

DOCKETED

Docket Number:	17-IEPR-07
Project Title:	Integrated Resource Planning
TN #:	217135
Document Title:	Future of Zero Emissions Automobiles
Description:	4.18.17 Presentation by Douglas Steven of Alliance of Automobiles Manufacturers
Filer:	Raquel Kravitz
Organization:	Alliance of Automobiles Manufacturers
Submitter Role:	Public
Submission Date:	4/17/2017 4:45:58 PM
Docketed Date:	4/17/2017

BMW Group

FCA
FIAT CHRYSLER AUTOMOBILES



PORSCHE

TOYOTA

VOLKSWAGEN
GROUP OF AMERICA



AUTO ALLIANCE

DRIVING INNOVATION®



Future of Zero Emissions Automobiles



AUTO ALLIANCE
DRIVING INNOVATION®

ZEVs (zero emission vehicles)

- Plug-in hybrid electric vehicles (PHEVs, A3 eTron, Prius Prime, Pacifica Hybrid)



- Battery electric vehicles (BEVs, Fiat 500e, VW eGolf)



- H2 Fuel Cell Vehicles (FCVs, Toyota Mirai)



What Automakers are Doing to Meet the ZEV Mandate

- More Models
- More variety
- Longer Range
- Better Performance
- More options
- Aggressive vehicle incentives

24 ZEVs from Alliance Members – AVAILABLE NOW

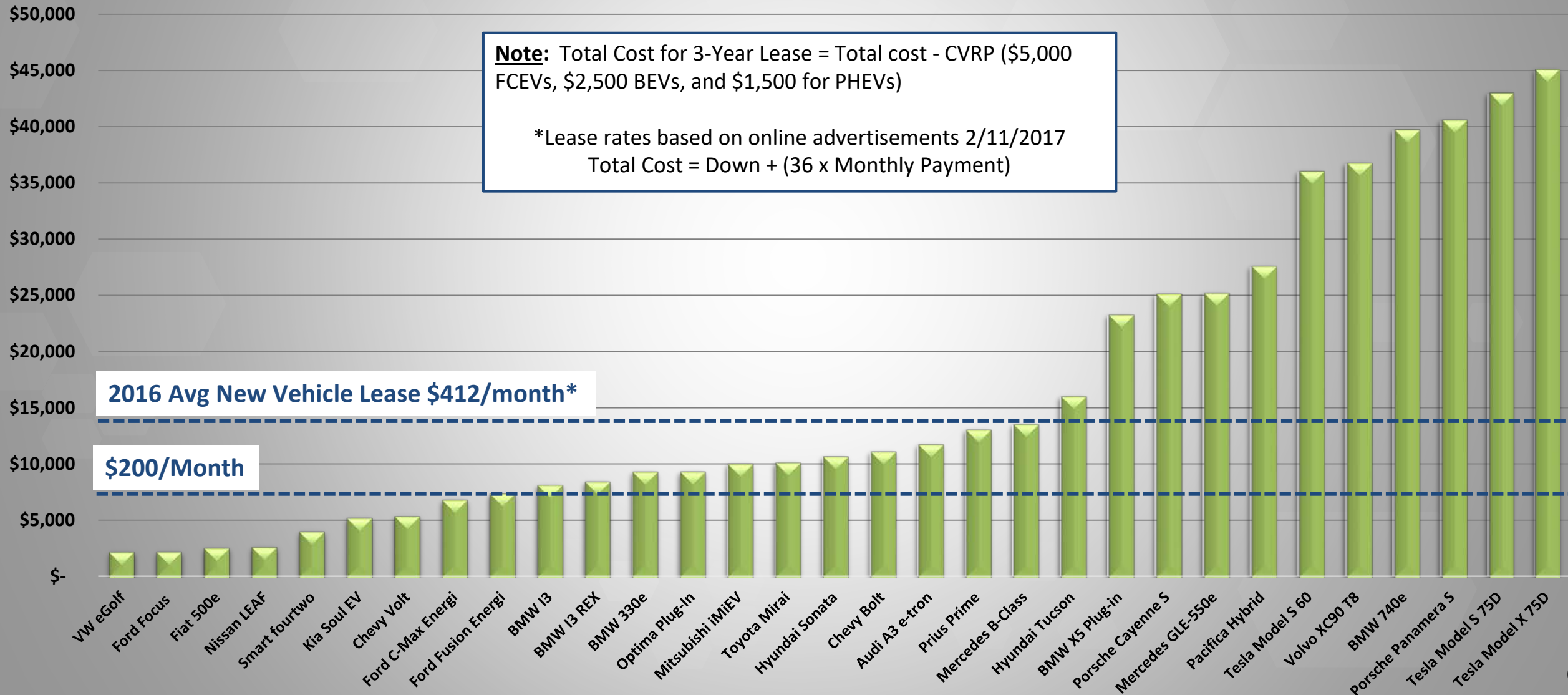
BEV
BMW i3
Chevy Bolt
Fiat 500E
Ford Focus Electric
Mercedes B-Class EV
Smart Electric Drive
Volkswagen eGolf

PHEV
Audi A3 e-tron
BMW 330e
BMW 740e
BMW i3 REX
BMW i8
BMW X5 Plug In
Chevy Volt
Chrysler Pacifica
Ford C-Max Energi
Ford Fusion Energi
Mercedes C350e
Mercedes GLE-550e
Mercedes S550e
Porsche Cayenne S
Porsche Panamera
Toyota Prius Prime
Volvo XC90 T8

FCEV
Toyota Mirai

Low-Cost Leases Available for CVRP Eligible

Lease Rates with CVRP Aggressive Automaker Incentives Total Cost For 3-Year Lease*



Low-Income Californians

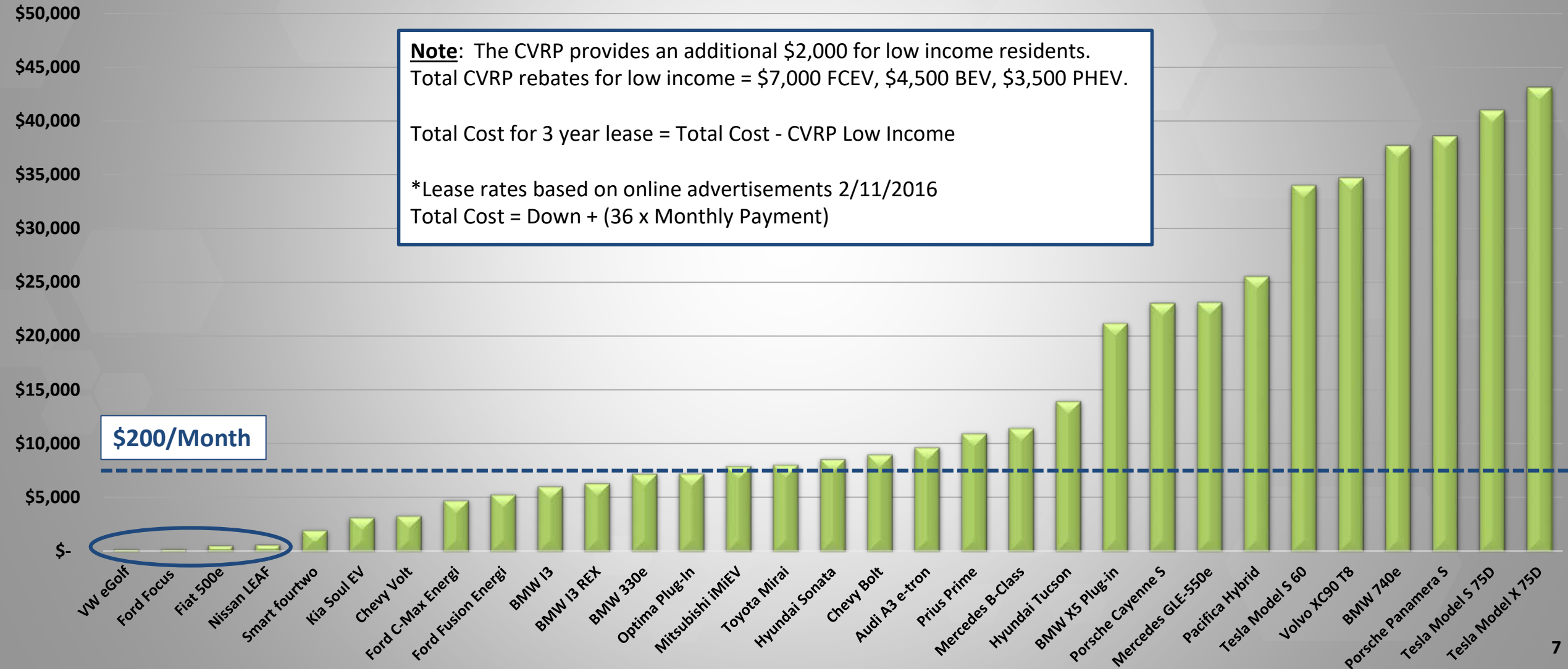
State-Wide Low Income Aggressive Automaker Incentives Total Cost For 3-Year Lease*

Note: The CVRP provides an additional \$2,000 for low income residents.
 Total CVRP rebates for low income = \$7,000 FCEV, \$4,500 BEV, \$3,500 PHEV.

Total Cost for 3 year lease = Total Cost - CVRP Low Income

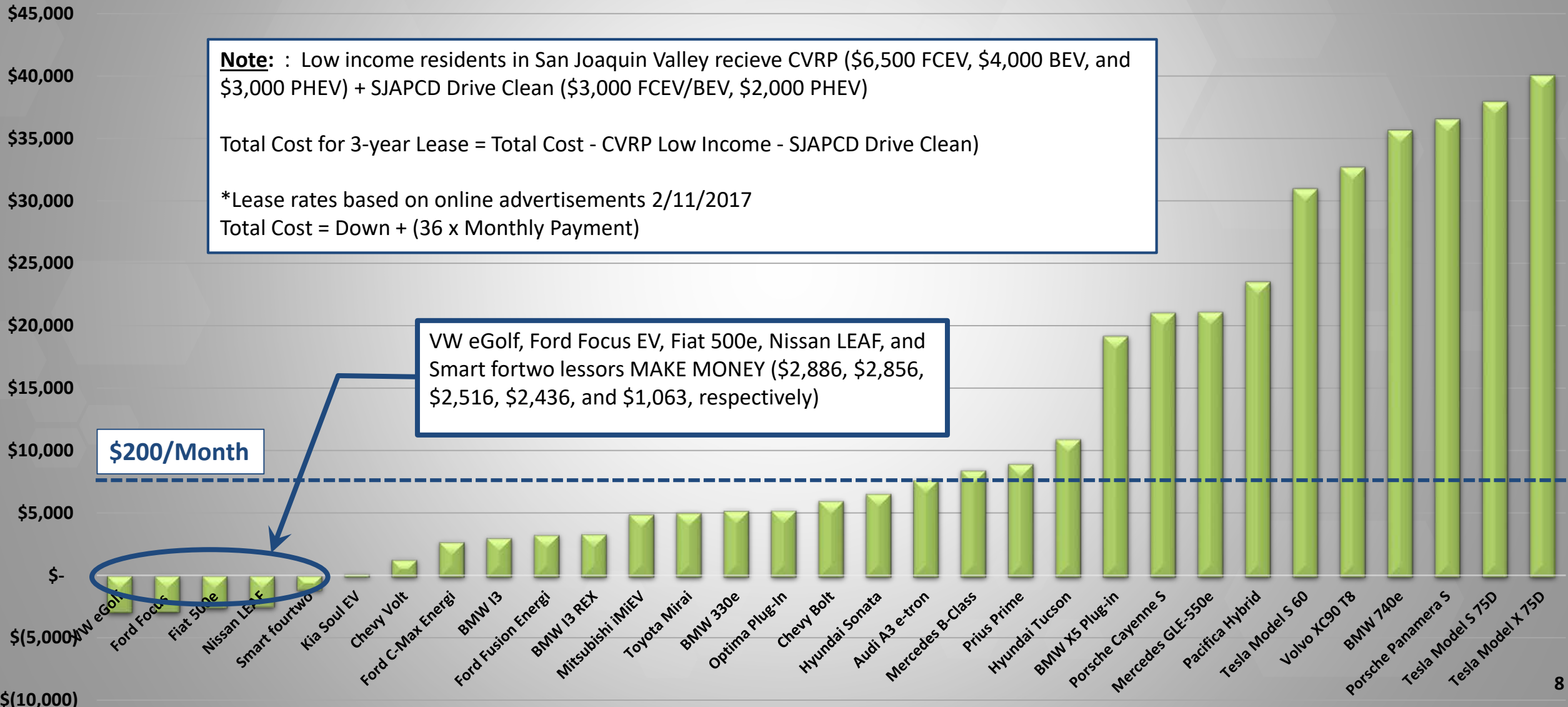
*Lease rates based on online advertisements 2/11/2016

Total Cost = Down + (36 x Monthly Payment)

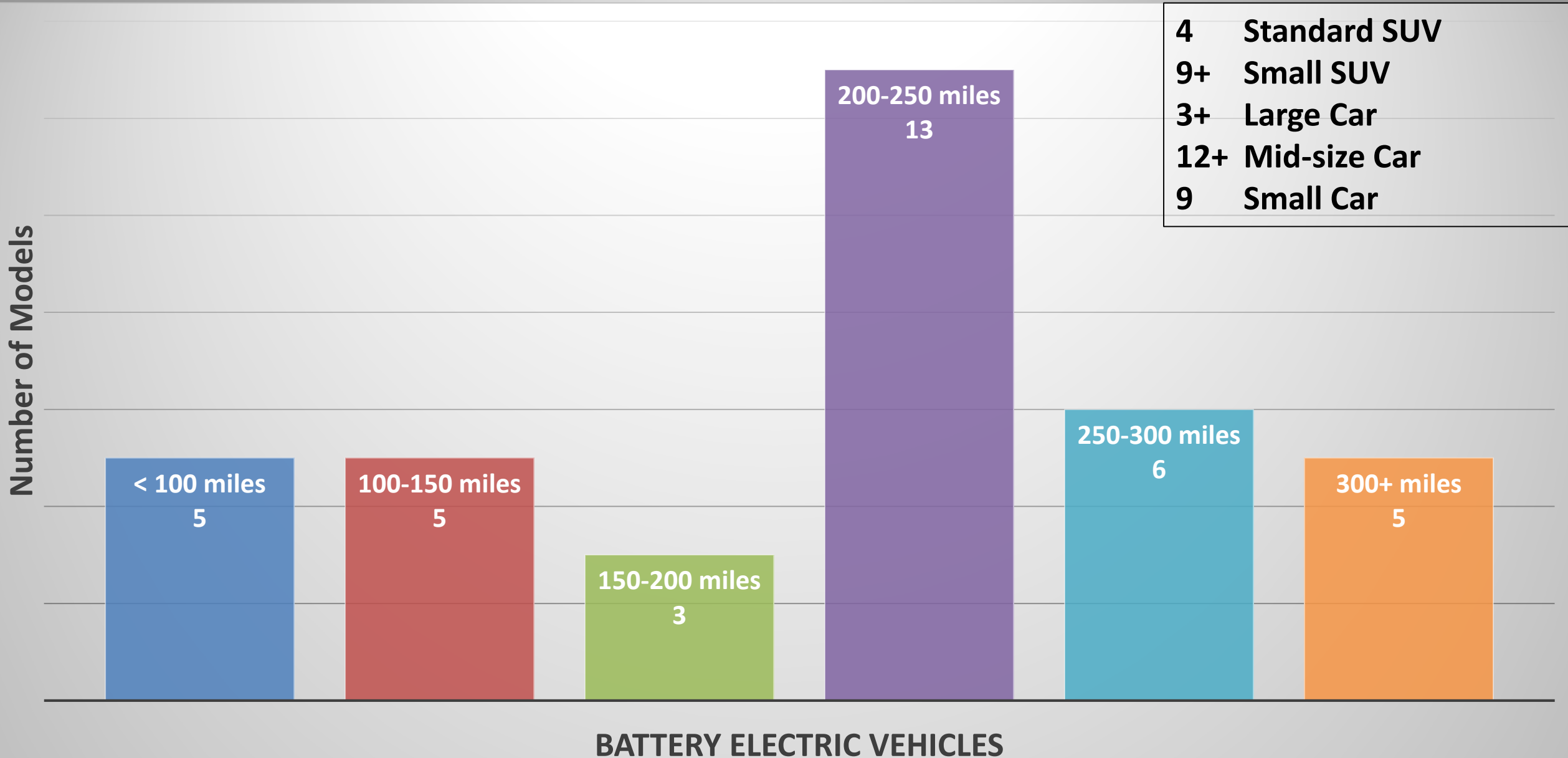


Low Income San Joaquin Valley

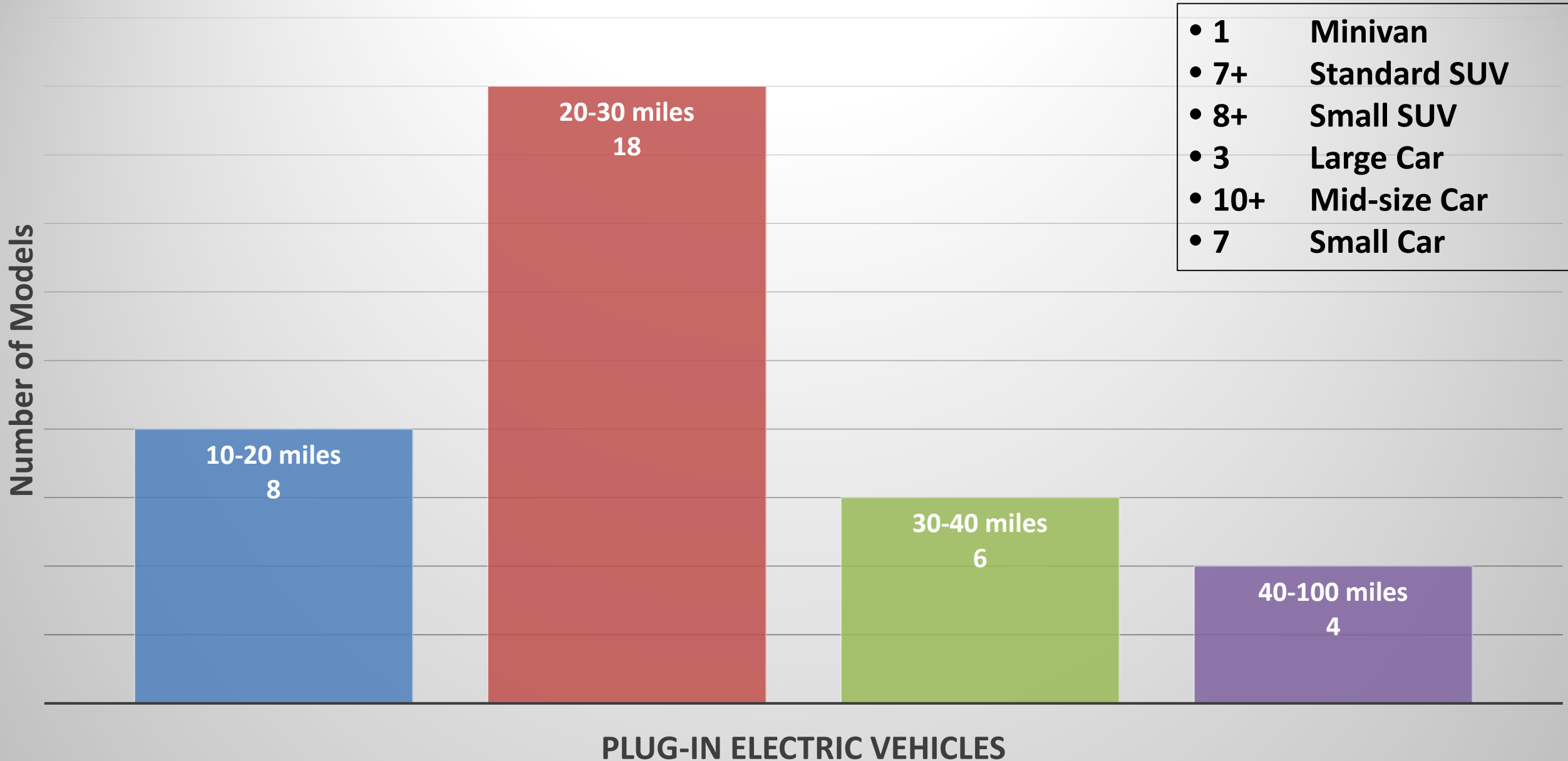
San Joaquin Valley Low Income Residents Aggressive Automaker Incentives Total Cost For 3-Year Lease*



37+ BEV Models within 5 Years



36+ PHEV Models within 5 Years





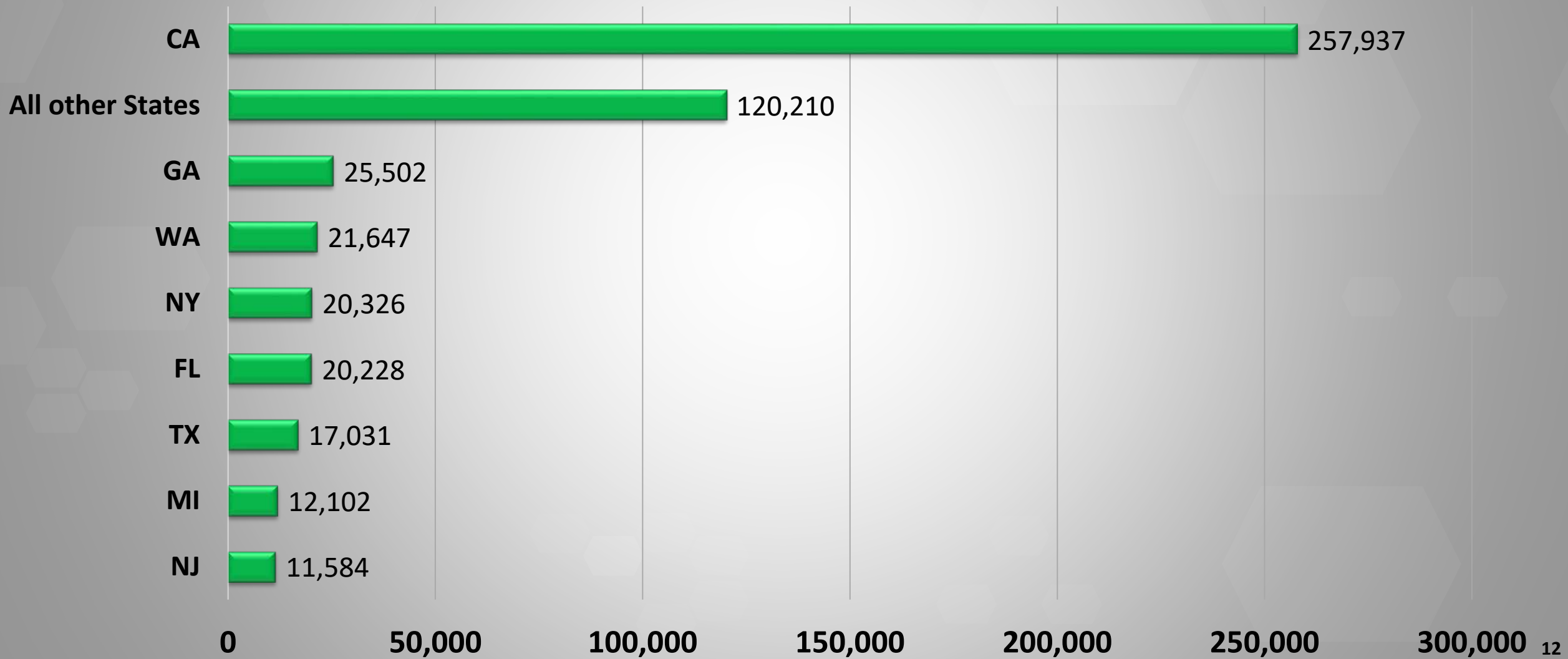
State's Role



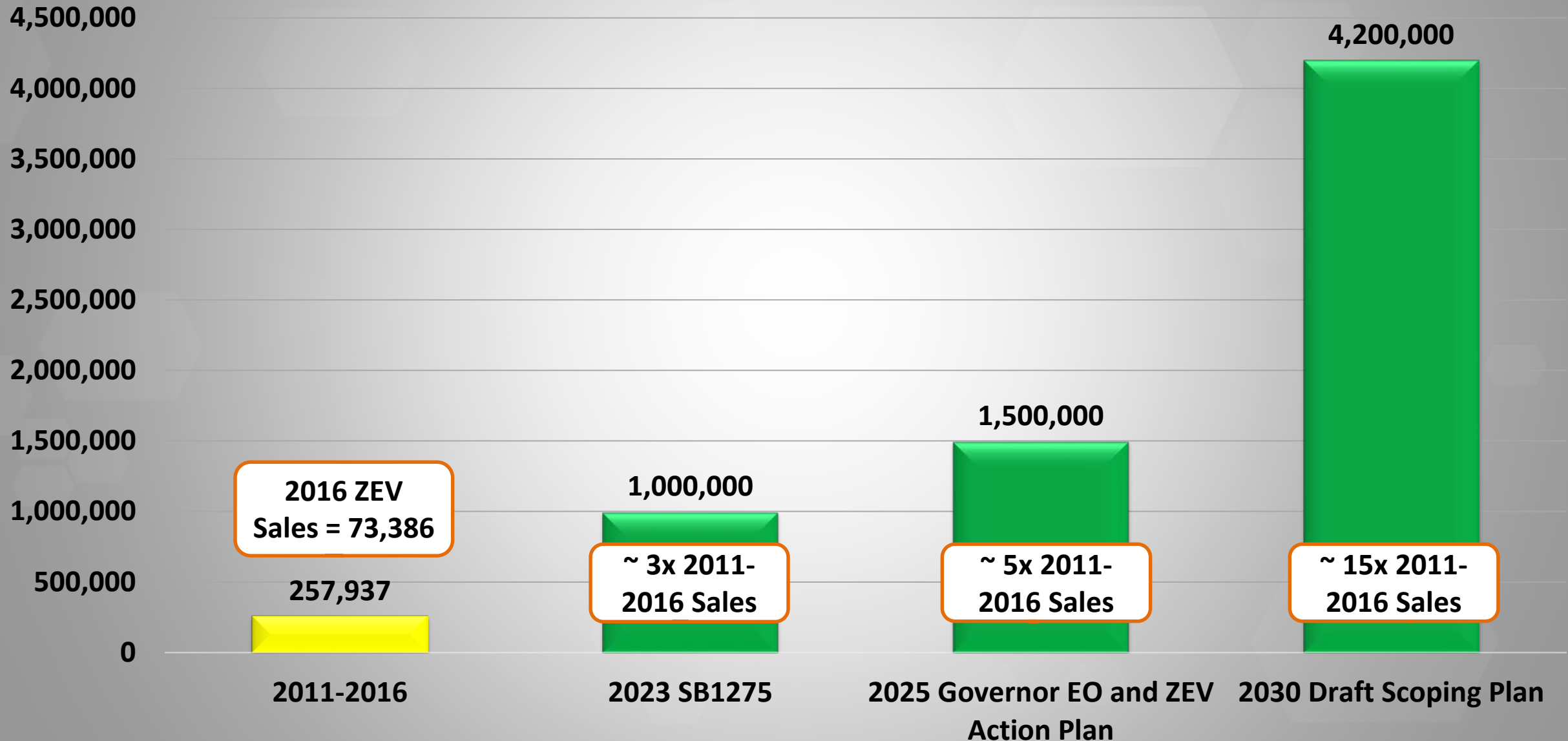
AUTO ALLIANCE
DRIVING INNOVATION®

Top ZEV States

Total ZEV Sales 2011-2016



ZEV Goals from Governor, Legislature, and ARB



Priorities for Growing ZEV Market

- **Simple and low-cost electric charging at home**
- **Fueling Infrastructure needed**
- **CVRP Incentive – Consistent availability and eligibility of CVRP**
 - \$5,000 FCEV
 - \$2,500 BEV
 - \$1,500 PHEV
 - \$2,000 in addition to above for low income Californians
- **HOV Lane Access Incentive – Consistent availability and eligibility**

Electricity More than Gasoline for Many

Nissan Leaf		
Utility/Rate plan	Ave rate (\$/kWh)	\$/gallon gas
PG&E: E-6	0.333	3.802
PG&E: E-TOU Option A	0.289	3.302
PG&E: E-TOU Option B	0.218	2.486
PG&E: EV-A	0.116	1.328
PG&E: EV-B	0.116	1.323
SCE: TOU-D	0.122	1.393
SCE: TOU-D-T	0.253	2.891
SCE: TOU-D-TEV	0.100	1.146
SCE: TOU-EV-1	0.126	1.439
SDG&E: DR-TOU	0.371	4.235
SDG&E: EV-TOU	0.182	2.078
SDG&E: EV-TOU-2	0.182	2.078
SDG&E: TOU-DR	0.372	4.247
SMUD: R-TOU	0.073	0.838
LADWP: R-1B	0.203	2.320
LADWP: R-1B (EV)	0.178	2.034
PG&E: E-1	0.364	4.159
SCE: D	0.302	3.456
SDG&E: DR	0.393	4.489
SMUD:R	0.190	2.171
LADWP: R-1A	0.243	2.779

**Flat Rate Prices more than
90% of Californians are
flat-rate customers with
rates below this line**

Chevy Volt		
Utility/Rate plan	Ave rate (\$/kWh)	\$/gallon gas
PG&E: E-6	0.333	4.619
PG&E: E-TOU Option A	0.289	4.013
PG&E: E-TOU Option B	0.218	3.021
PG&E: EV-A	0.116	1.614
PG&E: EV-B	0.116	1.608
SCE: TOU-D	0.122	1.693
SCE: TOU-D-T	0.253	3.513
SCE: TOU-D-TEV	0.100	1.393
SCE: TOU-EV-1	0.126	1.749
SDG&E: DR-TOU	0.371	5.146
SDG&E: EV-TOU	0.182	2.525
SDG&E: EV-TOU-2	0.182	2.525
SDG&E: TOU-DR	0.372	5.160
SMUD: R-TOU	0.073	1.018
LADWP: R-1B	0.203	2.819
LADWP: R-1B (EV)	0.178	2.472
PG&E: E-1	0.364	5.053
SCE: D	0.302	4.199
SDG&E: DR	0.393	5.454
SMUD:R	0.190	2.638
LADWP: R-1A	0.243	3.377

Is Electricity More than Gasoline for Many?

Utility Flat Rate	<u>Nissan LEAF</u> (price per gallon of gas equivalent compared to 40 mpg car)	<u>Chevrolet Volt</u> (price per gallon of gas equivalent compared to 40 mpg car)
PG&E	\$3.69	\$3.85
SCE	\$3.07	\$3.20
SDG&E	\$3.98	\$4.15
LADWP	\$2.47	\$2.57
SMUD	\$1.93	\$2.01

Are Electric Rates too Complicated?*

Plan	Targeted Users	Peak Period	Super-Off-Peak Period	Peak Rates	Off-peak Rates	Super Off-Peak Rates	Monthly Fee	Tiered?
TOU-D-TEV	Customers that charge EVs at home	10 hours 8am-6pm	6 hours 12am-6am	\$0.19 - \$0.49	\$0.13 - \$0.31	0.11	\$0.00	Yes
TOU-D	Self-generation customers High-usage customers	6 hours 12pm-6pm	0 hours	\$0.22 - \$0.47	\$0.13 - \$0.26	N/A	\$0.93	Yes
TOU-D-A	Customers that consume less than 700kWh/mo	6 hours 2pm-8pm	10 hours 10pm-8am	\$0.37 - \$0.47	\$0.26 - \$0.30	0.11	\$0.93	No
TOU-D-B	Customers that consume more than 700kWh/mo	6 hours 2pm-8pm	10pm-8am	\$0.25 - \$0.35	\$0.14 - \$0.18	0.11	\$16	No

* See <http://ev-vin.blogspot.com/2015/02/new-sce-time-of-use-rate-structure.html>

One Person – One Utility - Summer

SUMMER RATE								TOU-D-TEV			TOU-D			TOU-D-A			TOU-D-B														
Hour	8/18/14						8/24/14	Weekday Rate	Weekend Rate	Weekly Cost	Weekday Rate	Weekend Rate	Weekly Cost	Weekday Rate	Weekend Rate	Weekly Cost	Weekday Rate	Weekend Rate	Weekly Cost												
12:00 AM	5	5.98	4.8	4.74	5.69	6.1	8.26	\$ 0.10	\$ 0.10	\$ 4.06	\$ 0.22	\$ 0.22	\$ 8.93	\$ 0.11	\$ 0.11	\$ 4.46	\$ 0.11	\$ 0.11	\$ 4.46												
1:00 AM	2.96	5.22	4.24	4.18	4.9	4.92	7.31	\$ 0.10	\$ 0.10	\$ 3.37	\$ 0.22	\$ 0.22	\$ 7.42	\$ 0.11	\$ 0.11	\$ 3.71	\$ 0.11	\$ 0.11	\$ 3.71												
2:00 AM	1.7	5.04	4.17	3.99	4.53	4.82	5.58	\$ 0.10	\$ 0.10	\$ 2.98	\$ 0.22	\$ 0.22	\$ 6.56	\$ 0.11	\$ 0.11	\$ 3.28	\$ 0.11	\$ 0.11	\$ 3.28												
3:00 AM	1.09	4.55	4.21	4	4.53	4.56	4.78	\$ 0.10	\$ 0.10	\$ 2.77	\$ 0.22	\$ 0.22	\$ 6.10	\$ 0.11	\$ 0.11	\$ 3.05	\$ 0.11	\$ 0.11	\$ 3.05												
4:00 AM	2.68	5.46	5	4.91	5.2	5.21	5.39	\$ 0.10	\$ 0.10	\$ 3.39	\$ 0.22	\$ 0.22	\$ 7.45	\$ 0.11	\$ 0.11	\$ 3.72	\$ 0.11	\$ 0.11	\$ 3.72												
5:00 AM	2.99	5.47	4.99	4.94	5.05	5.08	4.55	\$ 0.10	\$ 0.10	\$ 3.31	\$ 0.22	\$ 0.22	\$ 7.28	\$ 0.11	\$ 0.11	\$ 3.64	\$ 0.11	\$ 0.11	\$ 3.64												
6:00 AM	0.98	3.02	3.44	3.53	3.71	2.42	2.5	\$ 0.26	\$ 0.26	\$ 5.03	\$ 0.22	\$ 0.22	\$ 4.31	\$ 0.11	\$ 0.11	\$ 2.16	\$ 0.11	\$ 0.11	\$ 2.16												
7:00 AM	0.71	1.6	0.73	2.11	2.46	2.29	2.6	\$ 0.26	\$ 0.26	\$ 3.21	\$ 0.22	\$ 0.22	\$ 2.75	\$ 0.11	\$ 0.11	\$ 1.38	\$ 0.11	\$ 0.11	\$ 1.38												
8:00 AM	0.57	0.58	0.43	1.18	0.46	1.95	2.77	\$ 0.26	\$ 0.26	\$ 2.04	\$ 0.22	\$ 0.22	\$ 1.75	\$ 0.30	\$ 0.30	\$ 2.38	\$ 0.18	\$ 0.18	\$ 1.43												
9:00 AM	0.31	0.64	0.28	0.25	0.36	0.54	2.92	\$ 0.26	\$ 0.26	\$ 1.36	\$ 0.22	\$ 0.22	\$ 1.17	\$ 0.30	\$ 0.30	\$ 1.59	\$ 0.18	\$ 0.18	\$ 0.95												
10:00 AM	0.34	0.61	1.09	0.28	0.28	0.55	3.29	\$ 0.43	\$ 0.26	\$ 2.11	\$ 0.22	\$ 0.22	\$ 1.42	\$ 0.30	\$ 0.30	\$ 1.93	\$ 0.18	\$ 0.18	\$ 1.16												
11:00 AM	0.34	1.17	2.33	0.33	0.28	0.82	3.37	\$ 0.43	\$ 0.26	\$ 3.00	\$ 0.22	\$ 0.22	\$ 1.90	\$ 0.30	\$ 0.30	\$ 2.59	\$ 0.18	\$ 0.18	\$ 1.56												
12:00 PM	0.35	0.83	1.57	0.33	0.3	0.78	2.86	\$ 0.43	\$ 0.26	\$ 2.40	\$ 0.43	\$ 0.22	\$ 2.24	\$ 0.30	\$ 0.30	\$ 2.11	\$ 0.18	\$ 0.18	\$ 1.26												
1:00 PM	0.58	1.46	0.54	0.58	0.45	0.94	1.92	\$ 0.43	\$ 0.26	\$ 2.30	\$ 0.43	\$ 0.22	\$ 2.17	\$ 0.30	\$ 0.30	\$ 1.94	\$ 0.18	\$ 0.18	\$ 1.16												
2:00 PM	0.51	1.37	0.28	0.38	0.36	0.44	1.2	\$ 0.43	\$ 0.26	\$ 1.68	\$ 0.43	\$ 0.22	\$ 1.60	\$ 0.47	\$ 0.30	\$ 1.86	\$ 0.35	\$ 0.18	\$ 1.31												
3:00 PM	0.81	2.33	0.37	0.61	0.63	0.41	0.88	\$ 0.43	\$ 0.26	\$ 2.39	\$ 0.43	\$ 0.22	\$ 2.31	\$ 0.47	\$ 0.30	\$ 2.62	\$ 0.35	\$ 0.18	\$ 1.89												
4:00 PM	0.55	0.86	1.52	1.65	0.95	0.41	0.98	\$ 0.43	\$ 0.26	\$ 2.75	\$ 0.43	\$ 0.22	\$ 2.67	\$ 0.47	\$ 0.30	\$ 3.02	\$ 0.35	\$ 0.18	\$ 2.19												
5:00 PM	0.77	0.32	1.58	2.3	0.79	0.74	0.53	\$ 0.43	\$ 0.26	\$ 2.82	\$ 0.43	\$ 0.22	\$ 2.74	\$ 0.47	\$ 0.30	\$ 3.09	\$ 0.35	\$ 0.18	\$ 2.24												
6:00 PM	0.79	0.88	1.98	1.5	0.78	0.66	1.64	\$ 0.26	\$ 0.26	\$ 2.11	\$ 0.22	\$ 0.22	\$ 1.81	\$ 0.47	\$ 0.30	\$ 3.48	\$ 0.35	\$ 0.18	\$ 2.49												
7:00 PM	0.86	1.19	1.16	0.64	1.01	0.96	2.34	\$ 0.26	\$ 0.26	\$ 2.09	\$ 0.22	\$ 0.22	\$ 1.80	\$ 0.47	\$ 0.30	\$ 3.27	\$ 0.35	\$ 0.18	\$ 2.30												
8:00 PM	5.24	3.11	1.24	2.02	3.79	2.86	2.91	\$ 0.26	\$ 0.26	\$ 5.43	\$ 0.22	\$ 0.22	\$ 4.66	\$ 0.30	\$ 0.30	\$ 6.35	\$ 0.18	\$ 0.18	\$ 3.81												
9:00 PM	3.66	2	1.34	2.68	2.69	1.43	3.36	\$ 0.26	\$ 0.26	\$ 4.40	\$ 0.22	\$ 0.22	\$ 3.78	\$ 0.30	\$ 0.30	\$ 5.15	\$ 0.18	\$ 0.18	\$ 3.09												
10:00 PM	6.19	3.76	1.7	2.96	2.84	1.15	3.04	\$ 0.26	\$ 0.26	\$ 5.55	\$ 0.22	\$ 0.22	\$ 4.76	\$ 0.11	\$ 0.11	\$ 2.38	\$ 0.11	\$ 0.11	\$ 2.38												
11:00 PM	7.4	5.26	4.72	6.38	5.29	2.56	6	\$ 0.26	\$ 0.26	\$ 9.65	\$ 0.22	\$ 0.22	\$ 8.27	\$ 0.11	\$ 0.11	\$ 4.14	\$ 0.11	\$ 0.11	\$ 4.14												
Total Consumption for week		351.93						Baseline Allocation Credit (Weekly)			\$ -			\$ -			\$ -														
Monthly Baseline Alloc		399.00						Rate Plan Fee (Weekly)			\$ -			\$ 0.21			\$ 0.21														
								TOTAL TOU-D-TEV			\$ 80.22			TOTAL TOU-D			\$ 95.82			TOTAL TOU-D-A			\$ 73.50			TOTAL TOU-D-B			\$ 62.44		

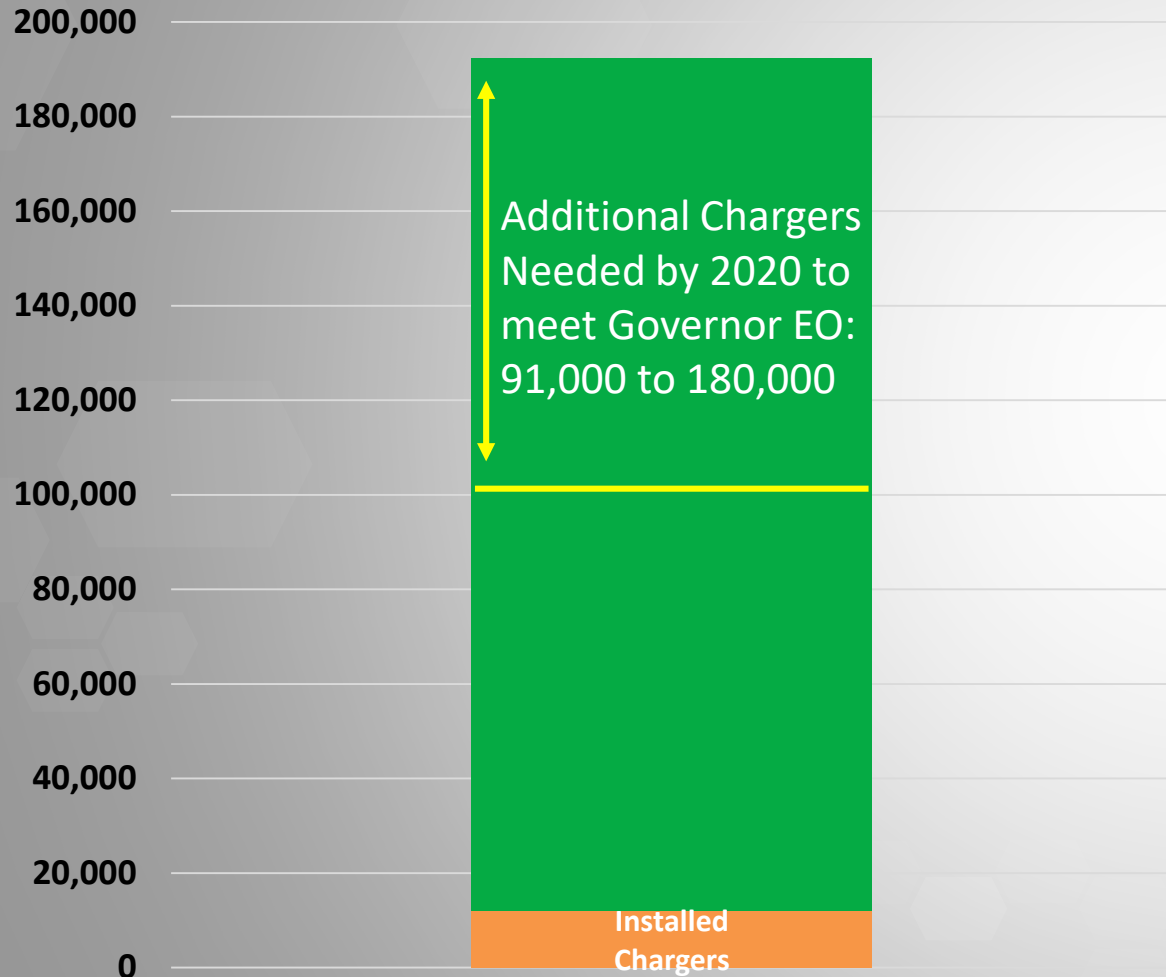
Support Simple and Low-Cost Electric Rates for EVs

Priorities for Growing ZEV Market

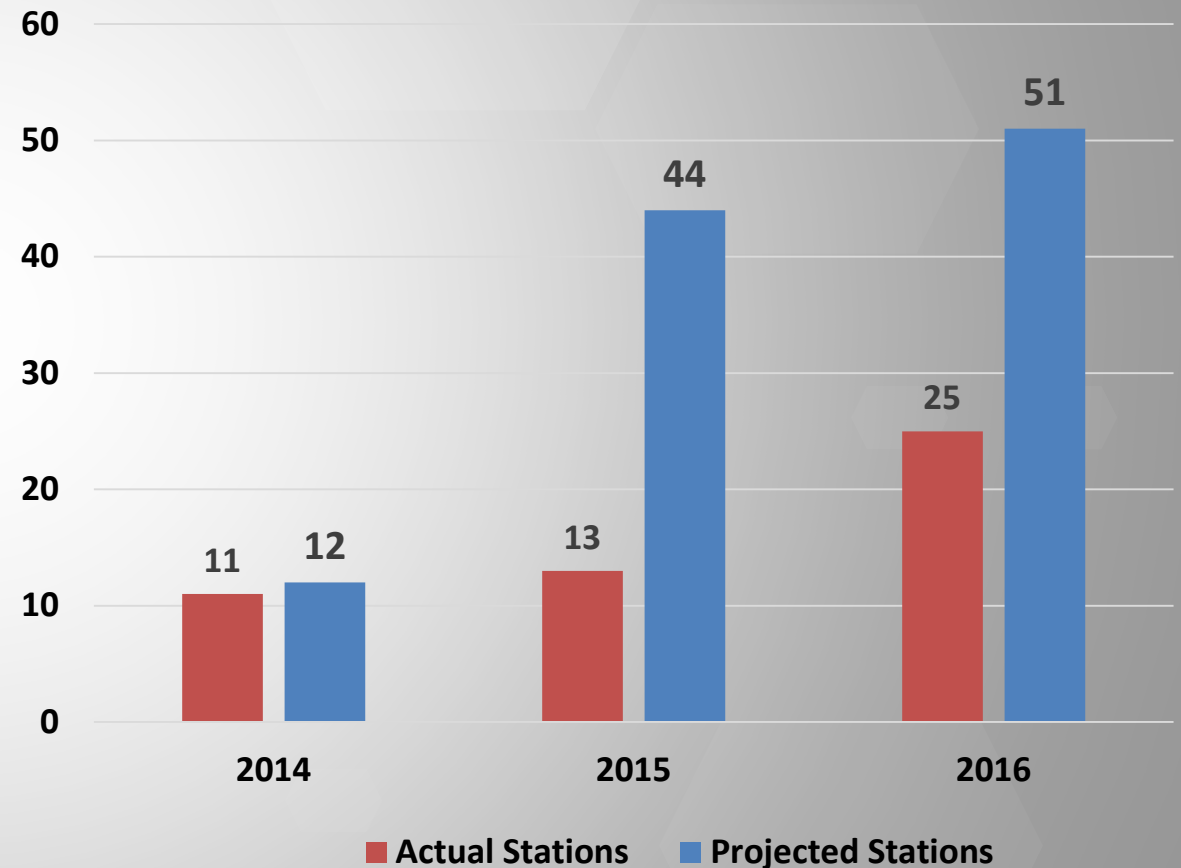
- Simple and low-cost electric charging at home
- **Fueling Infrastructure needed**
- **CVRP Incentive – Consistent availability and eligibility of CVRP**
 - \$5,000 FCEV
 - \$2,500 BEV
 - \$1,500 PHEV
 - \$2,000 in addition to above for low income Californians
- **HOV Lane Access Incentive – Consistent availability and eligibility**

Is Infrastructure Falling Behind?

Workplace and Public Charging



Hydrogen Fueling Stations - Projected vs. Actual



YES!!! Support Infrastructure

Wrap Up

Automakers have the ZEVs, we need the customers

These are the priorities for growing the ZEV market:

1. CVRP Incentive: Ensure consistent availability and eligibility of CVRP
2. HOV Lane Access: Ensure consistent availability and eligibility of HOV
3. Fuel Cost: Provide simple, low-cost electric charging at home
4. Fueling Infrastructure: Ensure needed infrastructure installed
5. Consumer Education & Awareness: Spread the word

BMW Group

FCA
FIAT CHRYSLER AUTOMOBILES



PORSCHE

TOYOTA

VOLKSWAGEN
GROUP OF AMERICA



AUTO ALLIANCE

DRIVING INNOVATION®