



Clean Vehicle Rebate Project Update

San Diego ReFuel Coordinating Council Meeting

15 July 2015, San Diego CA

Brett Williams, PhD – Senior Project Manager, EV Initiatives

John Anderson – Project Associate & CVRP Transparency Specialist

Additional thanks to Colin Santulli and others at CSE

CSE Electric Vehicle (EV) Activities



Incentives Design & Administration



Fleet Assistance & Clean Cities



Consumer & Dealer Outreach



PEV, Alt.-Fuel, & ZEV Planning & Implementation



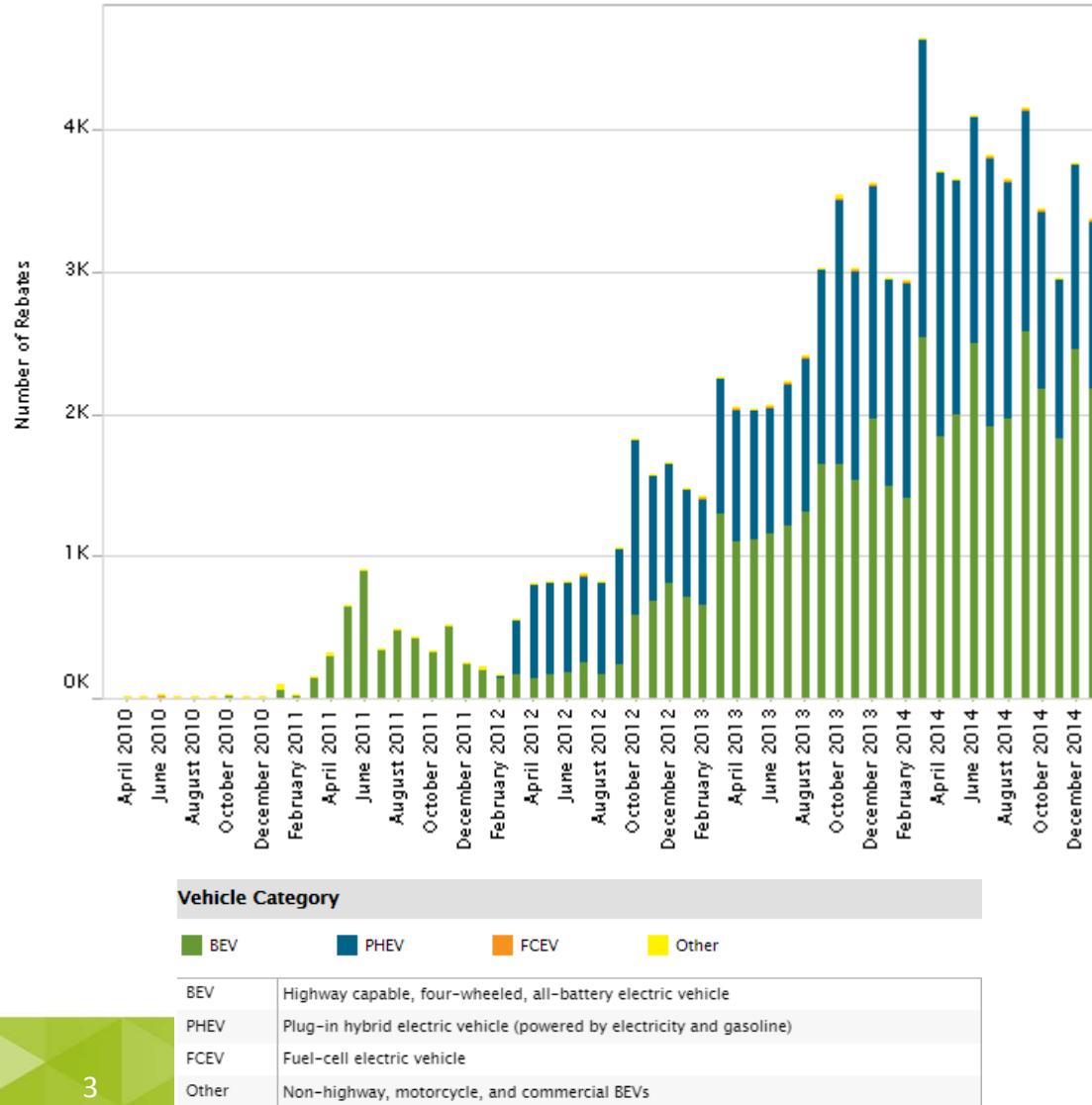
Stakeholder Engagement



2nd Life Battery Research & Vehicle-Grid Integration

Vehicle Incentives

CVRP Rebates by Month



CSE has processed

more than:

**112,000 vehicle rebates,
\$238 million in incentives**



**San Diego
Airport
Vehicle Rebate
Program**

MOR-EV

Massachusetts Offers Rebates
for Electric Vehicles

CHEAPR

Connecticut Hydrogen and Electric Automobile Purchase Rebate

Outline

- **Clean Vehicle Rebate Project (CVRP) Overview**
 - Program Changes
- **Public Fleet Pilot Project (PFPP)**
- **Public Tools and Available Data**
 - Rebate Statistics
 - EV Survey Data
- **California & San Diego EV Market Trends**
 - Registrations/Rebates
 - CVRP Uptake Rate
 - Charging Stations

Statewide Monetary Incentives



**Hydrogen Fuel-Cell
Electric Vehicles**

CVRP

\$5,000

**Federal Tax
Credit**

Expired



**Battery Electric
Vehicles (& i3 REx)**

\$2,500

\$7,500



**Plug-in Hybrid
Electric Vehicles**

\$1,500

Up to \$7,500



**Neighborhood
Electric Vehicles**

\$900



**Zero-Emission
Motorcycles**

\$900

New Since July 2014

- Electronic document submission option
 - Upload via the CVRP webpage
 - Mail or email also acceptable
 - Shortens the length of the application process
- Ownership requirement now 30 months
 - (down from 36 months)

FY 2015–2016 CVRP Updates

- \$163 million additional funding
- To take effect in 4–6 months:
 - Income cap for higher-income consumers
 - Increased rebate amounts for low- and moderate-income (LMI) consumers

<http://arb.ca.gov/lispub/rss/displaypost.php?pno=8634>

Income Cap

- 4–6 month warm-up period before takes effect
- Cap level based on income tax filing status:
 - \$250,000 for single filers
 - \$340,000 for head-of-household filers
 - \$500,000 for joint filers
- Cap for fuel-cell electric vehicles (FCEV) deferred

Increased Rebate Amounts for LMI Consumers

- 4–6 month warm-up period before increased rebate amounts take effect
- Available to consumers with household incomes \leq 300% of the federal poverty level (FPL)

Persons in household	Max. income
1	\$35,310
2	\$47,790
3	\$60,270
4	\$72,750
5	\$85,230
6	\$97,710
7	\$110,190
8	\$122,670

Statewide Monetary Incentives



**Hydrogen Fuel-Cell
Electric Vehicles**

CVRP

\$5,000

CVRP-LMI
(≤300% FPL)

\$6,500



**Battery Electric
Vehicles (& i3 REx)**

\$2,500

\$4,000



**Plug-in Hybrid
Electric Vehicles**

\$1,500

\$3,000



**Neighborhood
Electric Vehicles**

\$900

\$900

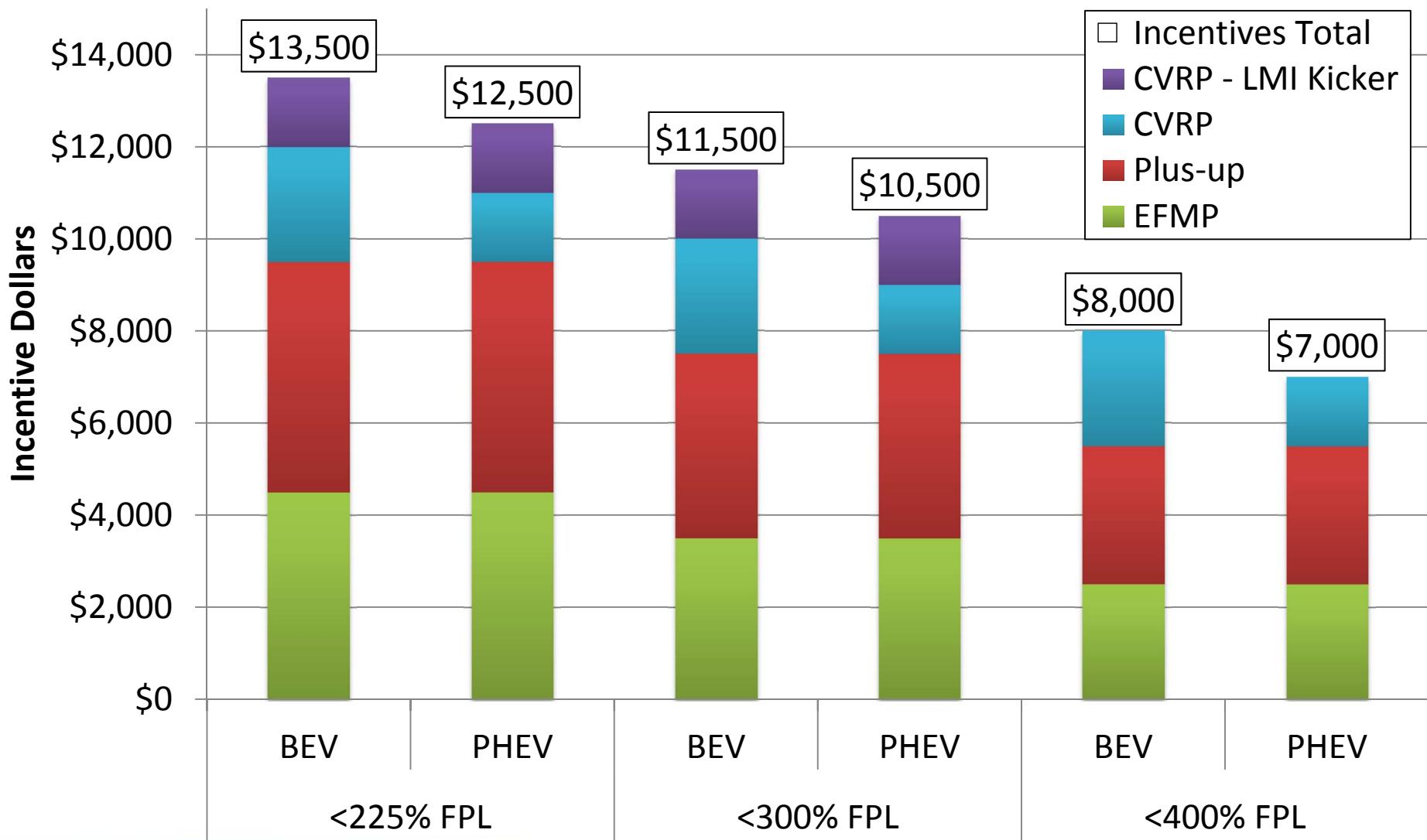


**Zero-Emission
Motorcycles**

\$900

\$900

Incentive Summary: South Coast and San Joaquin



Public Fleet Pilot Project

Increased Incentives for Public Fleets in Disadvantaged Communities

- \$5M allocated for FY2015–2016
- New purchases only, no leases
- 30 rebates per calendar year
- Optional pre-delivery reservations
- Can be combined with other incentives, but not CVRP



FCEV

\$15,000



BEV

\$10,000



PHEV

\$5,250

Public Fleet Pilot Project - Eligibility



- Local and state public entities in disadvantaged communities
- Determined by ZIP code of vehicle domicile facility
- Eligibility verification at: energycenter.org/PFP

<http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/535zipmap.htm>



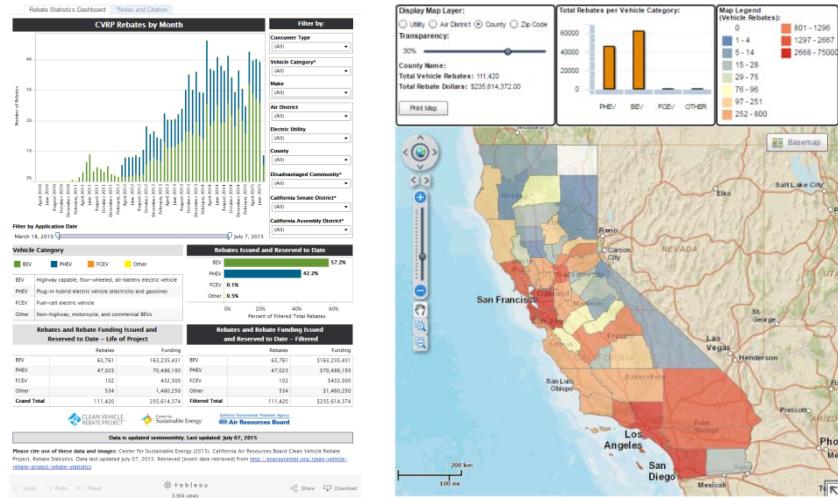
Data and Tools



CVRP Transparency Tools

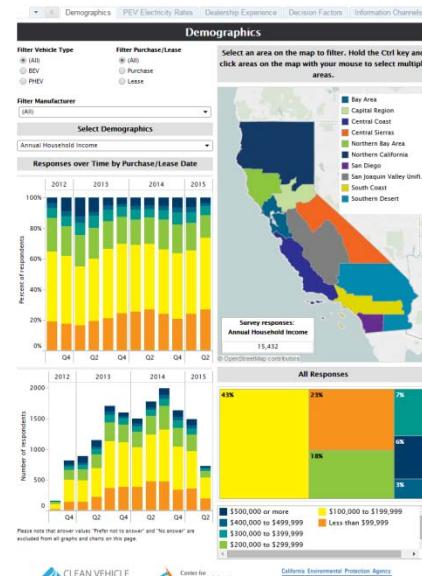
Rebate Statistics Dashboard and Map

- CVRP application data
- Updated twice per month



EV Consumer Survey Dashboard

- EV Consumer Survey data
- Covers vehicles purchased or leased from September 2012 – May 2015

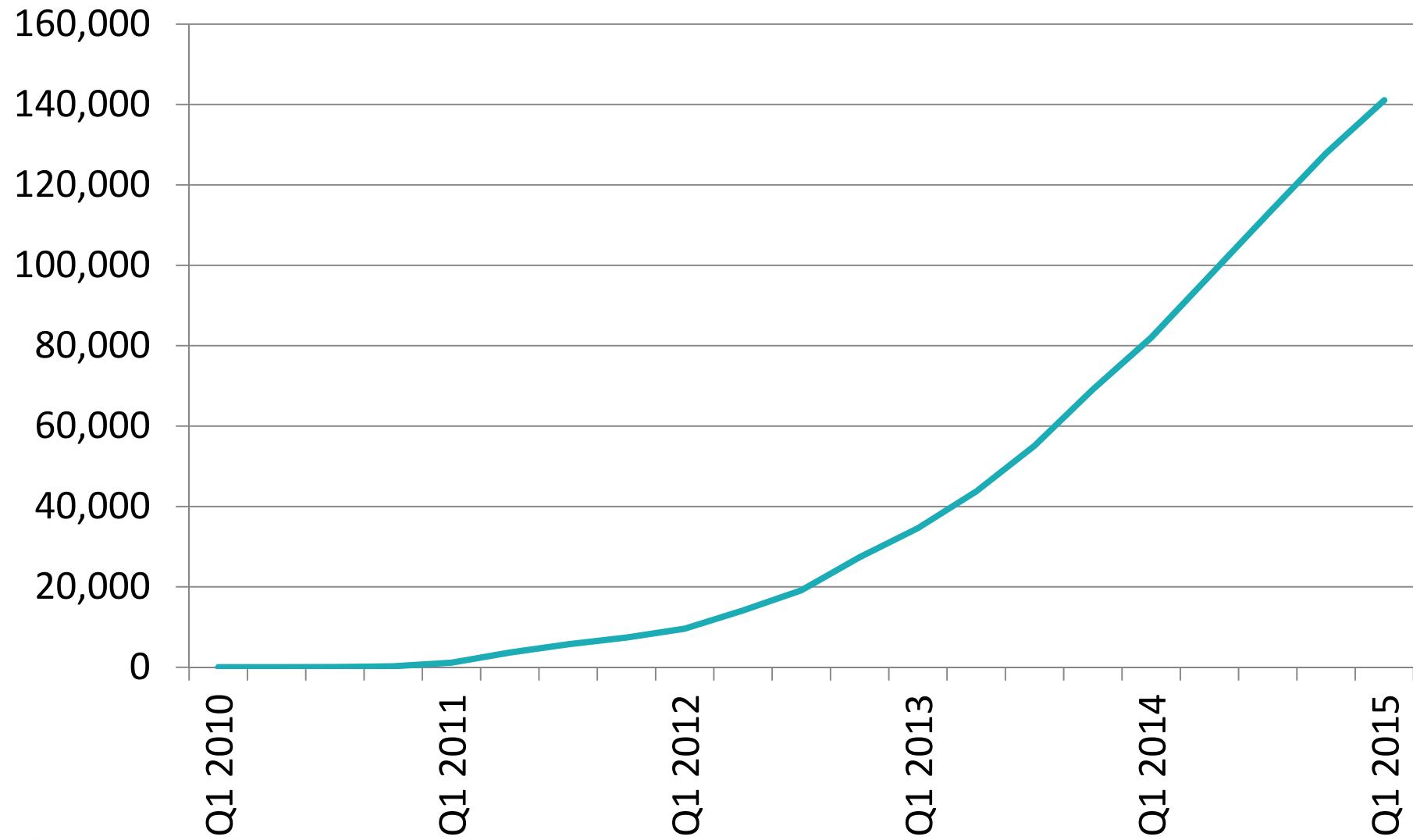




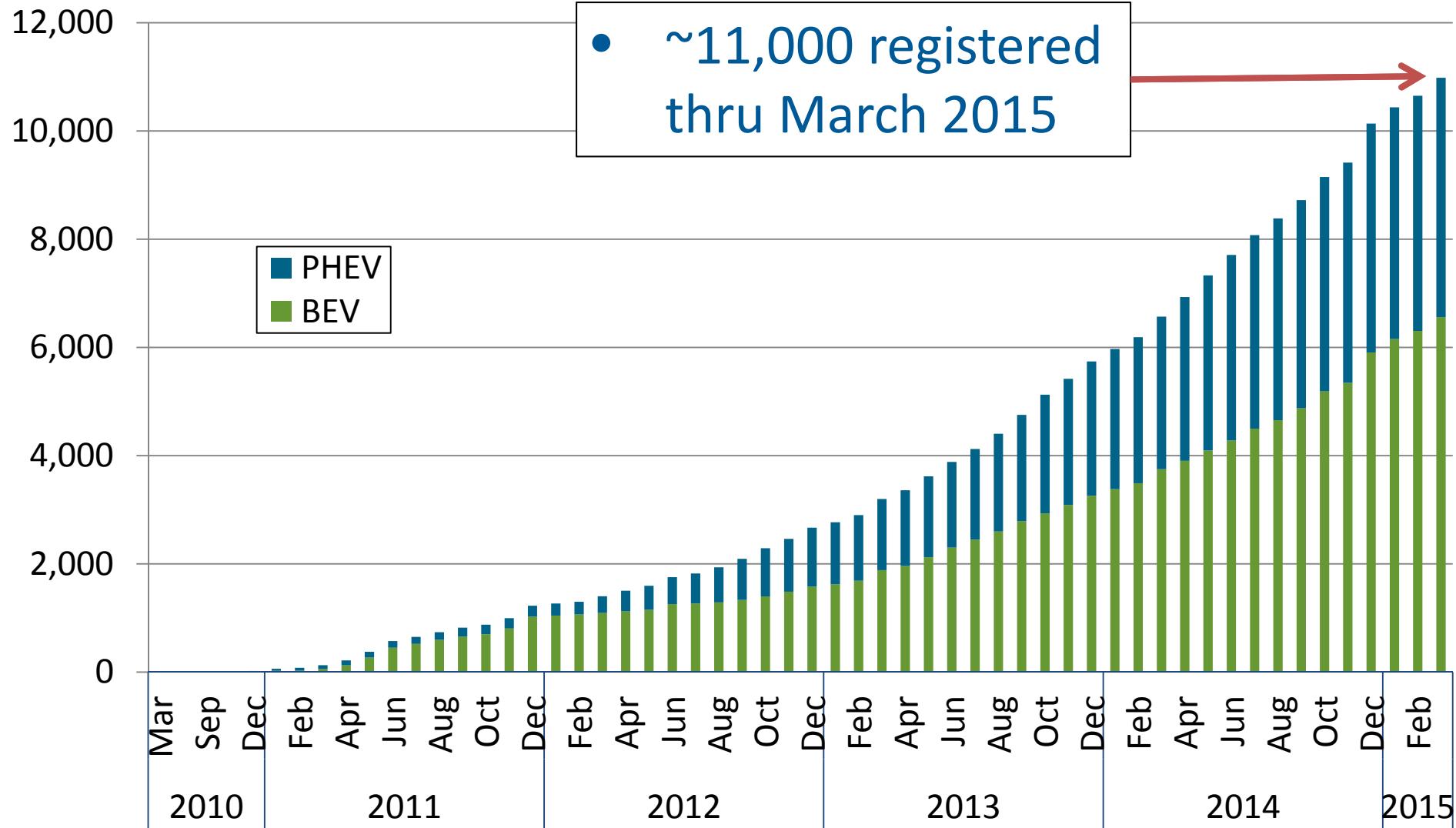
CA & San Diego EV Market & Rebate Trends



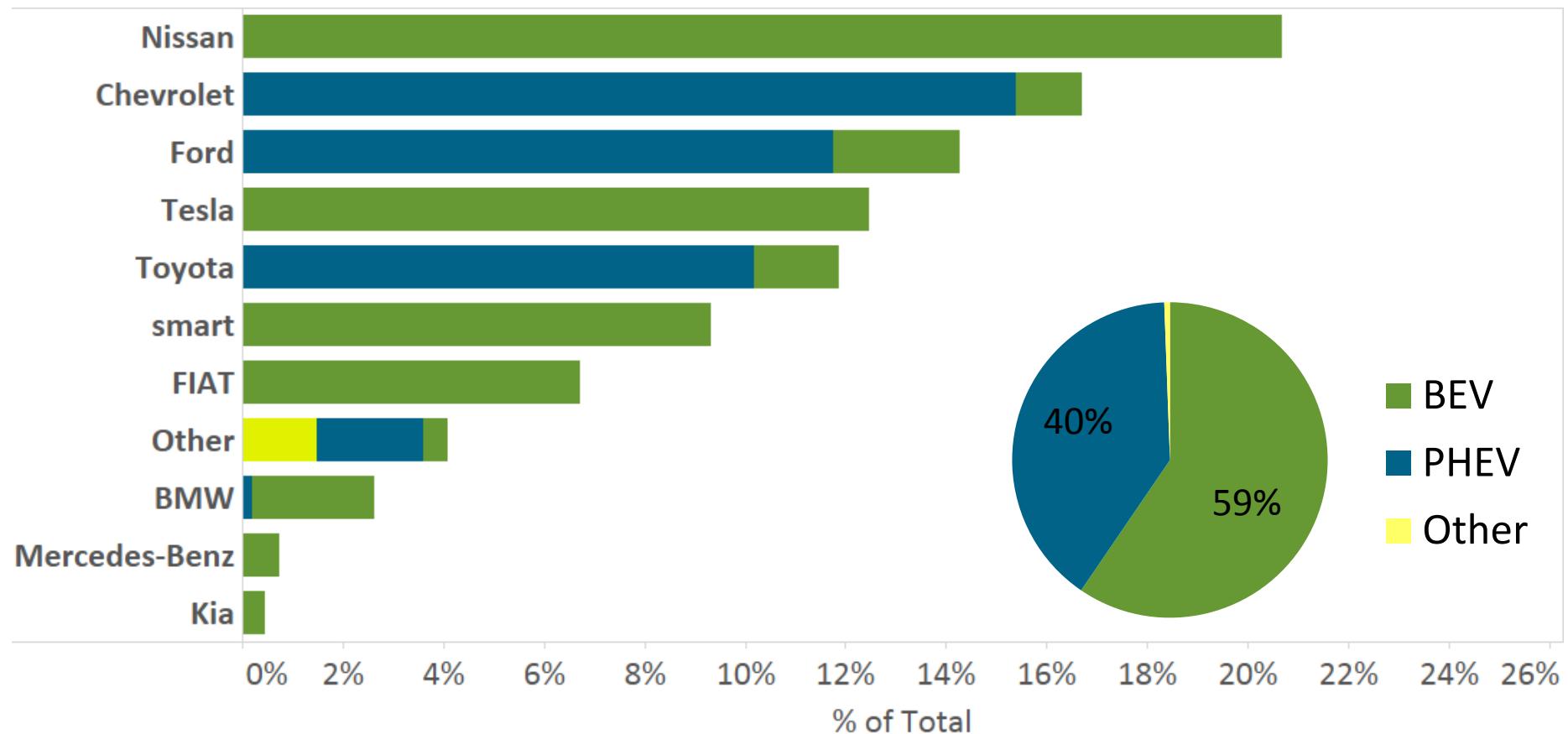
California Cumulative PHEV, BEV, FCEV Sales (2010 – Q1 2015)



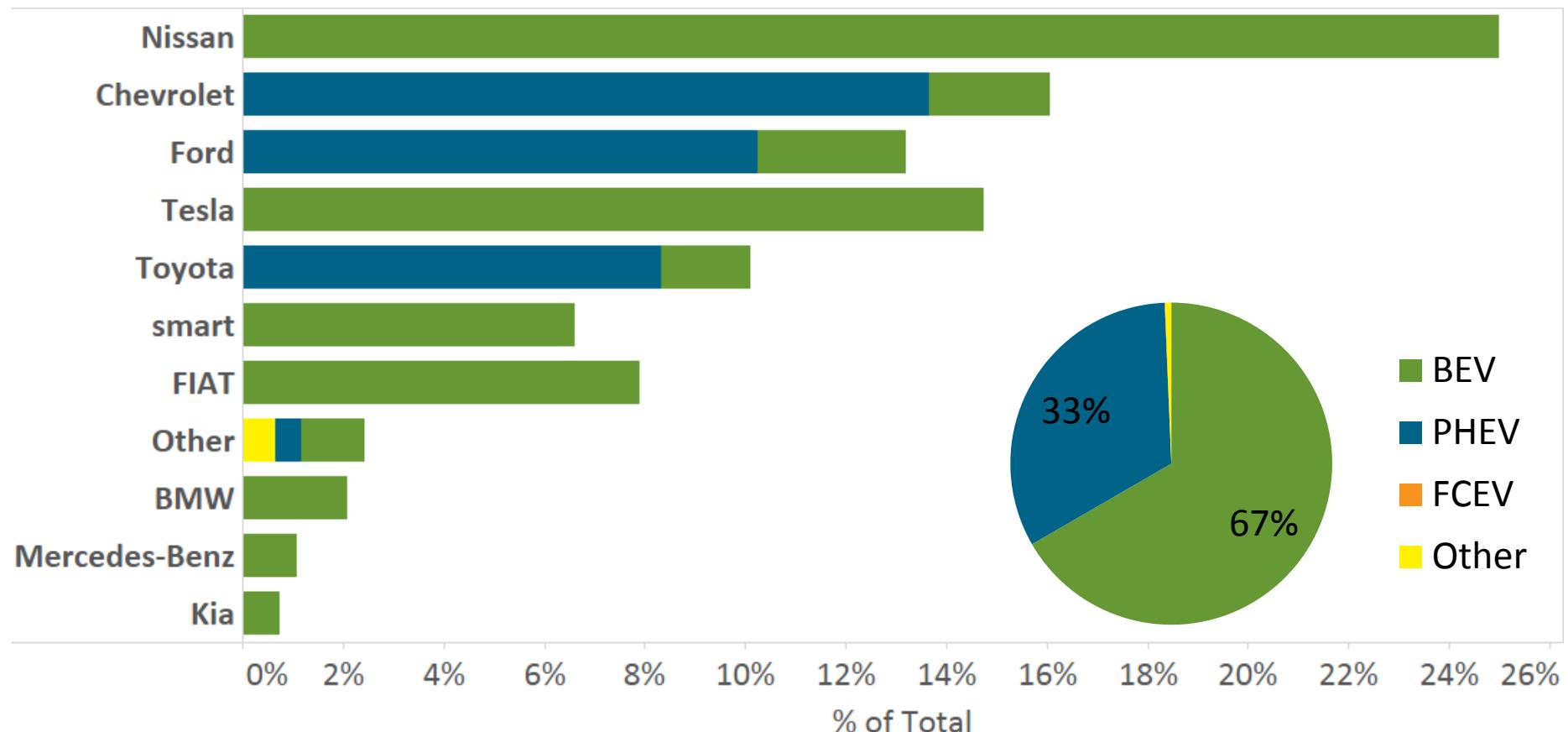
San Diego EV Market: Cumulative Volume



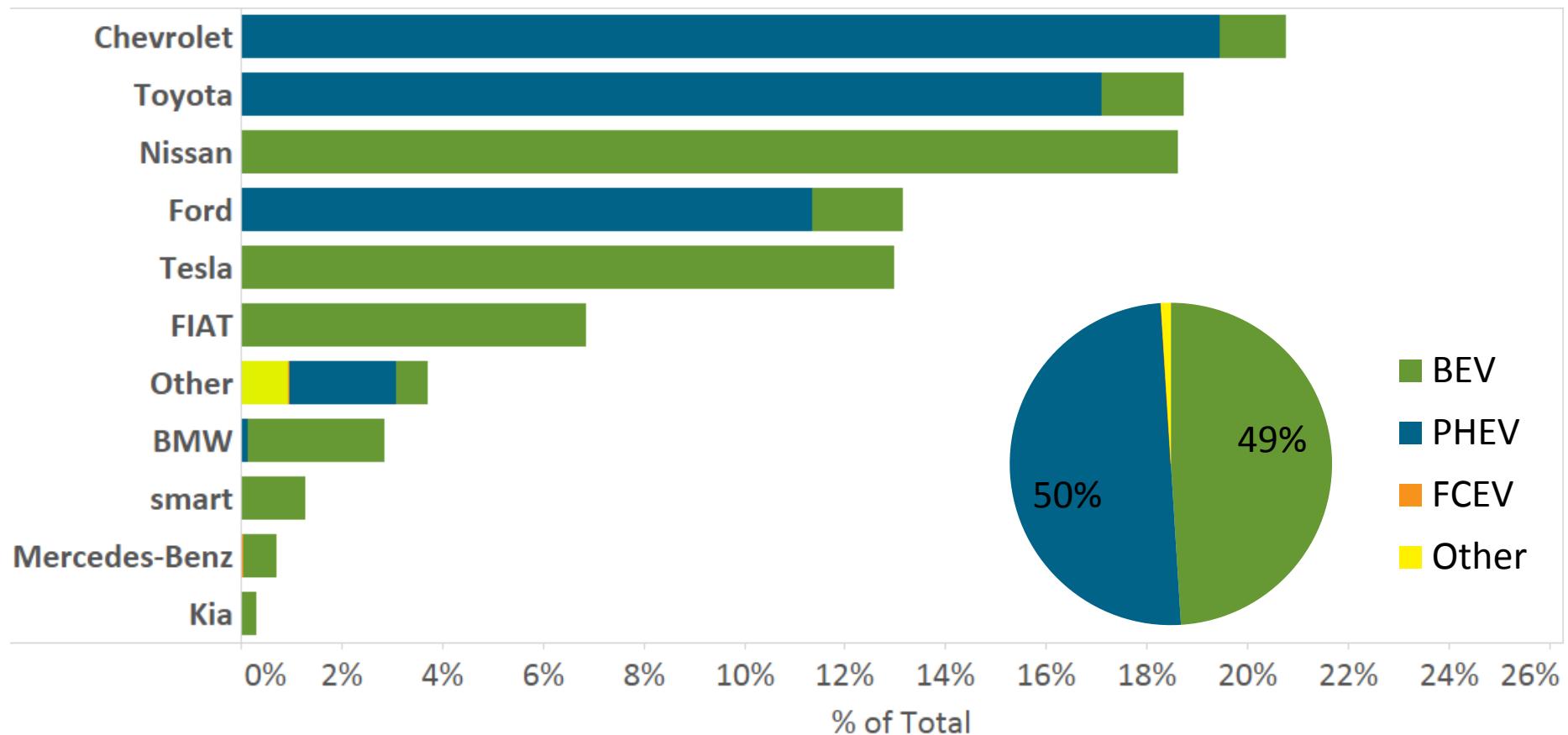
San Diego EV Market: Vehicles



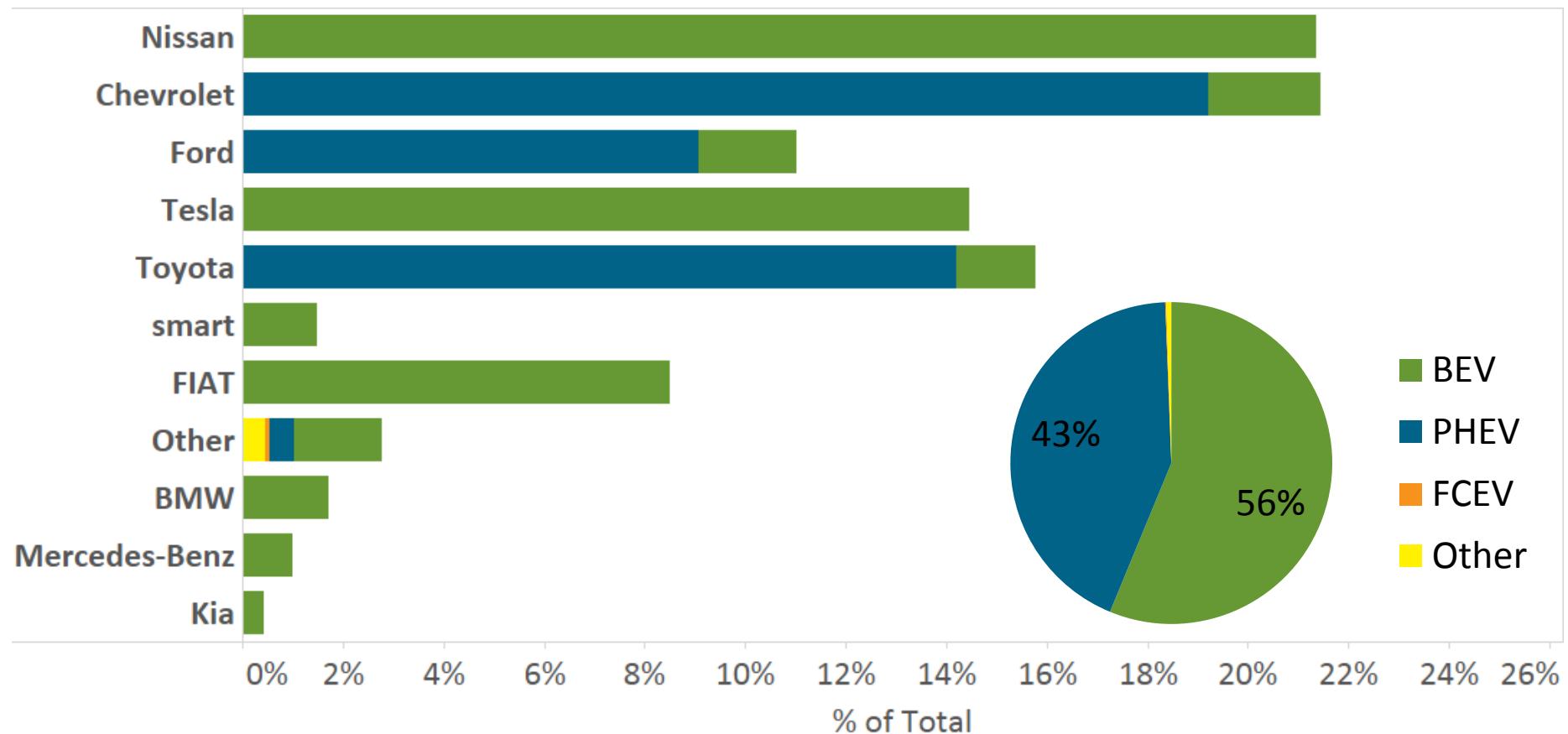
San Diego EV Market: Rebates



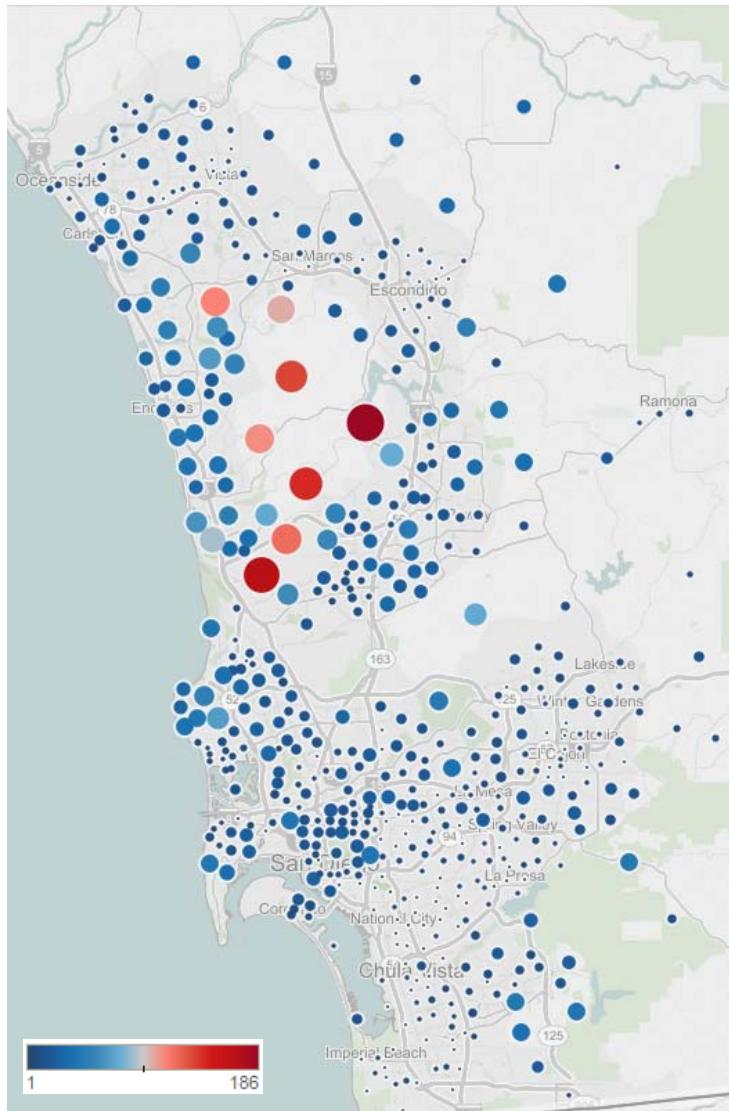
Rest of State: Vehicles



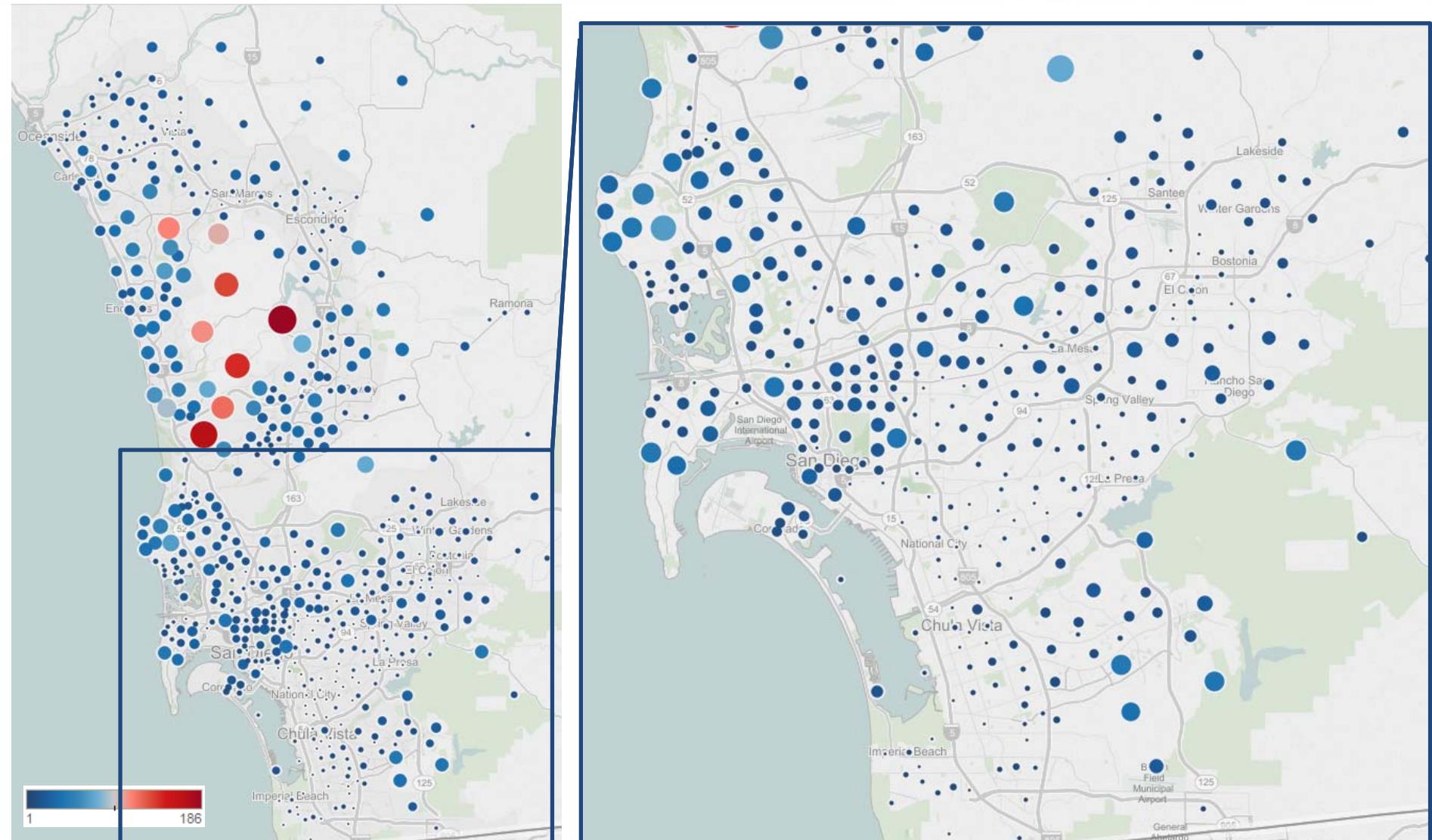
Rest of State: Rebates



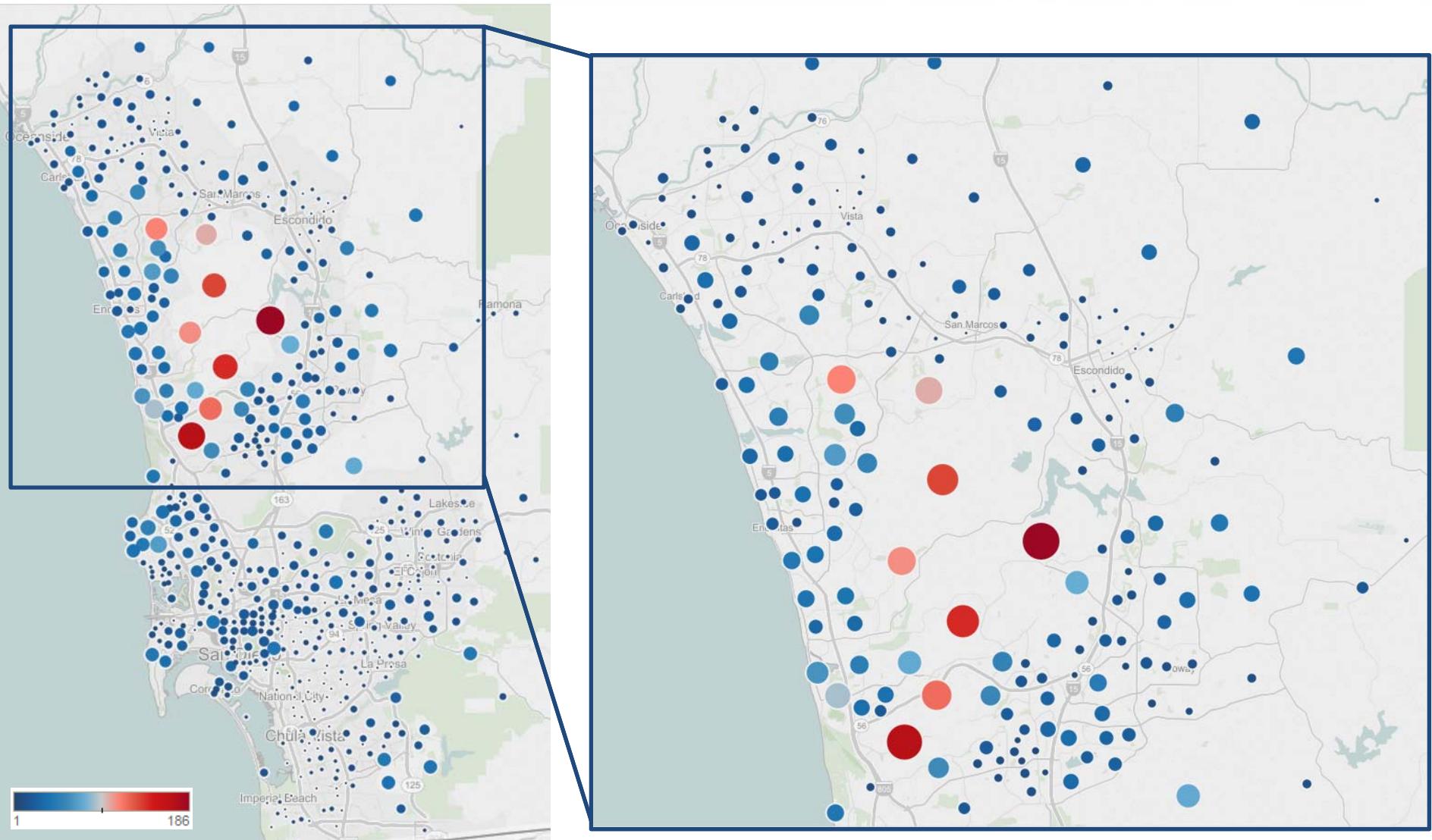
San Diego County Rebates by Census Tract



San Diego County Rebates by Census Tract

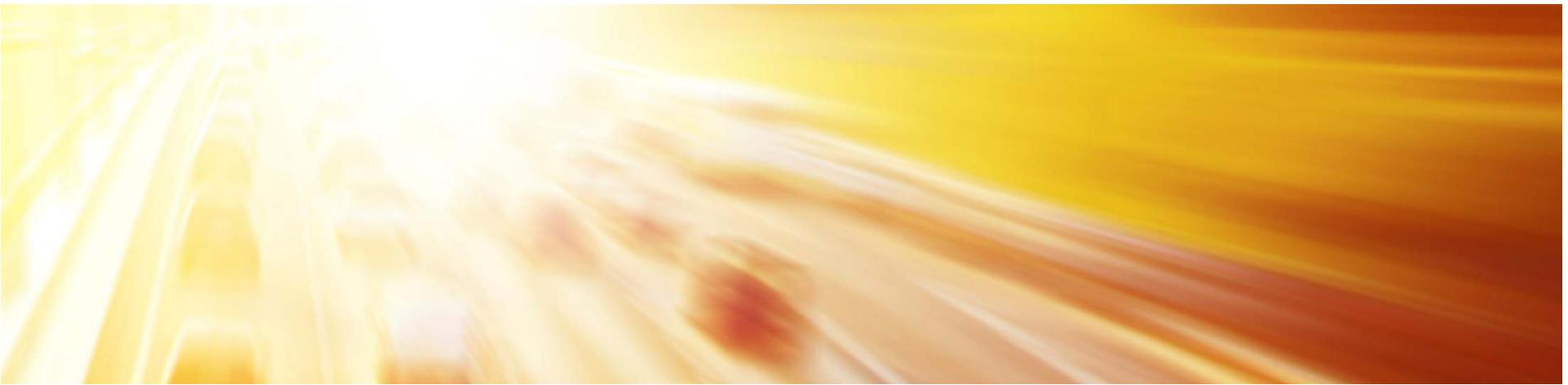


San Diego County Rebates by Census Tract



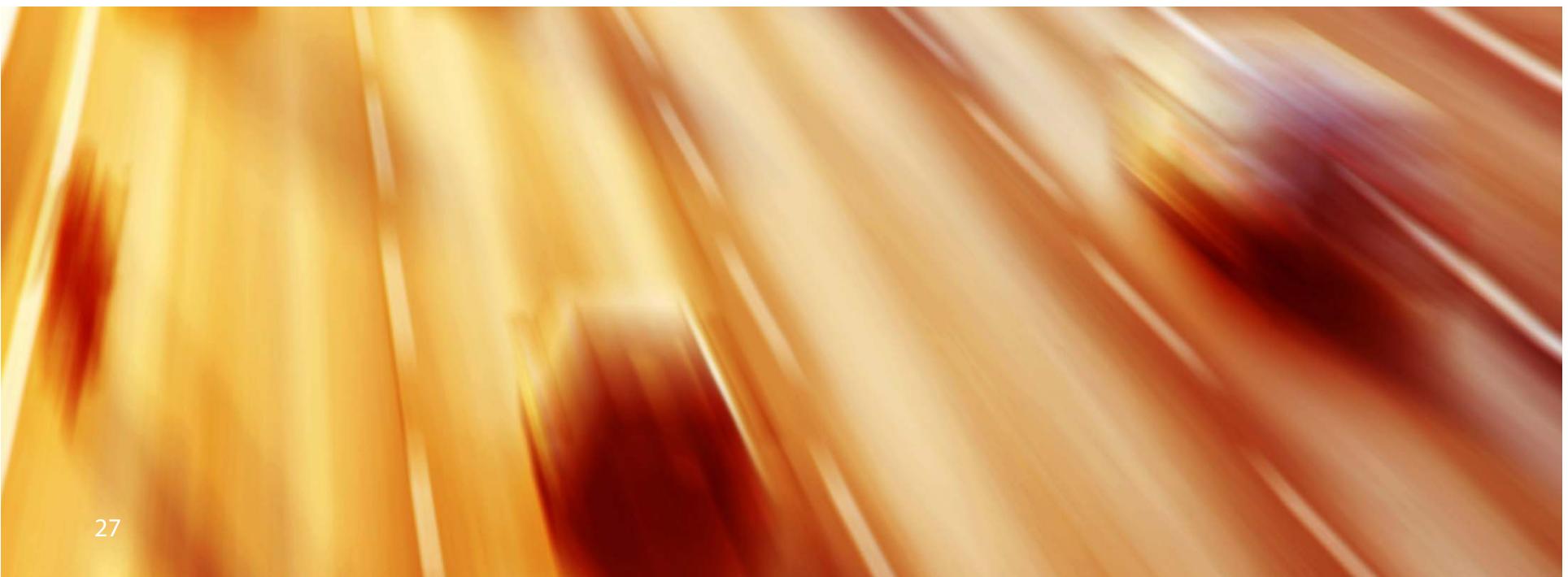
Journey ahead?





Did you get all that?

Any questions?





Center for
Sustainable Energy™

brett.williams@energycenter.org

john.anderson@energycenter.org





National Drive Electric Week 2015

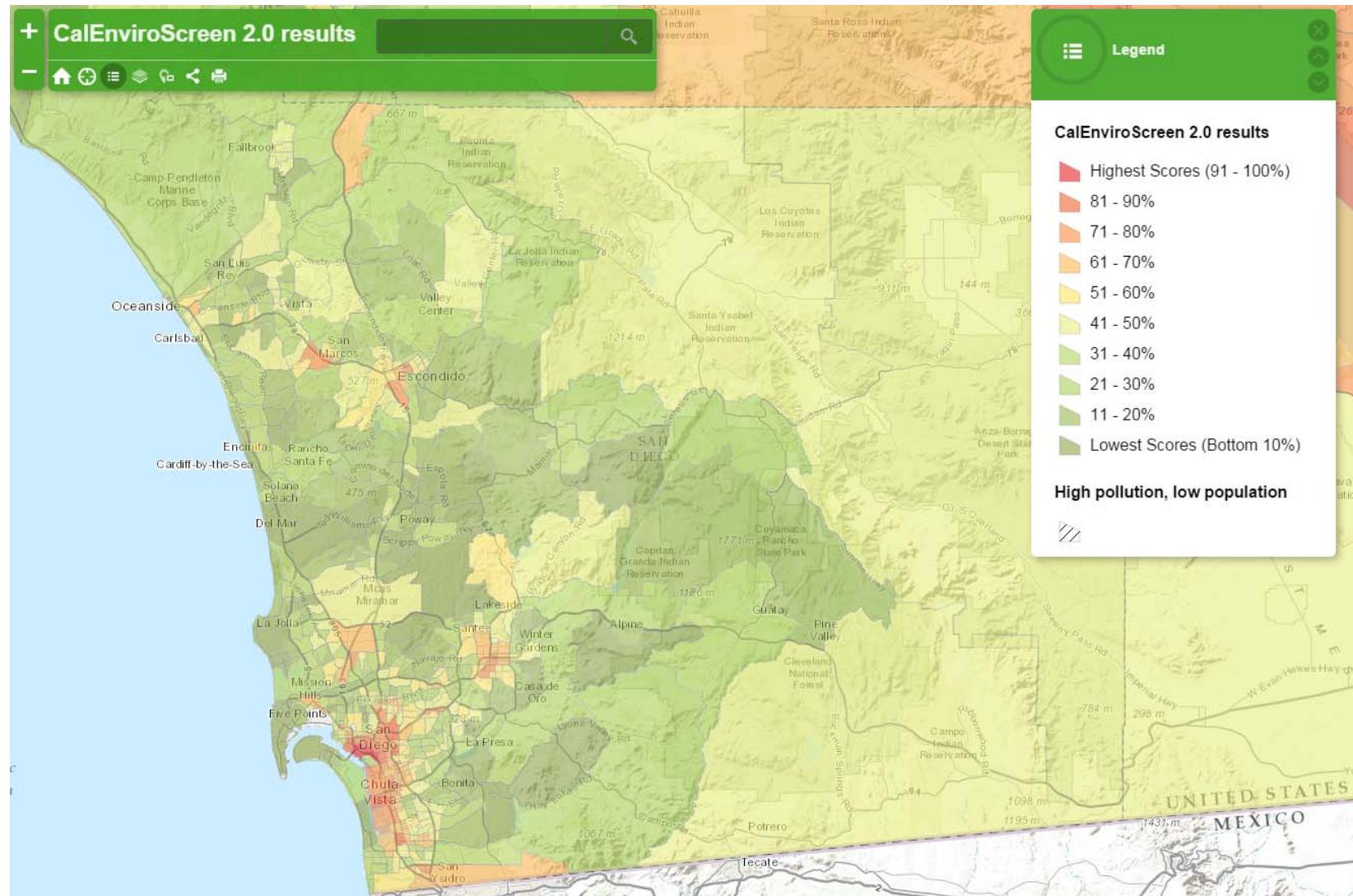


National Drive Electric Week 2015

- Organized nationally by the Sierra Club
- Over 100 events last year, 150 expected 2015
- San Diego: Center for Sustainable Energy and San Diego Gas & Electric
- This year:

Saturday, September 19, 10am
Liberty Station

Disadvantaged Communities



Monetary Incentives

CVRP or PFPP



Hydrogen Fuel-Cell Electric Vehicles

\$5,000

\$15,000



Battery Electric Vehicles (& i3 REx)

\$2,500

\$10,000



Plug-in Hybrid Electric Vehicles

\$1,500

\$5,250



Neighborhood Electric Vehicles

\$900

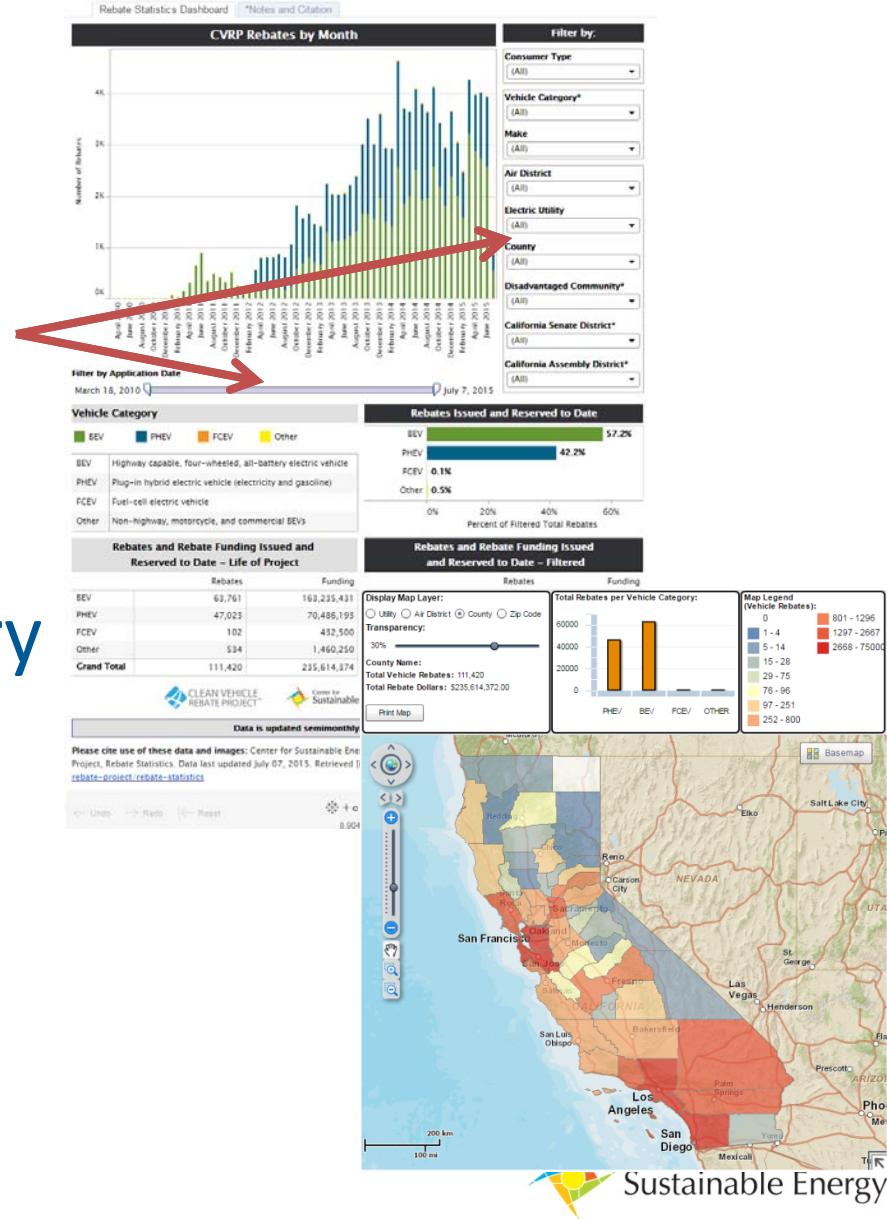


Zero-Emission Motorcycles

\$900

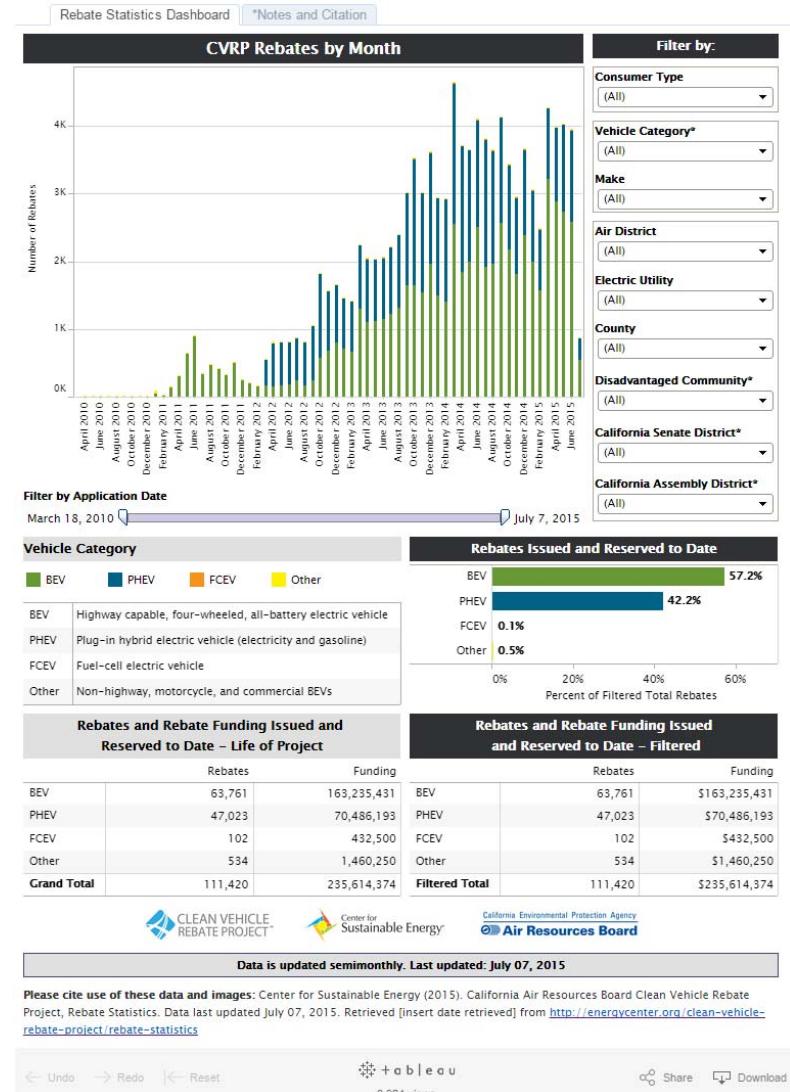
Rebate Statistics

- CVRP Application Data
- Updated twice monthly
- Consumer, vehicle, and application date filters
- Results displayed over time, by vehicle category (Rebate Statistics Dashboard) and geographically (Rebate Map)

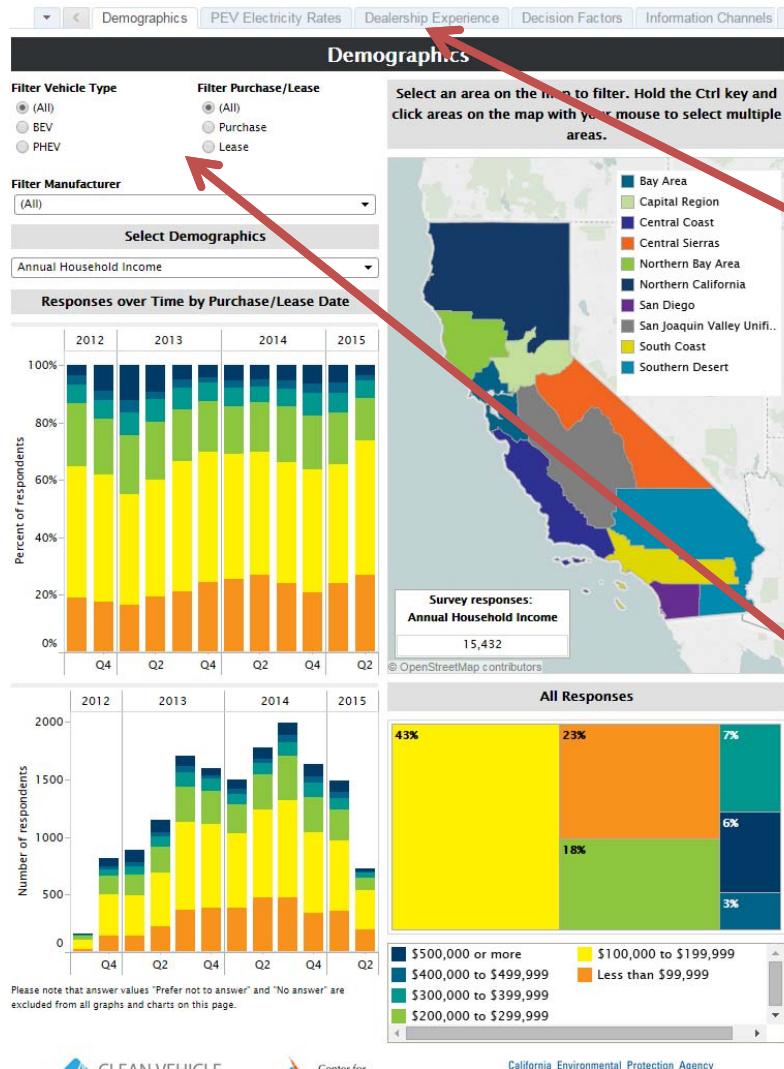


Rebate Statistics Dashboard: New Features

- Filter by:
 - vehicle category
 - vehicle make
 - disadvantaged community status
 - California Senate District
 - California Assembly District
- BEV and FCEV broken out
- Compare filtered results with overall side-by-side
- Census tract, in addition to new filter data, available for download



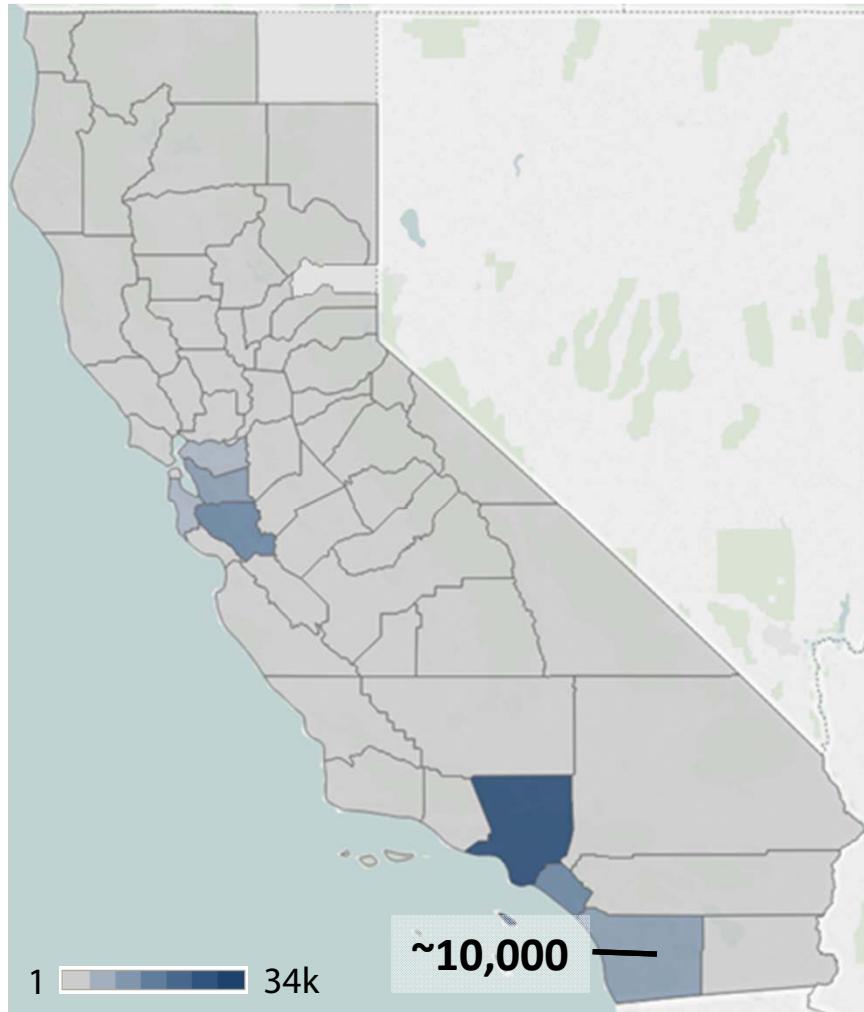
Transparency: Consumer Survey Data



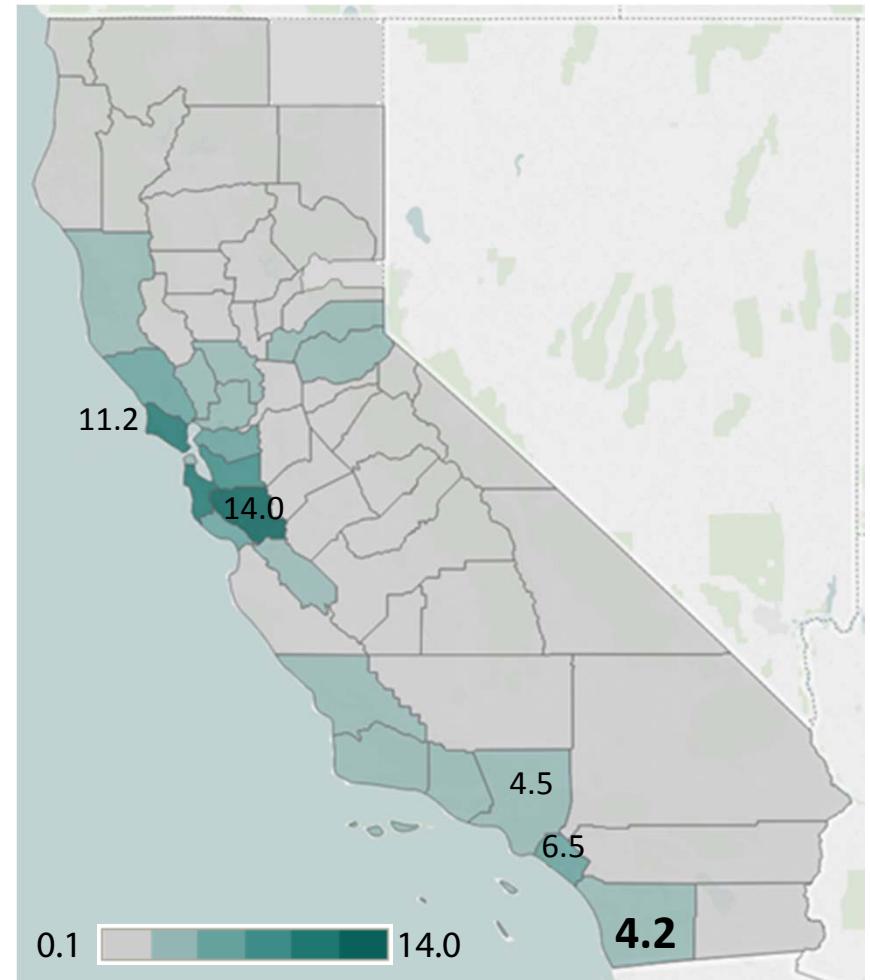
- All applicants invited to take a survey
- >16,000 CVRP responses
- Topics include:
 - purchase motivations and enablers
 - dealership experience,
 - utility rate awareness
 - Demographics
- Filter by vehicle category, tenure, make, geography
- CVRP responses updated monthly on an interactive dashboard for easy use
- Weighting (internal)

Registrations and Density by County (2010 – 2014)

New ZEV Registrations

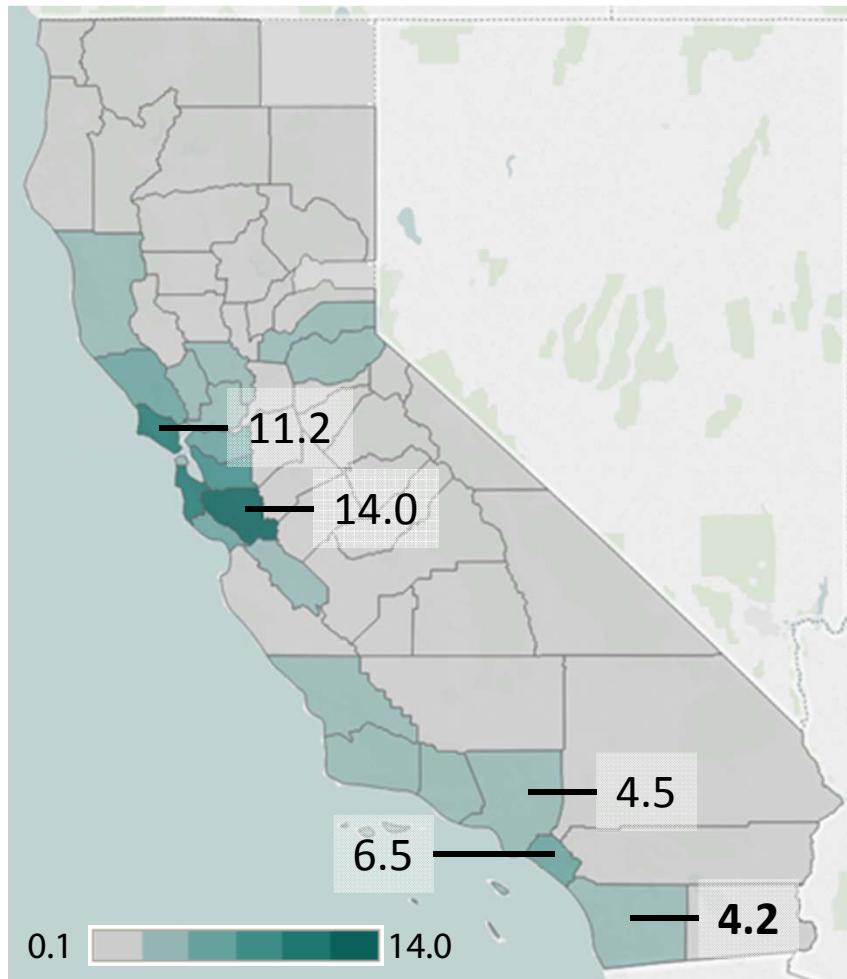


New ZEV registrations per 1,000 population (18 or older)

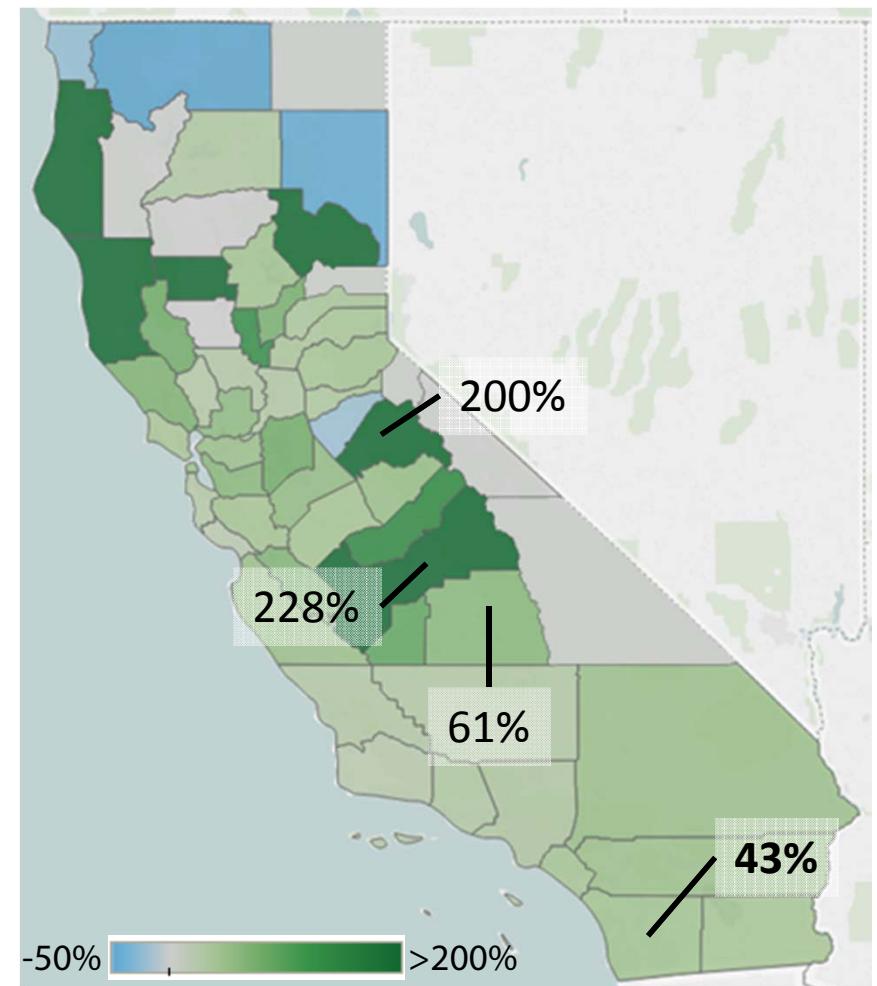


EV Density and Changes

New ZEV registrations (2010–2014) per 1,000 population (18 or older)

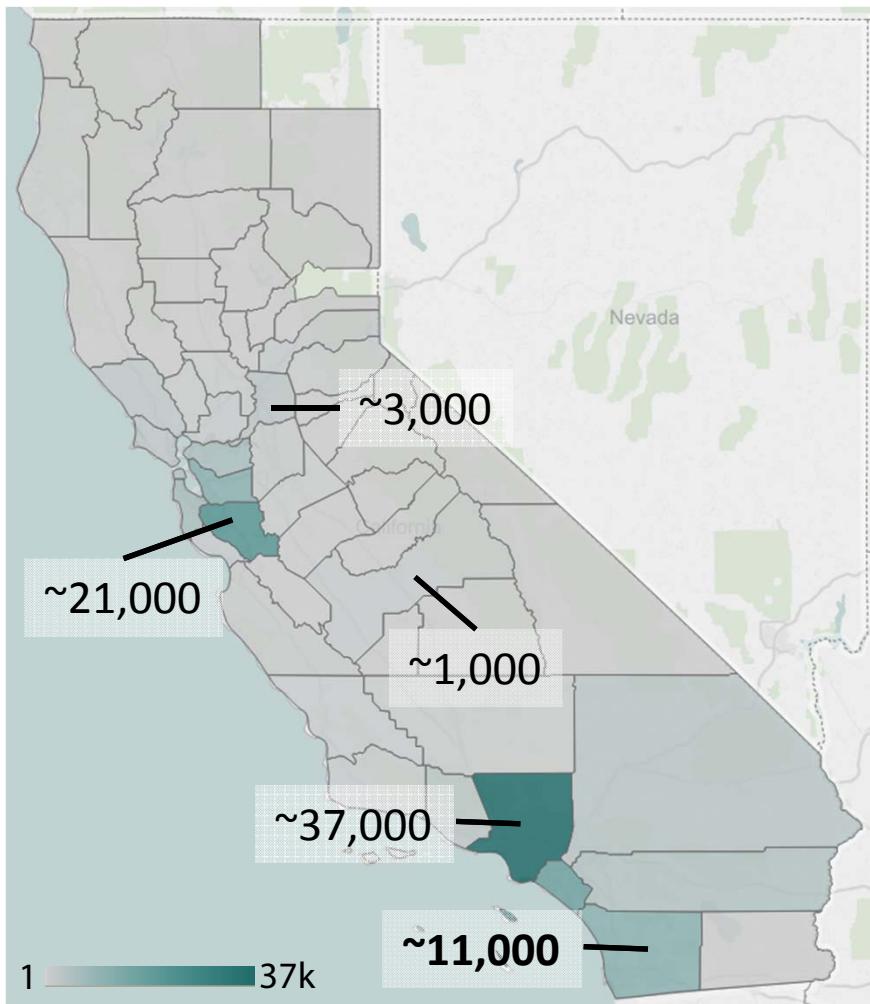


Percent change in density, 2013–2014

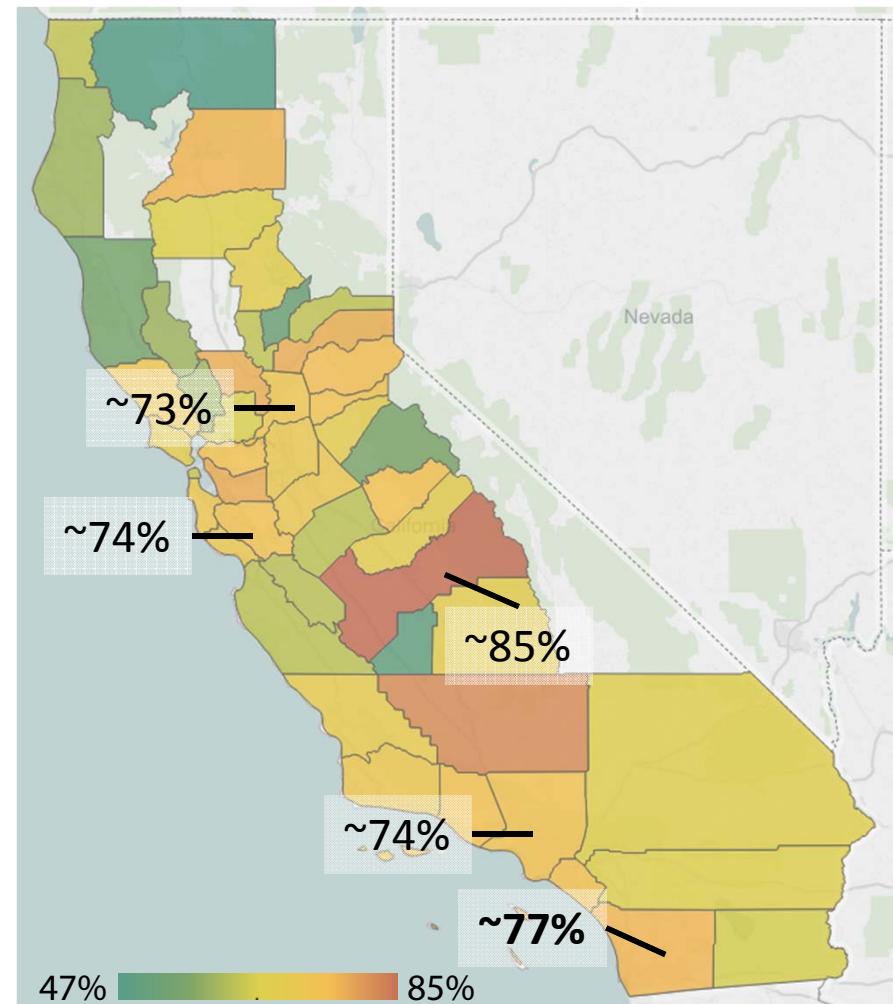


Registrations by County (Mar 2010 – Mar 2015)

New Clean Vehicle Registrations

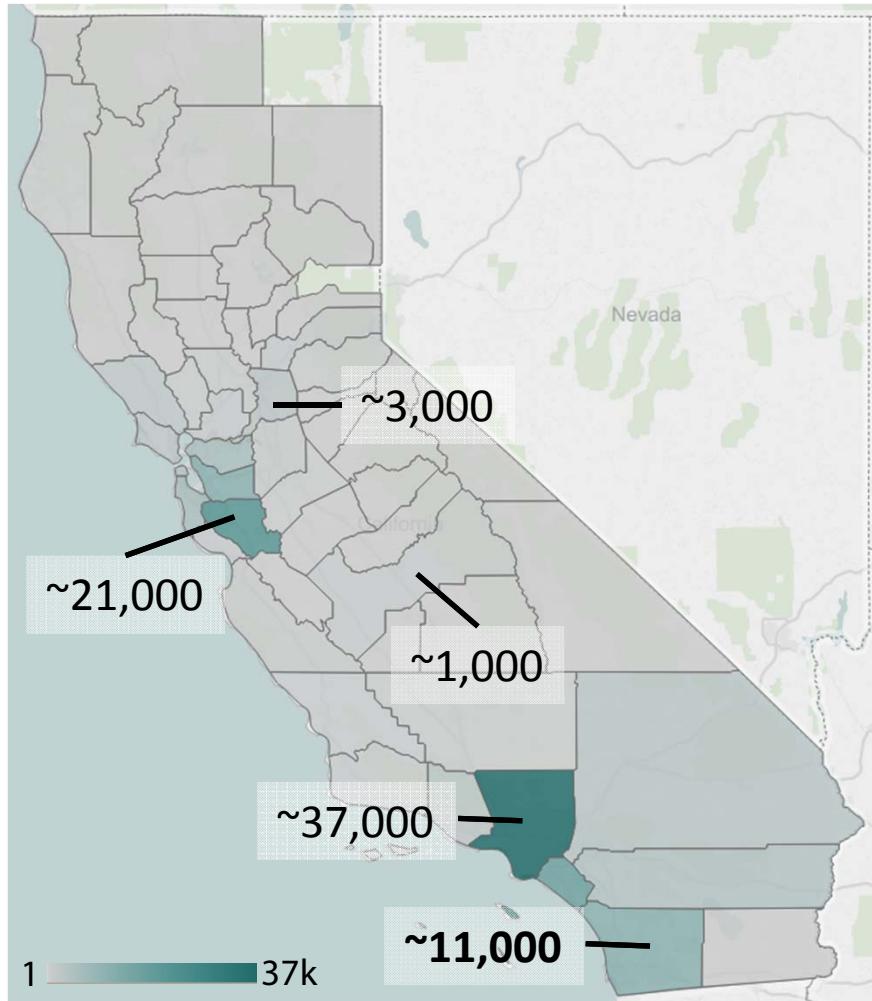


CVRP Uptake

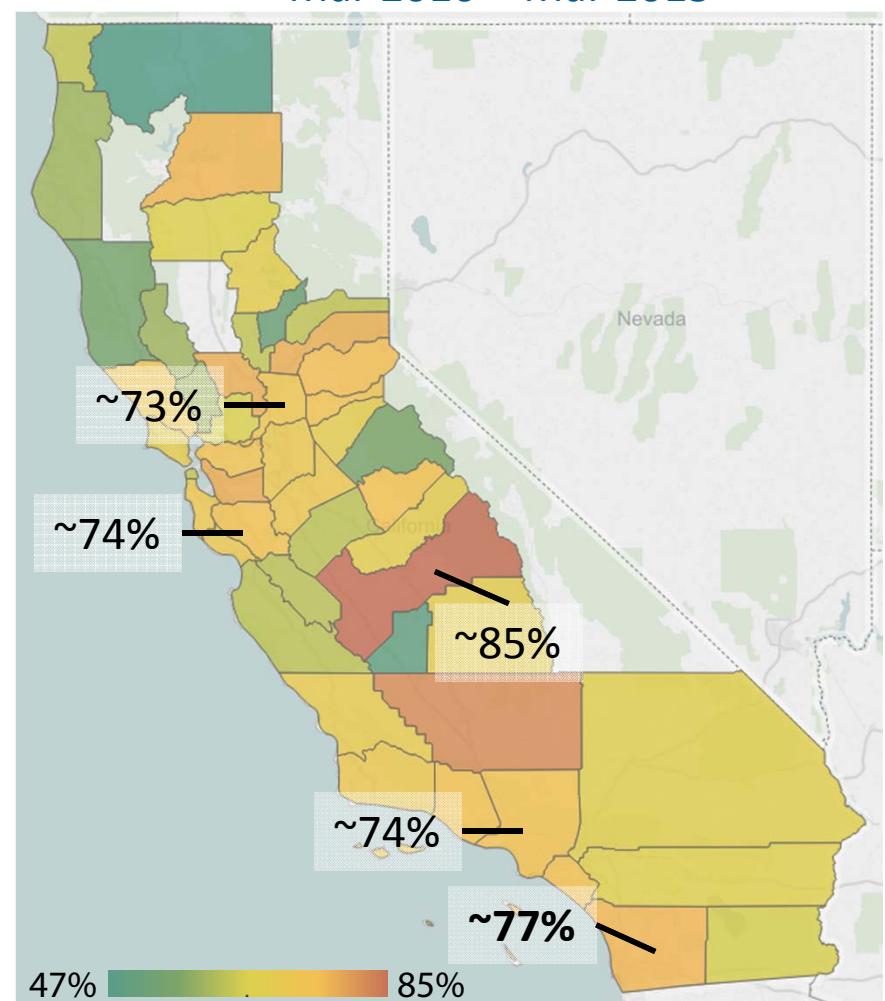


Registrations by County

New Clean Vehicle Registrations
Mar 2010 – Mar 2015

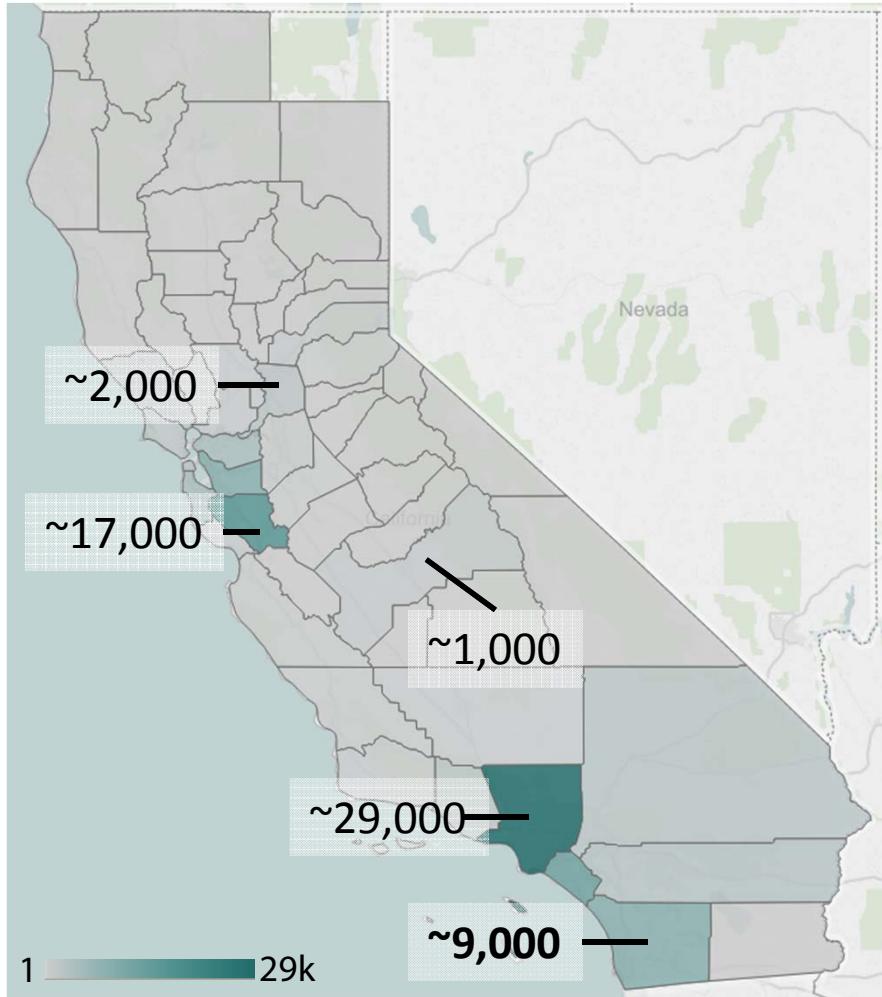


CVRP Uptake
Mar 2010 – Mar 2015

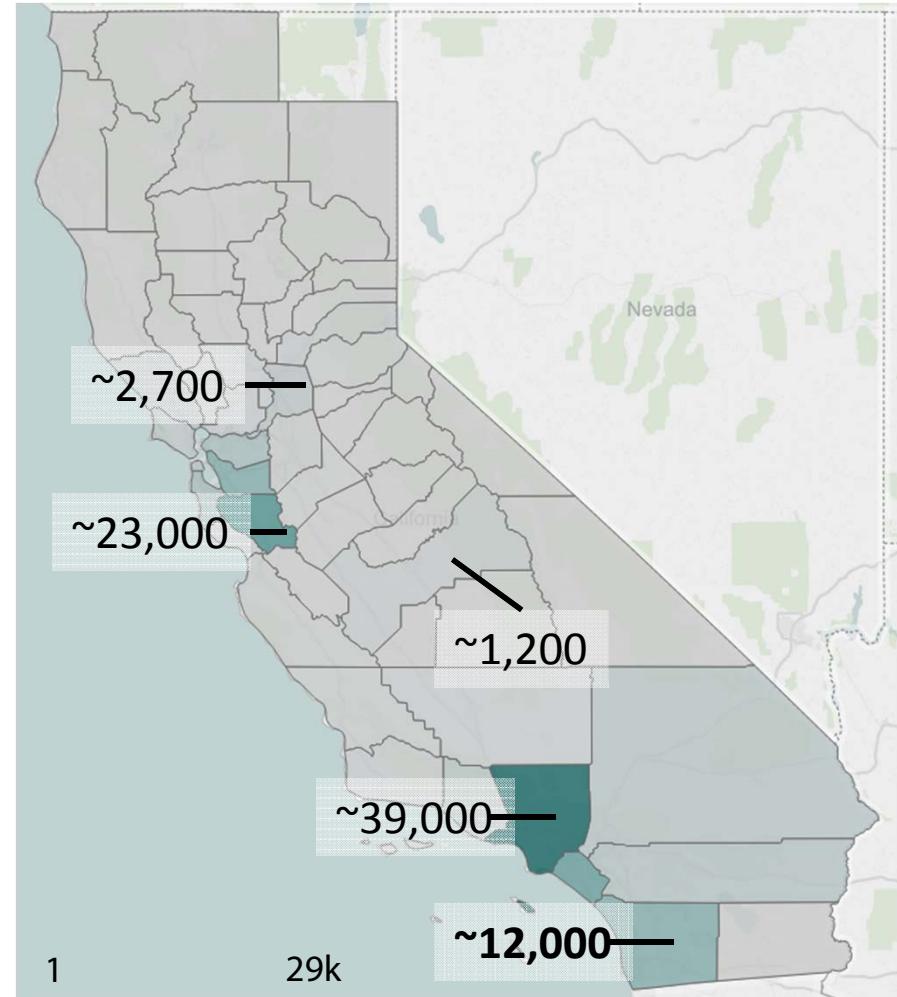


CVRP Rebates and Uptake Rate

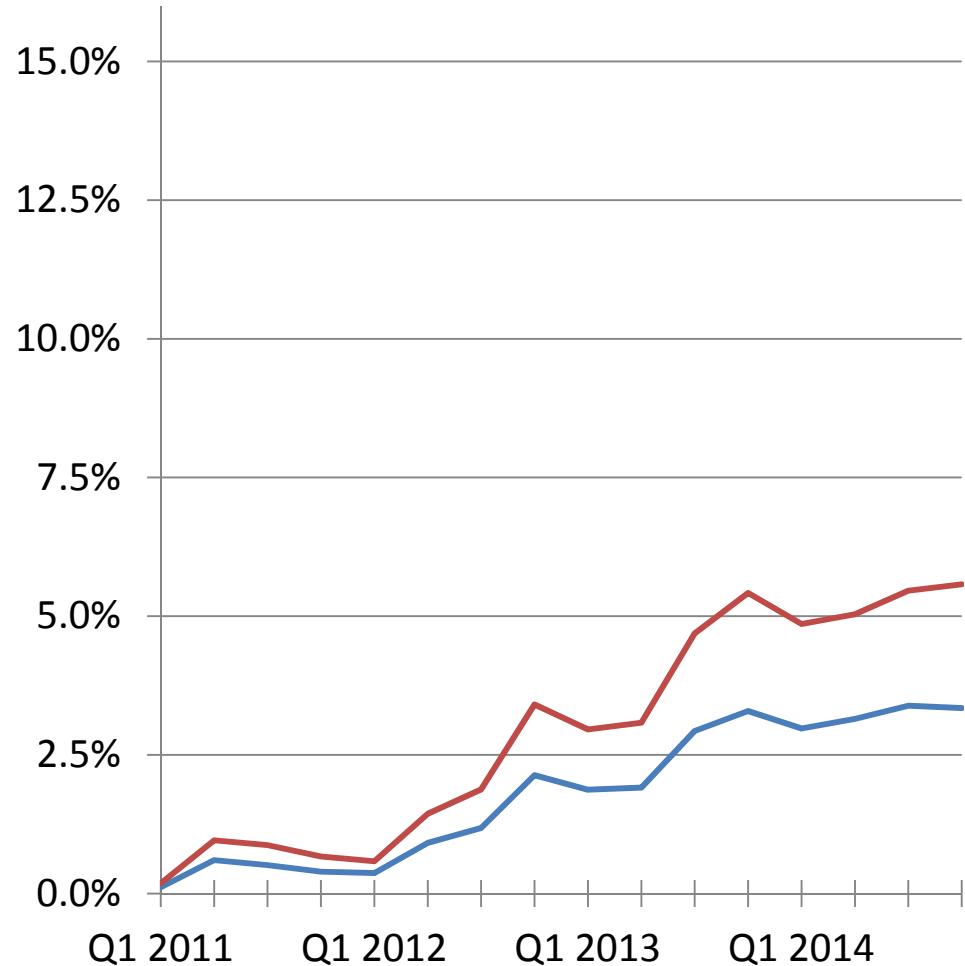
CVRP Rebates
Mar 2010 – Jul 2015



EV Sales Estimate (Uptake-Adjusted Rebates)
Mar 2010 – Jul 2015



California ZEV Market Share



Q4 2014 Market Share

- 5.5% of new cars
- 3.4% of new light-duty vehicles

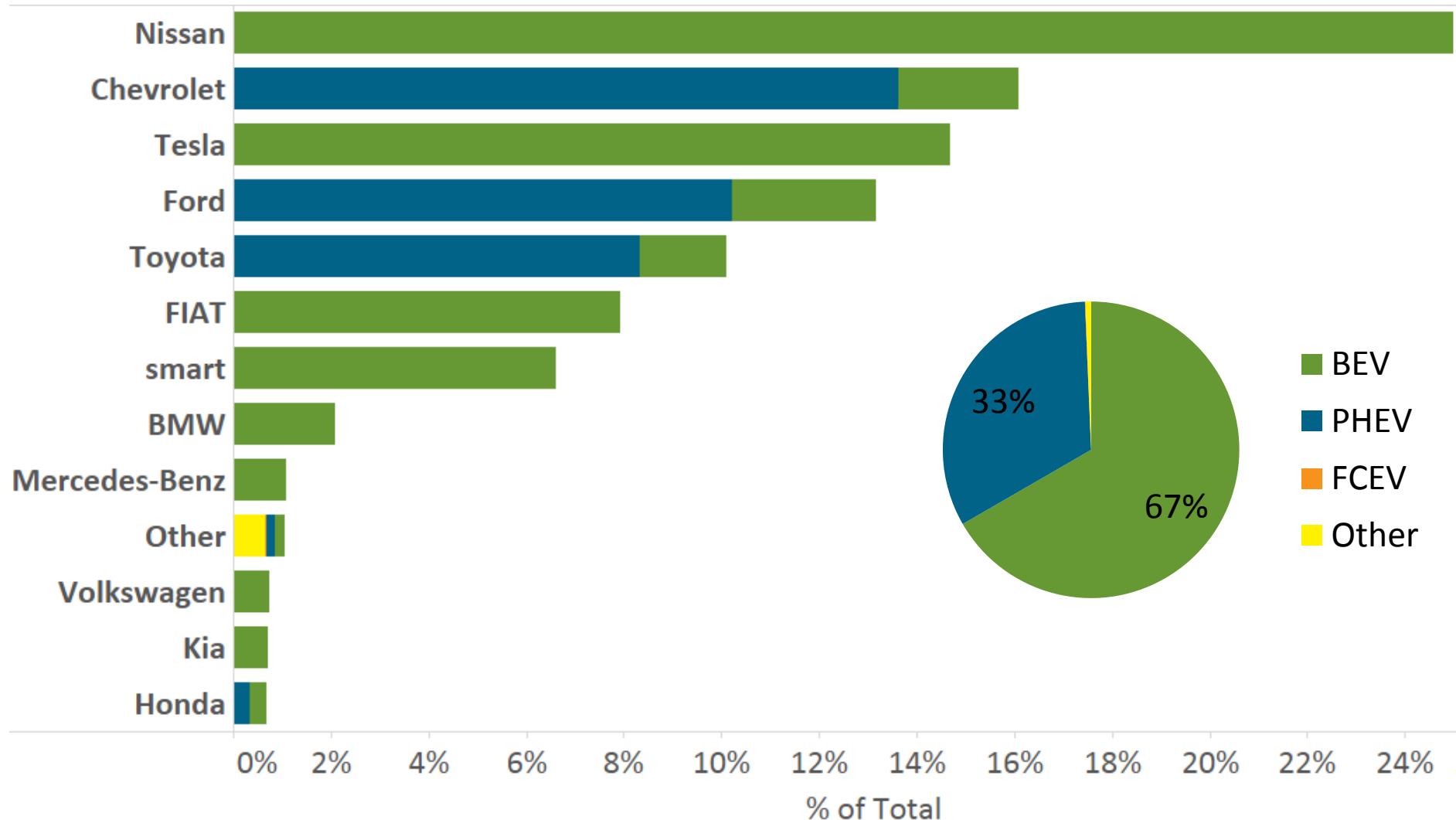
New Car Market Share
New Light-Duty Vehicle Market Share



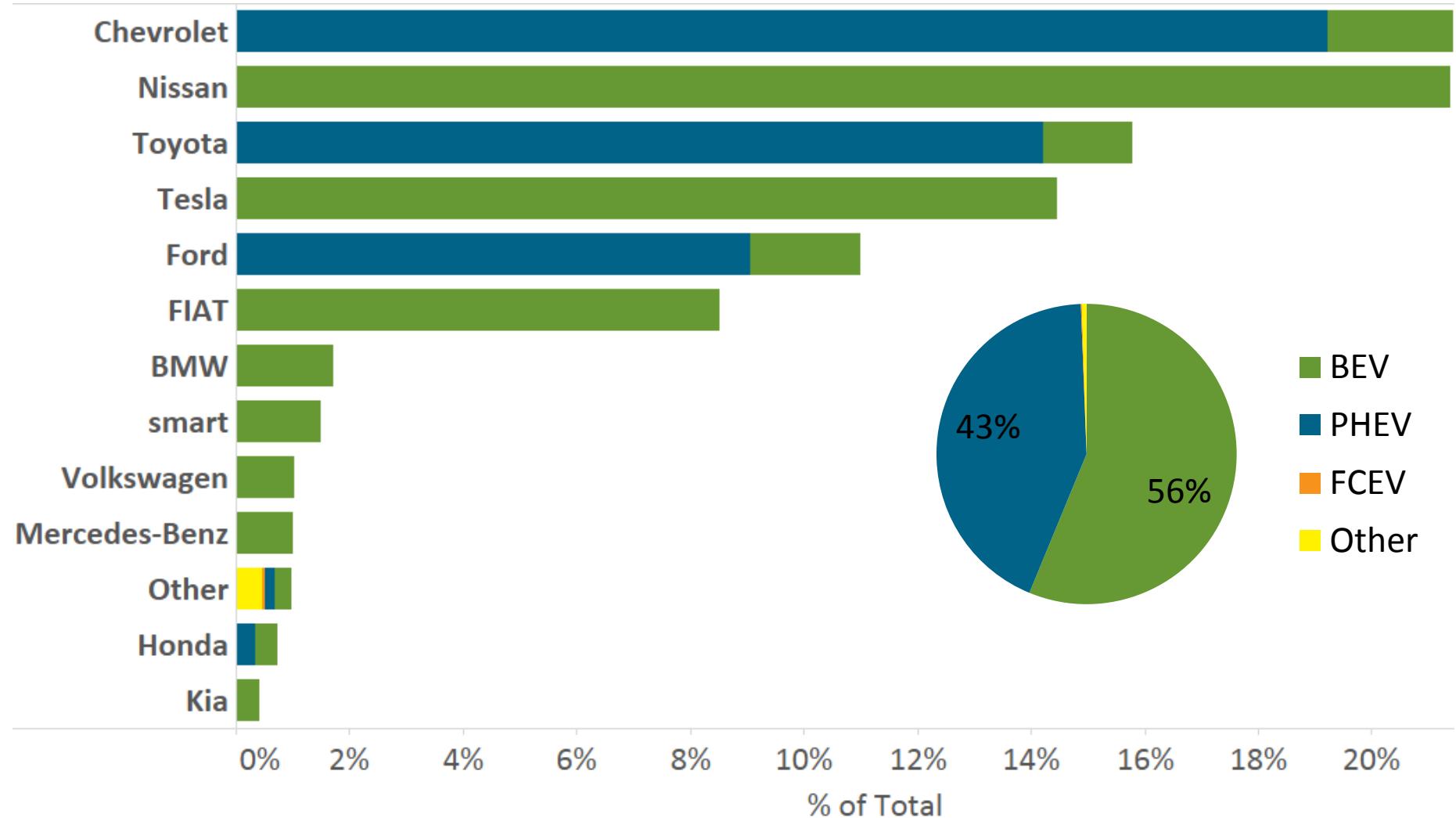
OPTION 1: Polk Data and Uptake



San Diego EV Market: Rebates

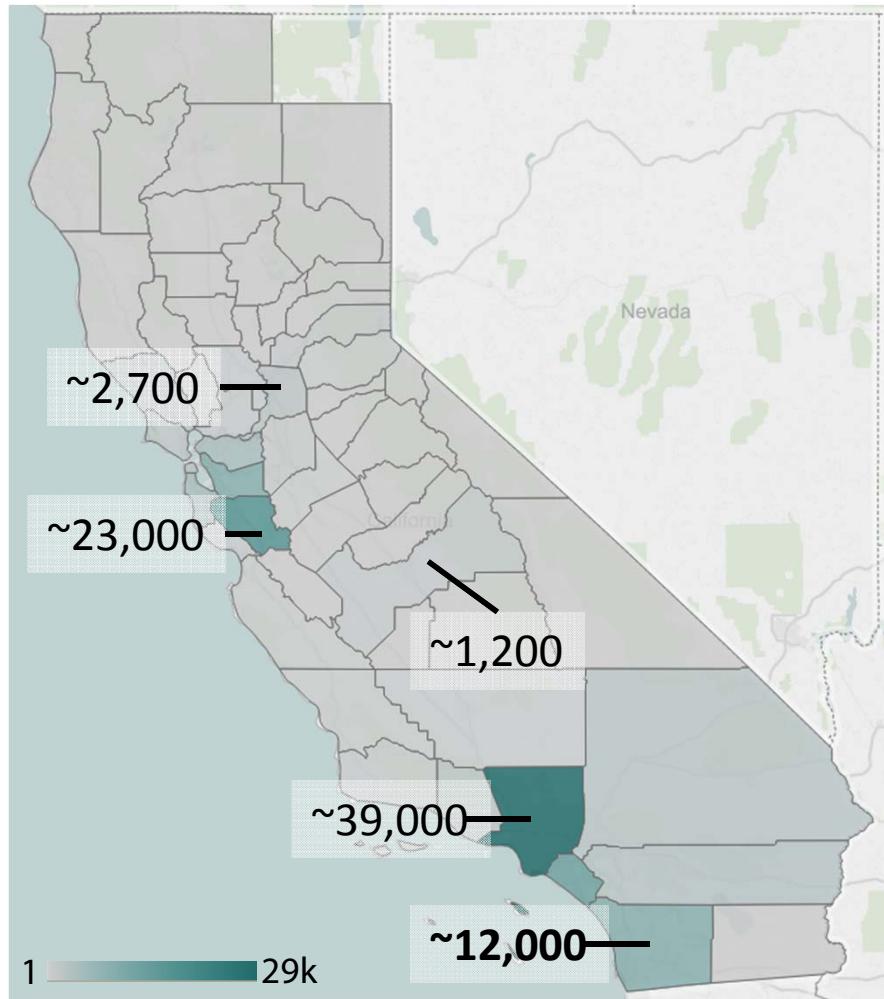


Rest of State: Rebates

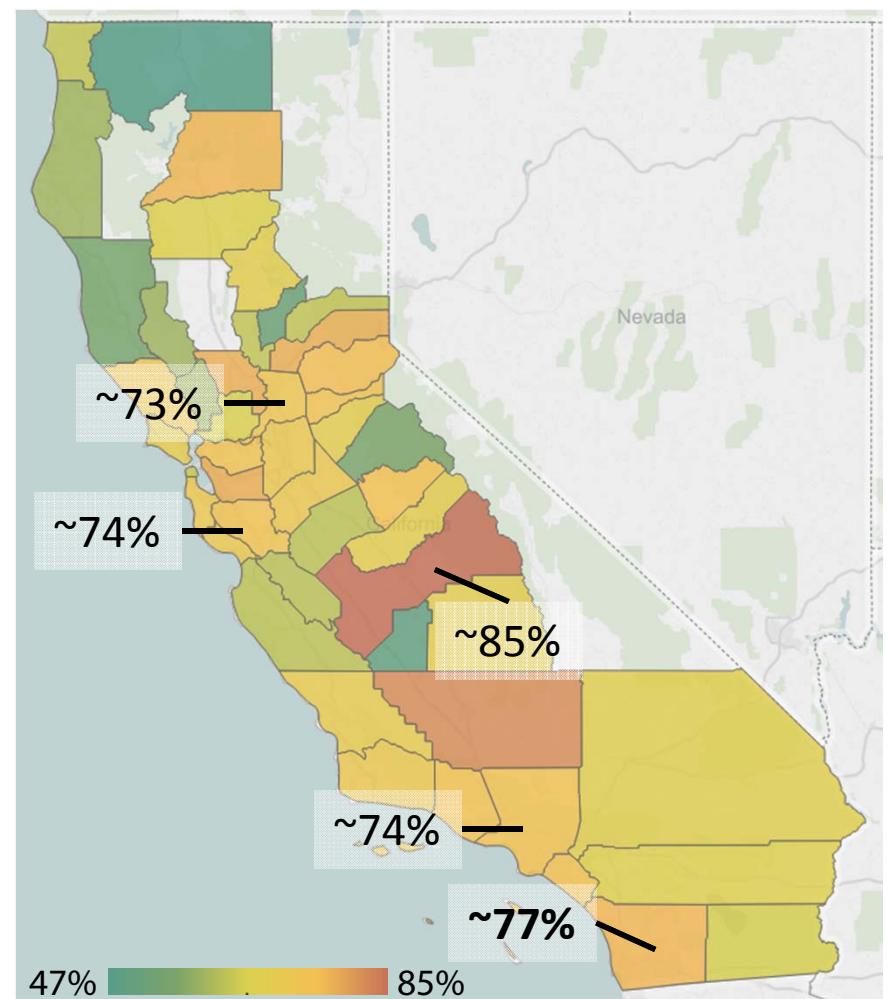


EV Sales Estimate and Uptake Rate

EV Sales Estimate (Uptake Adj. Rebates)
Mar 2010 – Jul 2015



CVRP Uptake
Mar 2010 – Mar 2015



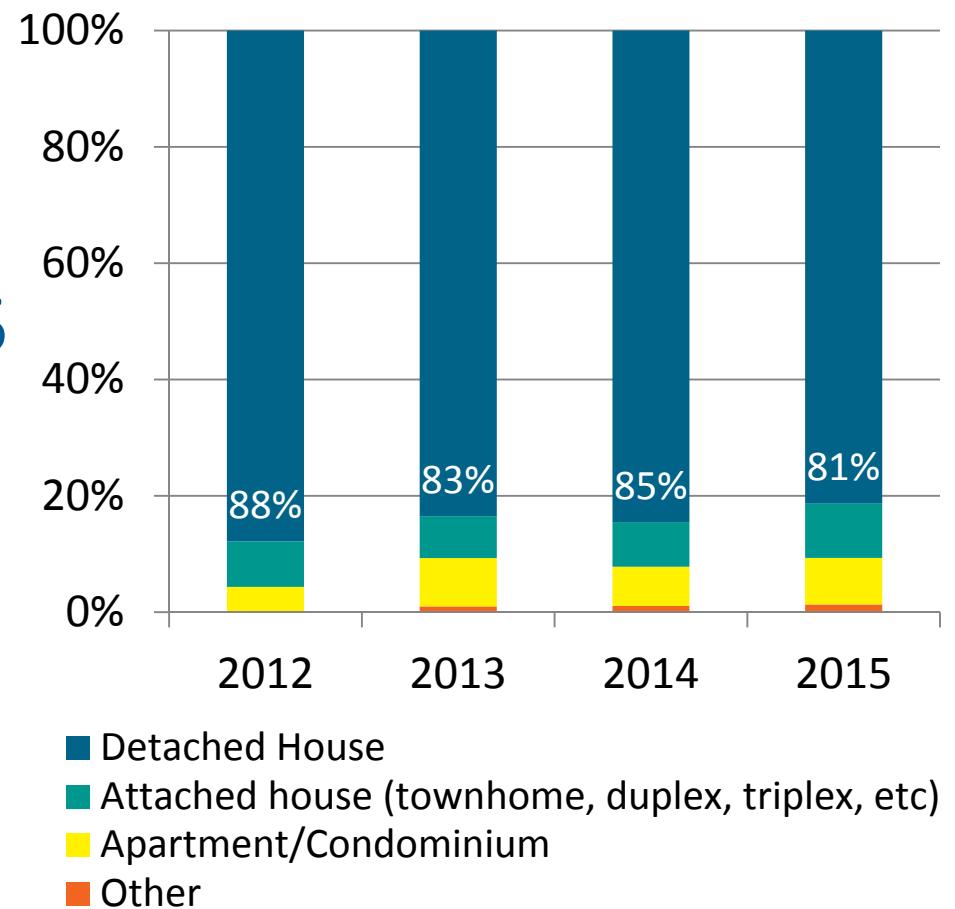


OPTION 2: Rebates and Uptake

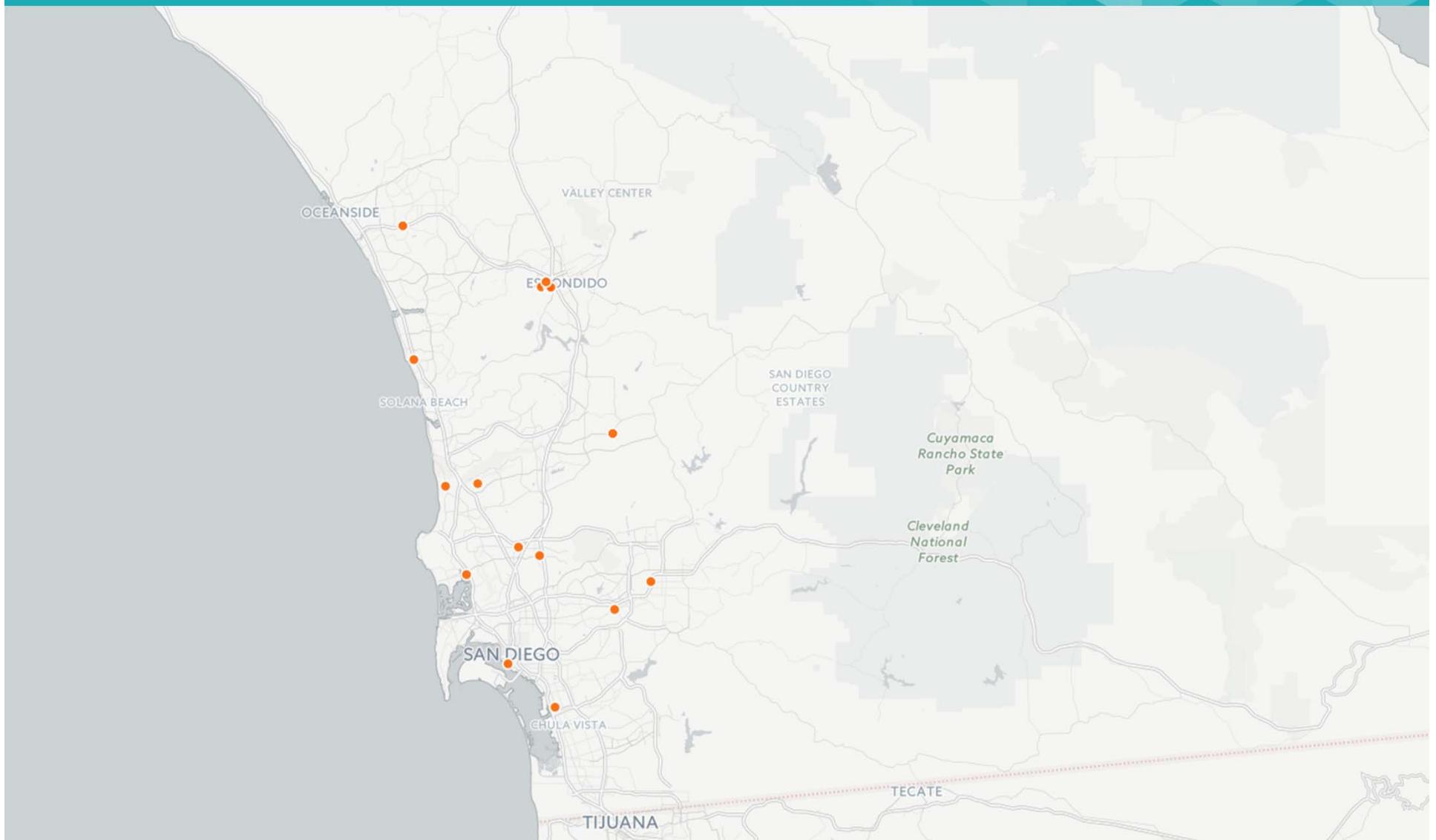


Demographics

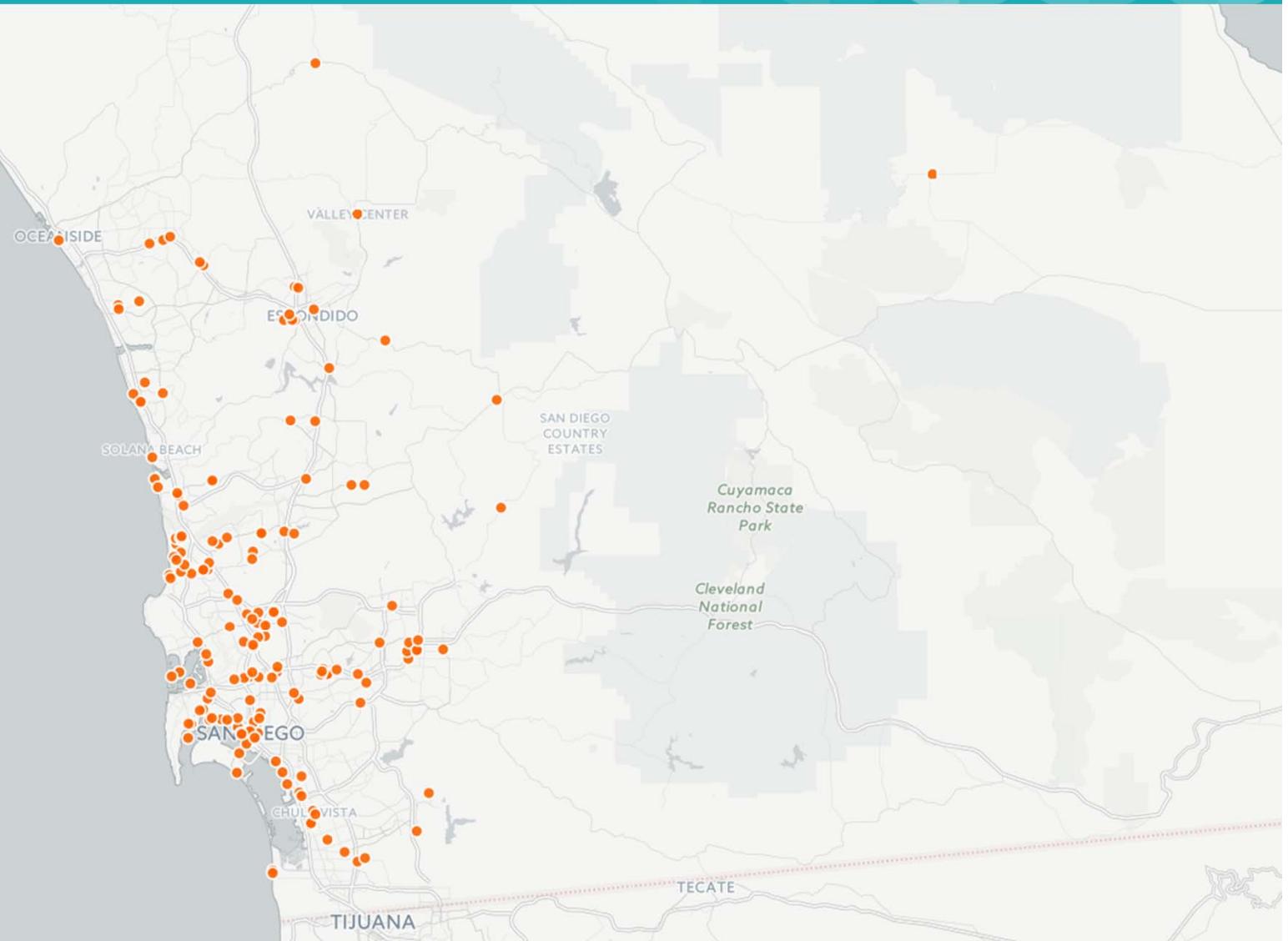
- ~7% increase in housing other than detached single family homes from Q3 2012 – Q2 2015
 - Q1 and Q2 2015: 19% attached homes, apartments/condos, or other
- No other demographic changes evident



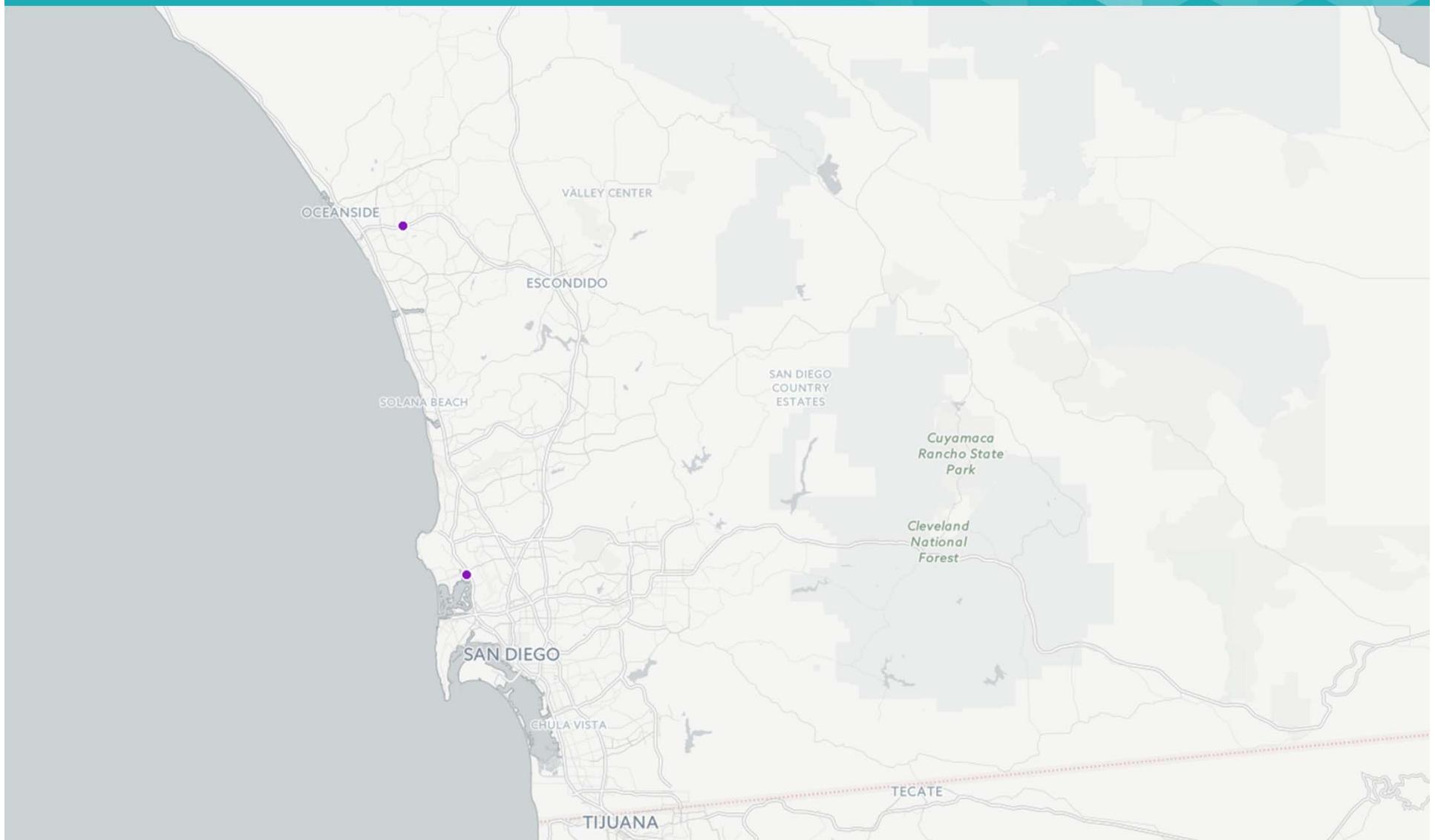
Public Electric Vehicle Charging Sites - 2012



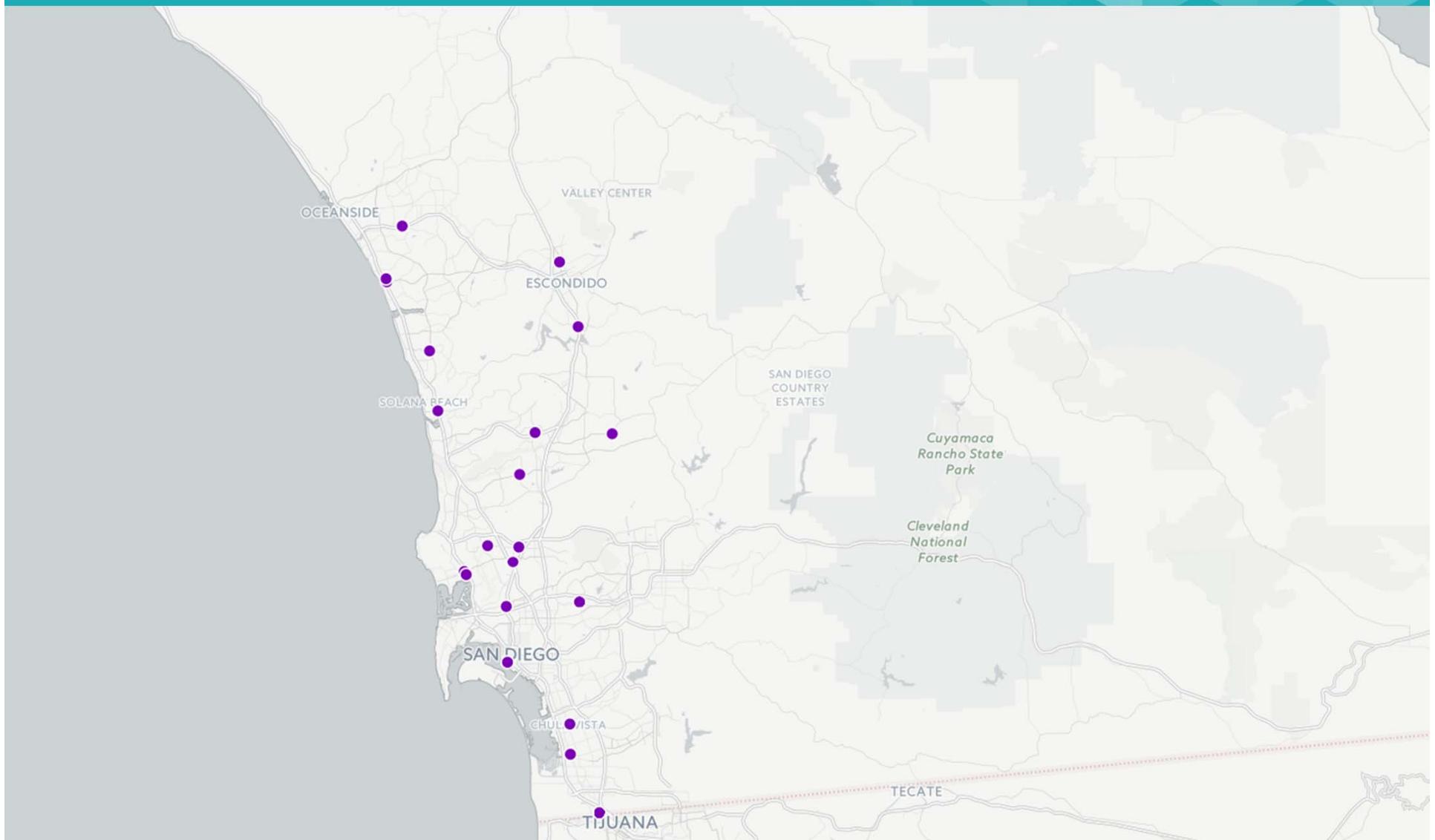
Public Electric Vehicle Charging Sites - 2015



Public DC Fast Charging Sites - 2012



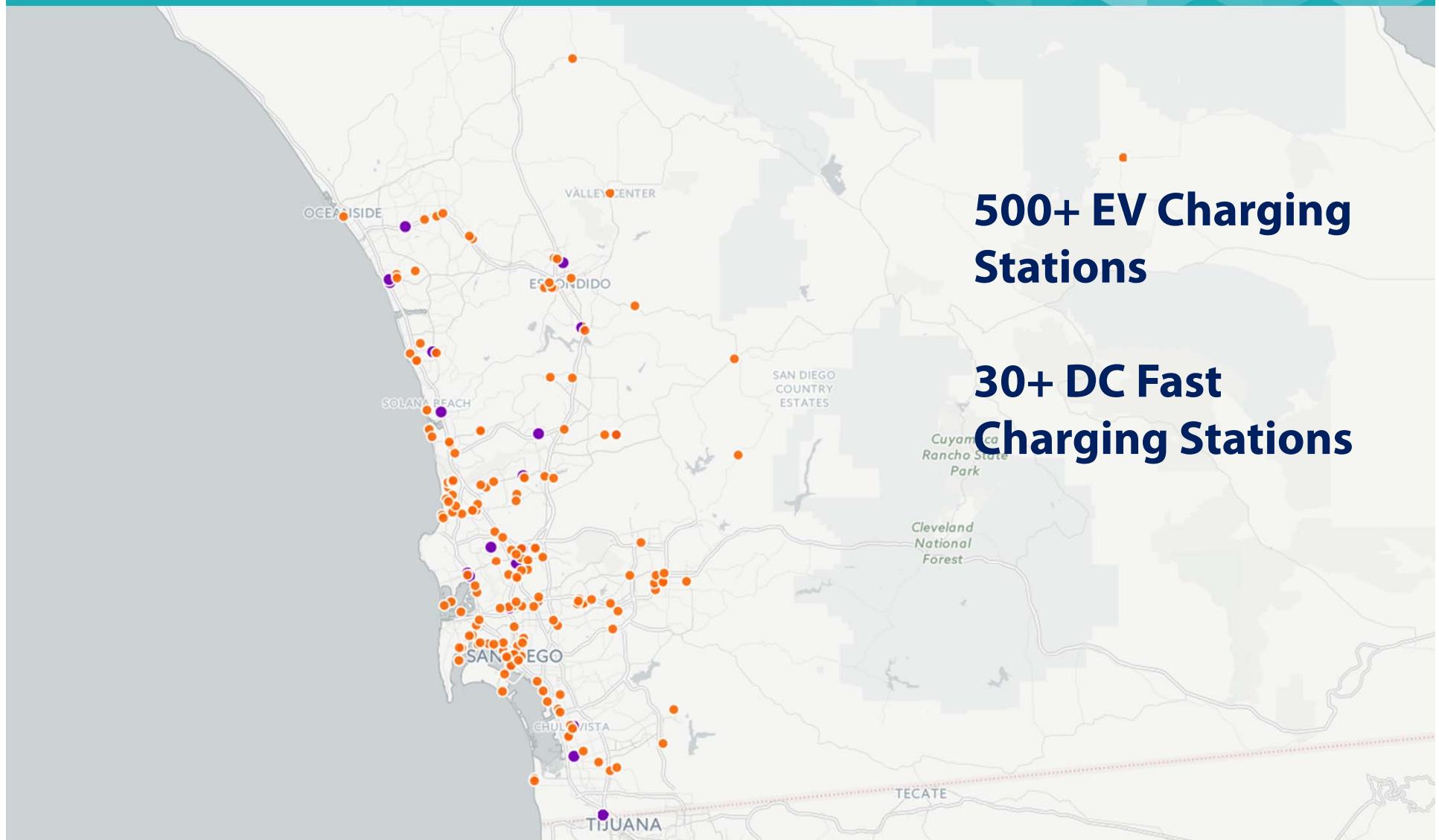
Public DC Fast Charging Sites - 2015



Total Public Charging Sites

**500+ EV Charging
Stations**

**30+ DC Fast
Charging Stations**





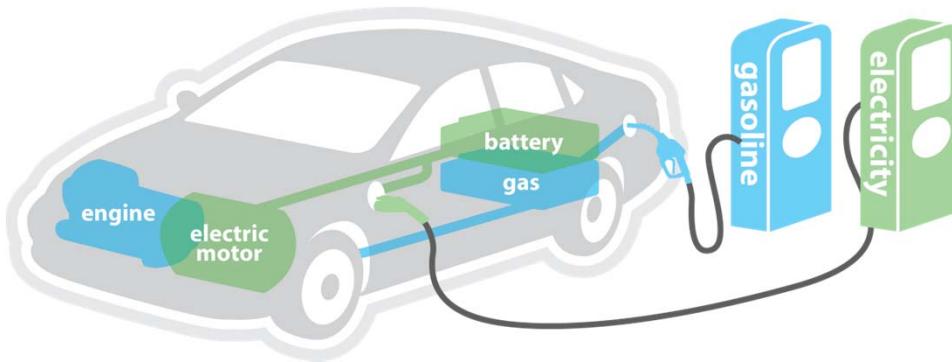
PEV 101



Plug-in Electric Vehicles

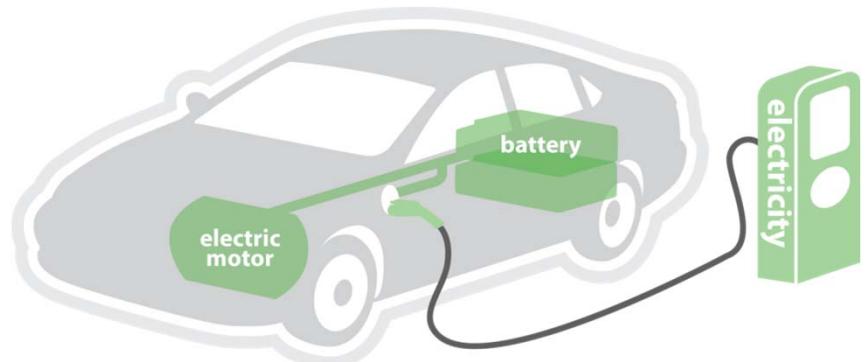
Plug-in Hybrid Electric Vehicle

- Runs on gasoline and electricity from grid
- Up to 40 miles on electricity, 150 to 400 miles total range, depending on model



Battery Electric Vehicle

- Runs entirely on electricity that is stored on an onboard battery
- Range of 60 to about 100 miles, depending on model



Vehicles on the Road

All-battery
Fuel: 100% Electric



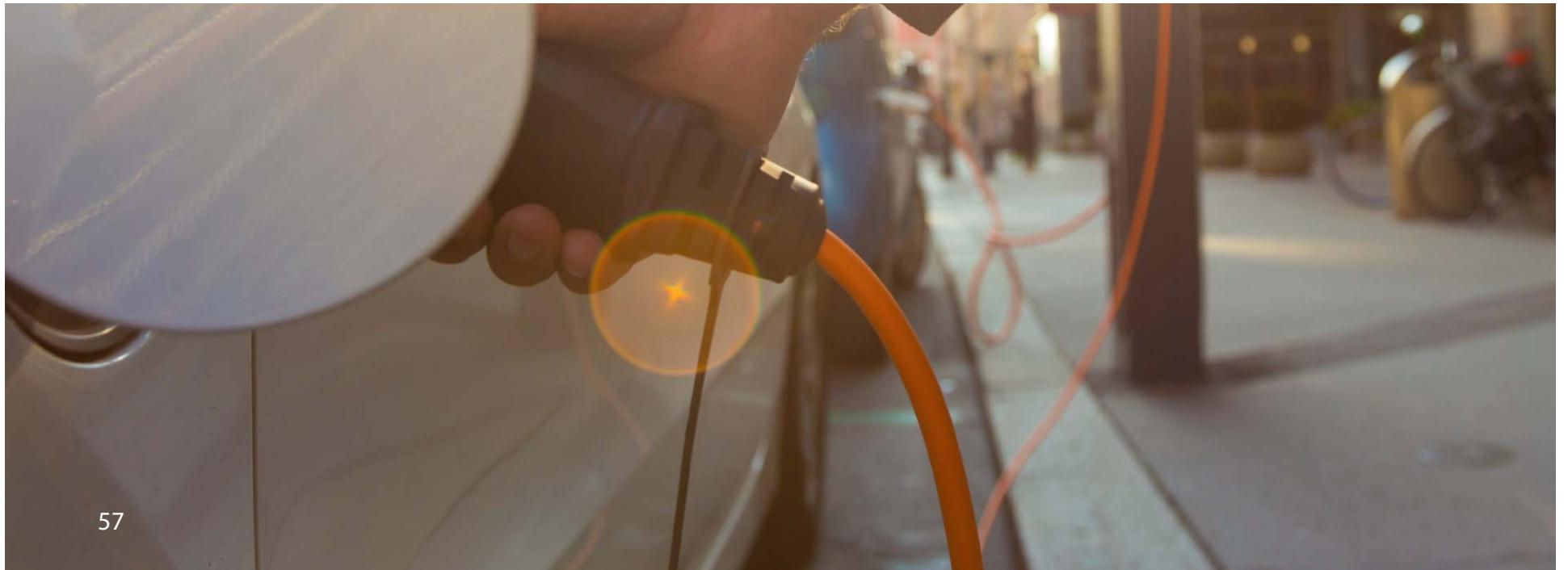
Vehicles on the Road

Plug-in Hybrid Electric Vehicle Fuel: Electric and Gasoline





New and Upcoming Vehicles



2014 Additions (All-Battery, Plug-in Hybrid, and Fuel-Cell)

	Vehicle	Vehicle Category	EPA Fuel Economy	EPA Range
	Cadillac ELR	PHEV	82 mpg _e , 33 mpg (gas)	37 e-mi 340 total
	Hyundai Tucson Fuel-Cell	FCEV	48–50 kg/mi (city–hwy)	265 mi
	BMW i3, i3 REx	BEV, BEVx	124 mpg _e , 117 mpg _e	81 e-mi, 72 e-mi; 150 total
	Mercedes B-Class Electric	BEV	84 mpg _e	87 e-mi
	Kia Soul EV	BEV	105 mpg _e	93 e-mi
	Volkswagen e-Golf	BEV	116 mpg _e	83 e-mi

Upcoming PHEVs

	Vehicle	Vehicle Category	Expected Release
	Volvo V60 PHEV	PHEV	2015
	Volkswagen Golf GTE	PHEV	2015
	Audi A4 e-quattro	PHEV	2015
	Audi A3 e-tron	PHEV	2015
	Hyundai Sonata Plug-in Hybrid	PHEV	2015

Upcoming PHEVs

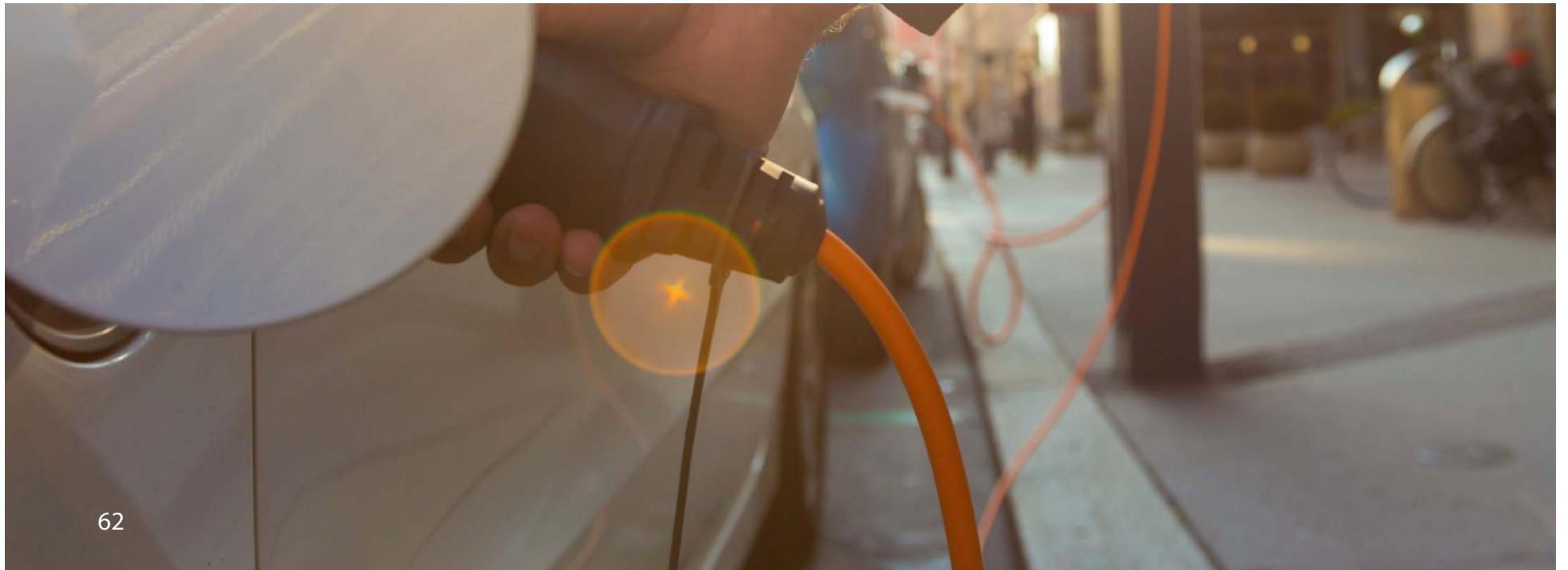
	Vehicle	Vehicle Category	Expected Release
	Chevrolet Volt (MY2016)	PHEV	2015
	Mercedes S500 Plug-in Hybrid	PHEV	2015
	Mitsubishi Outlander PHEV	PHEV	2015
	Volvo XC90 T8 Plug-in Hybrid	PHEV	2015
	Mercedes C350 Plug-in Hybrid	PHEV	2016

Upcoming BEVs and FCEVs

	Vehicle	Vehicle Category	Expected Release
	Tesla Model X	BEV	2015
	Chevrolet Bolt	BEV	2016
	Infinity LE	BEV	2017
TBD in 2017	Tesla Model 3	BEV	2017
	Toyota Mirai	FCEV	Fall 2015



Benefits of Driving Electric



Benefits: Lower Fuel Costs

On average, it costs about half as much to fuel an electric vehicle.

regular
gasoline

3.69

electric
eGallon

1.68

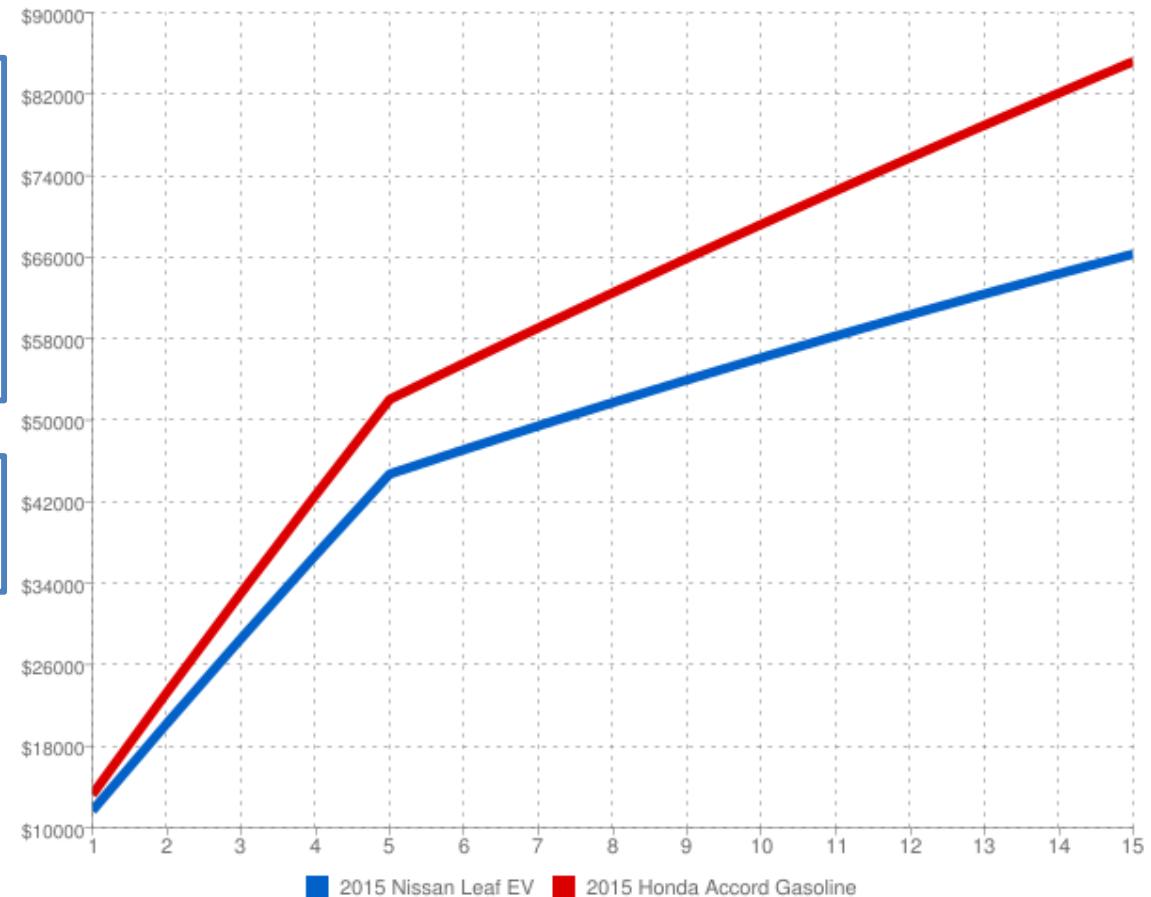
Benefits: Lower Total Cost of Ownership

Savings of **~\$8,000** at 7 years of ownership

Savings of **~\$20,000** at 15 years of ownership

Typical EV owner saves **\$750-\$1200** in fuel costs

Cumulative Cost of Ownership by Year (Dollars)

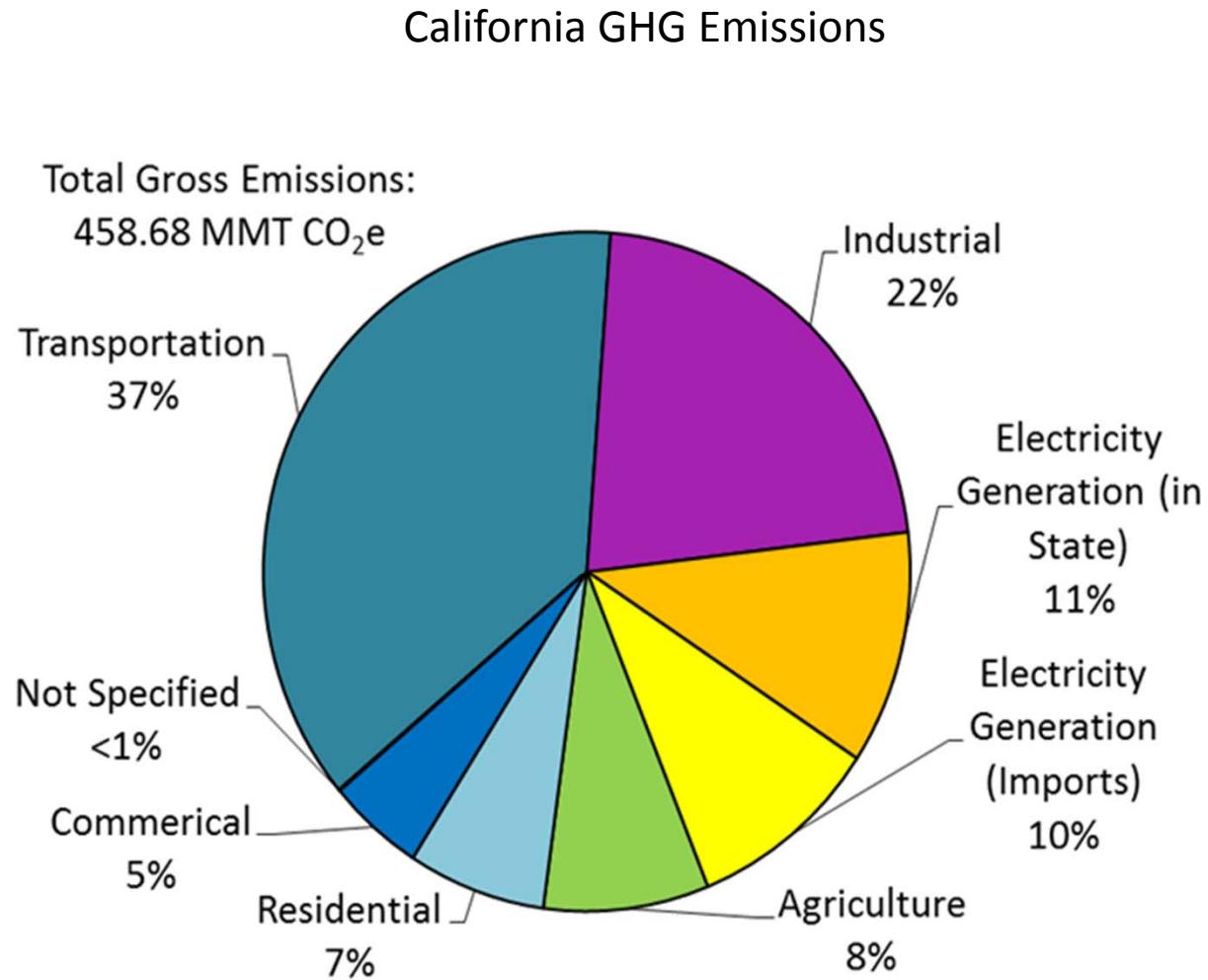


Source: AFDC Vehicle Cost Calculator

Cleaner Air:

- California vehicles emit 272 tons of smog-forming VOCs and NOx per day
- Improving air quality to federal eight-hour ozone standard could save over \$2.5 billion in medical costs and lost work days
- 30% increased risk for new asthma cases in children living in communities with higher vehicle traffic

Benefits: GHG Emissions Reductions



Benefits: Time Savings



All-battery EVs

Currently unlimited availability



Plug-in hybrid EVs

Limited number available

Valid until January 1, 2019

Benefits: FUN!

Performance!





Charging Options



Charging Equipment: L1 & L2

AC Level 1

- Uses a standard 110/120-volt alternating current (VAC) three-pronged wall plug
- 4-6 miles per hour of charge



AC Level 2

- Uses 208/240 VAC and can be hardwired or connected with a plug
- 8-24 miles per hour of charge



Charging Equipment: DC Fast Charging

- Uses commercial-grade 440 /480 VAC – produces direct current (DC) to charge
- Commercial/Public – due to costs
- Charges vehicle 80% in 30 minutes

