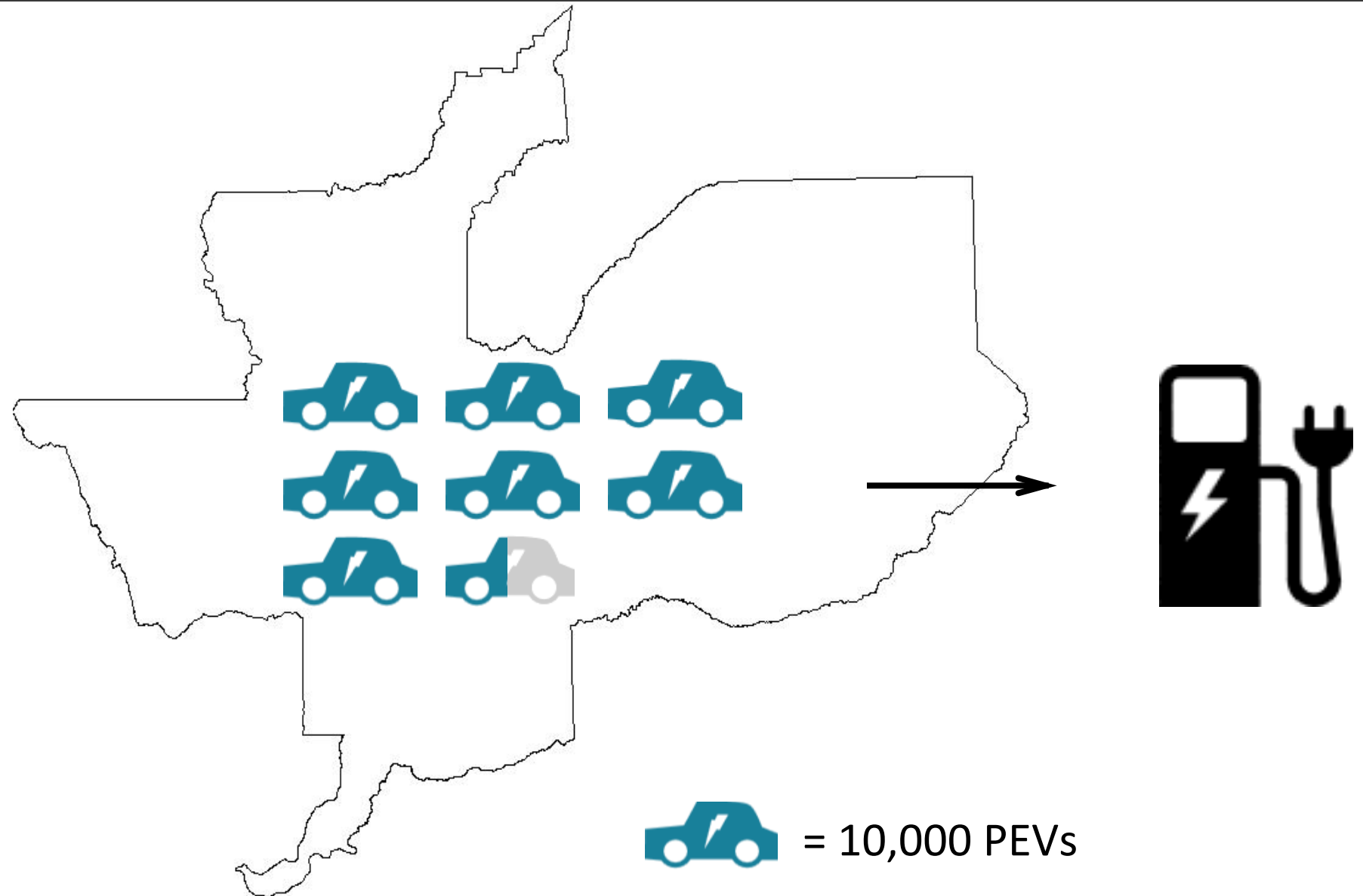
**91%**  
live in single-family  
homes with attached garages



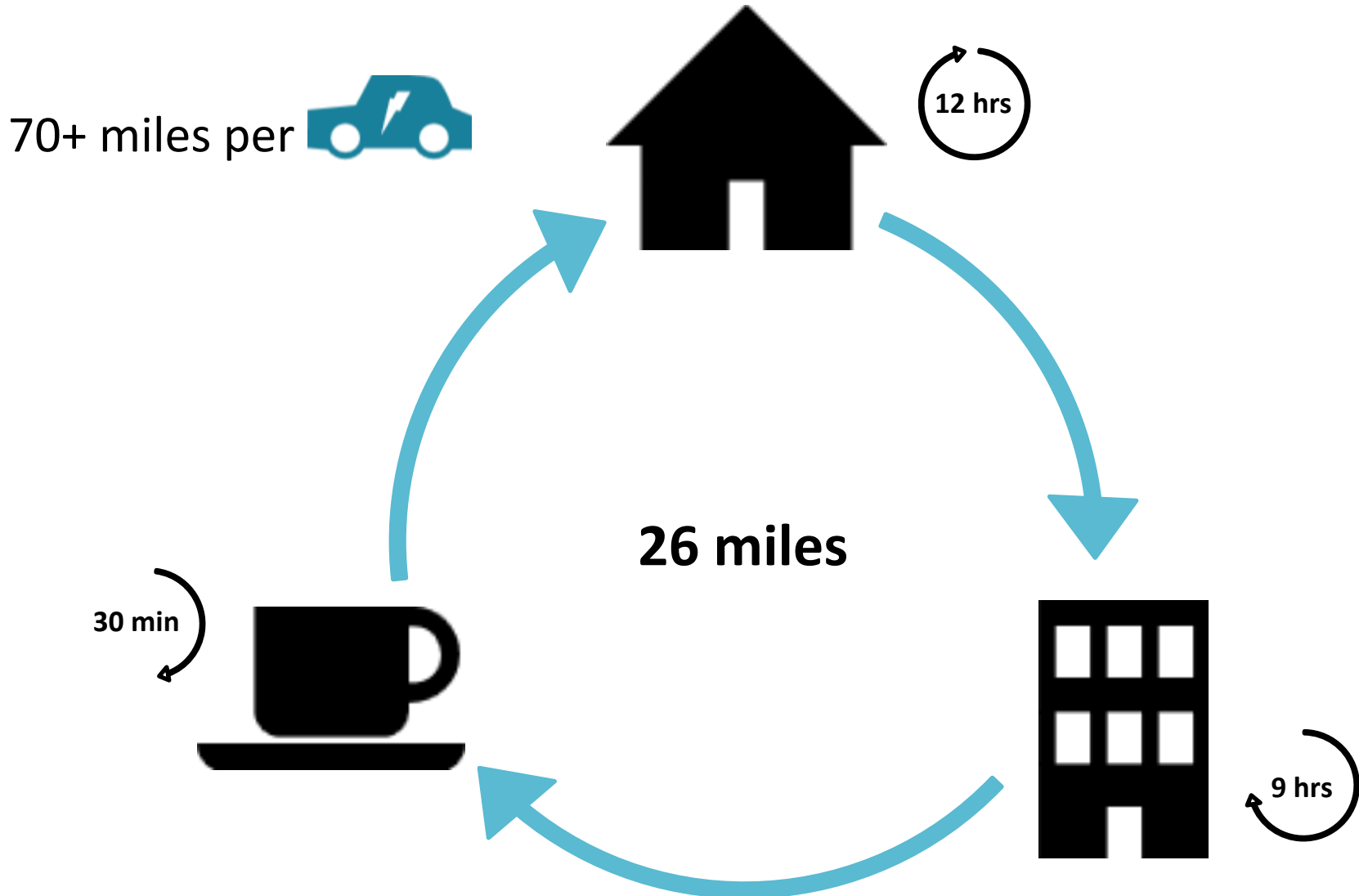
**42%** have solar panels on their  
homes

\*The CVRP provides incentives of up to \$2,500 for the purchase or lease of zero-emission and plug-in hybrid electric vehicles. The CVRP is funded by the CA Environmental Protection Agency's Air Resources Board.

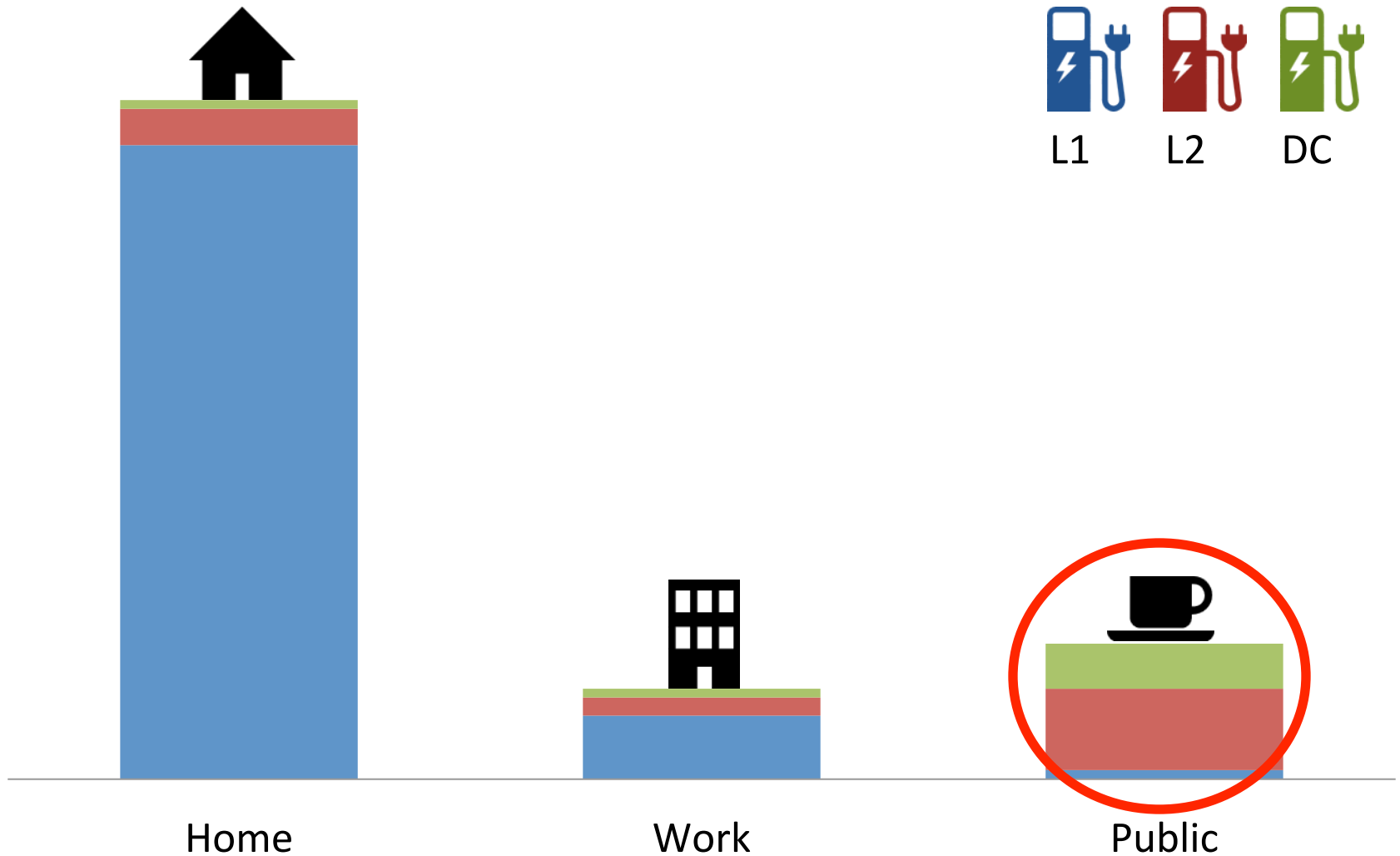
# Infrastructure Forecast



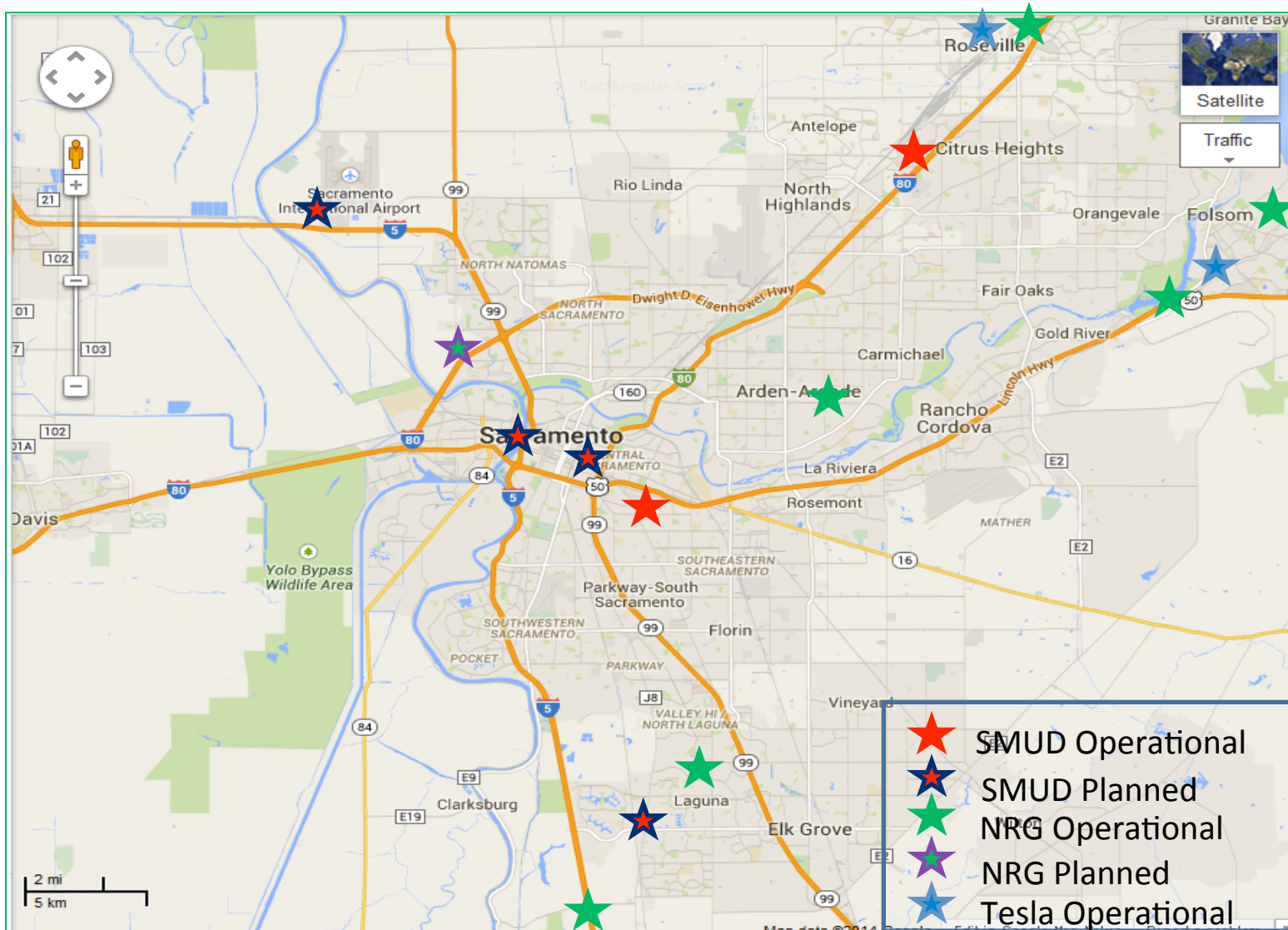
# Driving Behavior Influences Charging Behavior



# Most Charging will be Low-Voltage Charging at Home

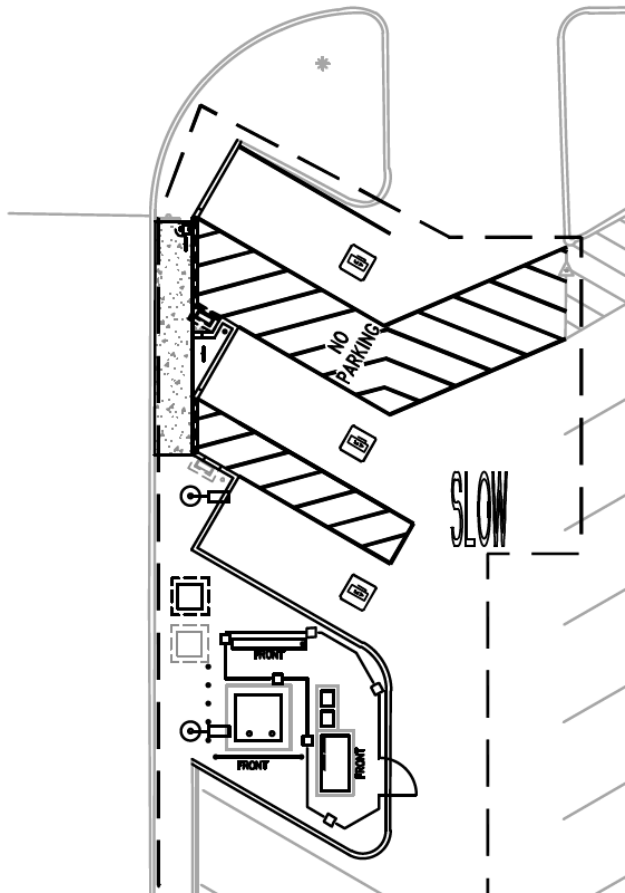


# Locations of DC Fast Chargers in Sacramento County





# Standard SMUD DC Fast Charger Design / Business Model



- Stock design sized for two DC Fast Chargers and one Level 2 EVSE Units
  - Only one DCFC and 1 L2 installed at the onset
- Designs also vary by location
  - SMUD HQ designed for one standalone DCFC
  - Amtrak Sac Valley Station designed for two standalone DC Fast Chargers
- Forward looking toward ADA Compliance
- 23¢/kWh flat rate fee
  - 21¢/kWh for electricity, 2¢ City or County Tax
- Greenlots Back Office Network / Customer Interface
  - Credit Card, RFID, Cell Phone App, Pay by Phone payment capability
  - OCPP System (multiple hardware makes being used)

# Lessons learned from our original activity went into our SACOG-SMUD CEC Proposal

- New Business Process Development
  - Outsourced customer service model
  - New EV flat commercial rate (No TOU or demand charge elements)
  - Cash flow / Information management model
  - Community tax collection for direct utility electricity sales
- Upfront Land Negotiation/Design Efforts are Laborious
  - Timelines average over a year and are equal to construction costs
  - Property owners / managers are generally unengaged/disinterested
- Disability Access trumps utility service proximity
- Hardware selection for higher temperatures was good
- Despite high reliability some operational gaps have occurred
- SMUD risk aversion / security cameras have been cost drivers

# Additional Lessons Learned from current effort

- Earlier SMUD activity had already solved a lot of organization issues
  - Business approach and processes, Rates, Taxes
  - Hardware selection
- Property negotiation screening process needs to be improved
  - Strategic agreements with large multi-site property owners
  - Better screening processes needed
  - Take it or leave it negotiation screening tactics
  - Figure out a revenue stream for the property owner
- Focus siting activities on utility property or with single entity owners
  - Utility property requires no negotiations
  - Multi-entity property ownership complicates/slows negotiations
  - Weingarten's and Simon Properties are better models
  - Best model is where a business and property owner are one in the same
- Incorporating charging into new building / remodeling construction can be equally slow
  - Dependent on the rest of the construction activities
  - Less overall headaches and lower cost