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ELECTRIC VEHICLE QUARTERLY REPORT

ALLIANCE FOR AUTOMOTIVE INNOVATION

THIRD QUARTER, 2023

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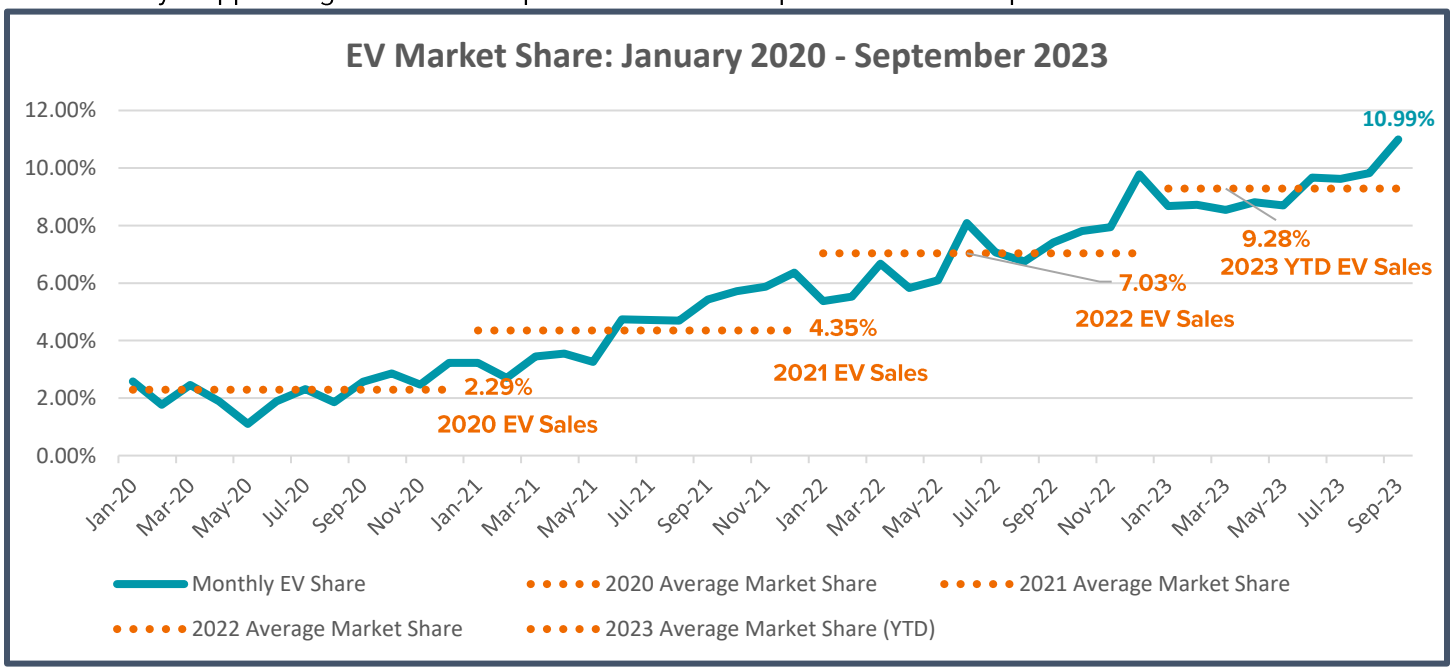
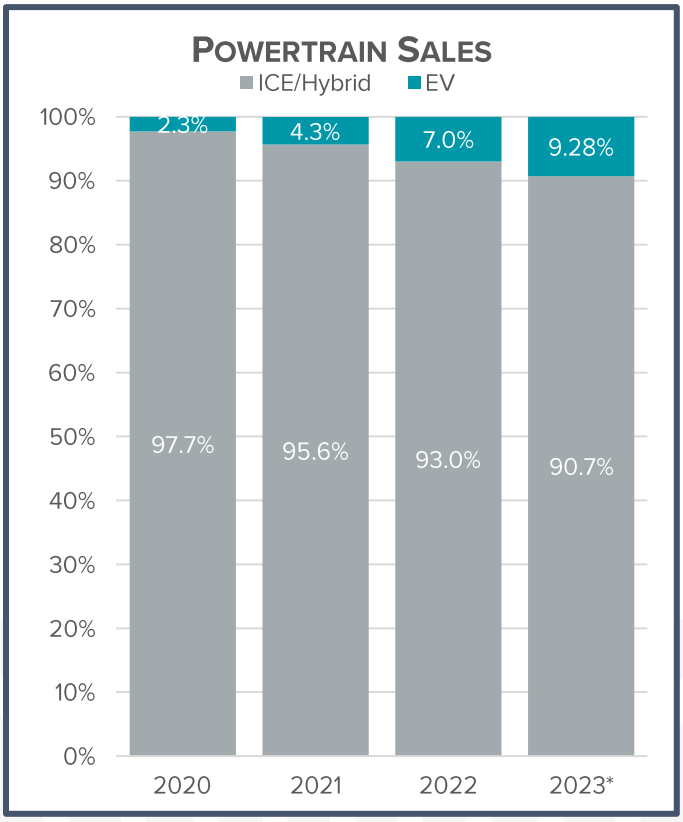
ELECTRIC VEHICLE SALES OVERVIEW (2023)

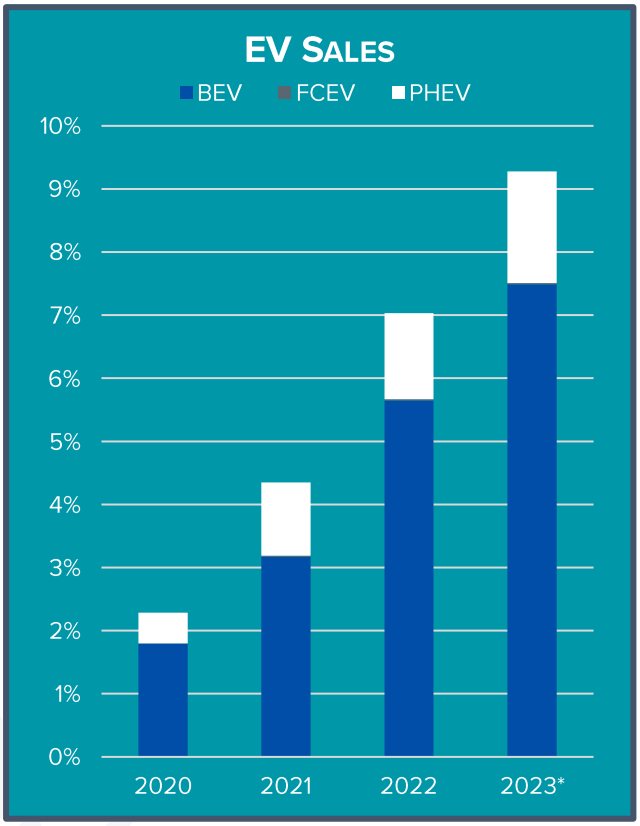
In the third quarter of 2023, automakers sold about 378,000 electric vehicles (EVs, including battery, plug-in hybrid, and fuel cell electric vehicles) in the United States, representing 10.1 percent of overall light-duty vehicle sales. Year-over-year (YoY), market share increased 3.1 percentage points (pp) from the third quarter of 2022. Over 145,000 more EV units were sold than the same period in 2022, a 63 percent increase.

More than 1 million EVs were sold through the first three quarters of 2023, 9.3 percent of all light vehicle sales and an increased market share of 2.8 pp over the same period in 2022. The total volume of all light-duty sales for the first three quarters of the year is up 12 percent from the same period a year ago, while the volume for EVs increased 59 percent (an increase of 385,882 vehicles). For comparison, internal combustion engine (ICE) vehicle market share decreased by 5.1 pp during the first three quarters of 2023 compared to the same period in 2022. [1]



[1] Hybrid vehicles comprised the remainder of the gains in vehicle share.





*2023 through Q3

SEE ADDITIONAL HISTORIC DATA ON EV SALES HERE

ELECTRIC VEHICLE SALES BY SEGMENT

While passenger cars once dominated the EV market, manufacturers continue to introduce new models to satisfy a variety of consumer needs. Utility vehicle (UV) offerings continue to grow, and while electric pickup trucks are a relatively new entry to the market (making their commercial debut in September 2021), more models are expected soon. As a result, non-car segments are continuing to make gains, and in the third quarter of 2023, light truck (UVs, minivans, and pickups) sales comprised 74 percent of the EV market – a 7 pp increase over the third quarter of 2022.

Quarterly sales of BEV and PHEV UVs have grown from about 19 percent of EVs at the start of 2020 to 69 percent in the third quarter of 2023. More than 118,000 UVs were sold in the third quarter of 2023 than the third quarter of 2022.

For a list of EVs that qualify for the federal government's new clean vehicle tax credit of up to $7,500 click here.

EV MODEL AVAILABILITY

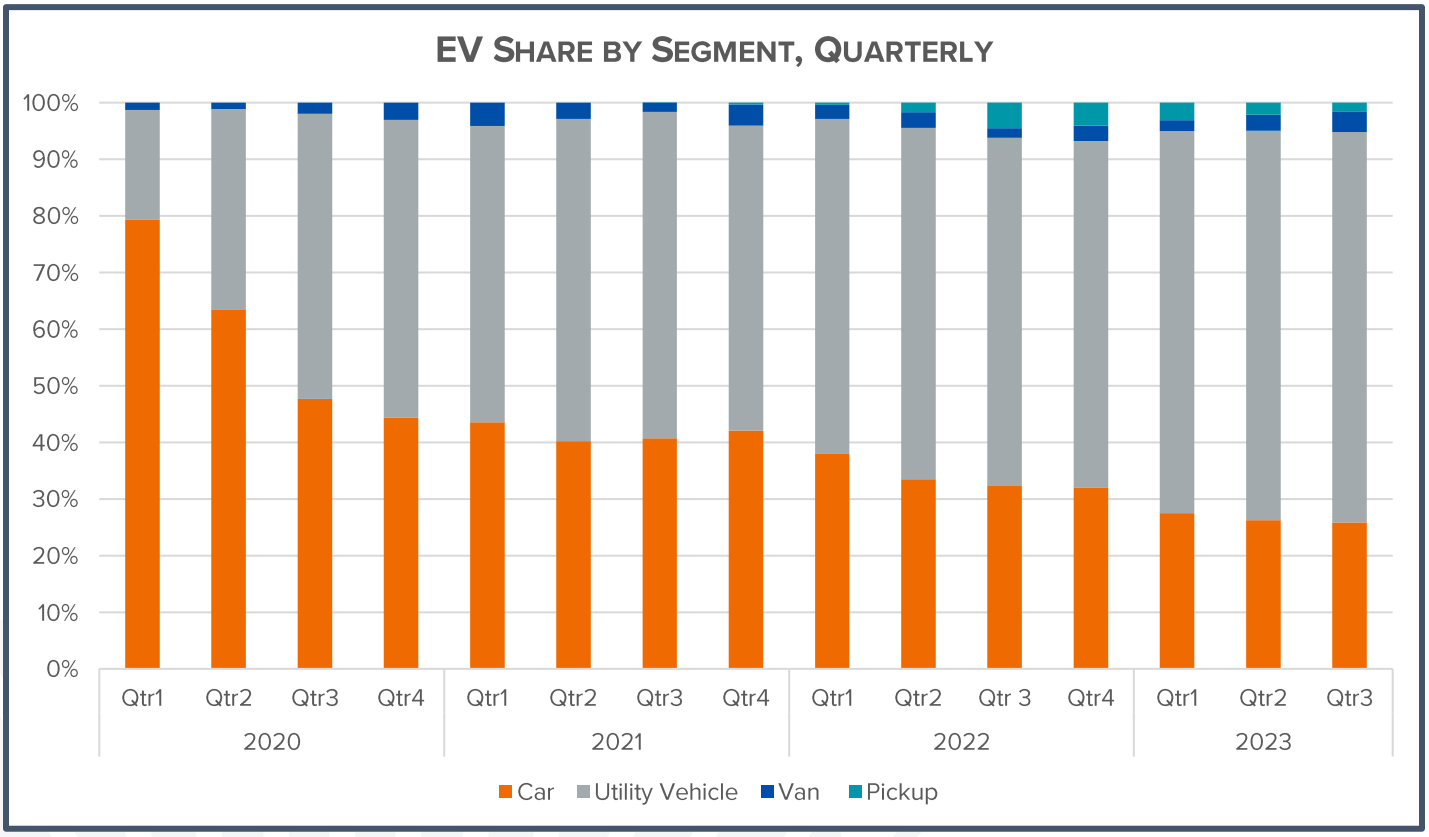
111 Vehicle Models Sold in Q3 2023:

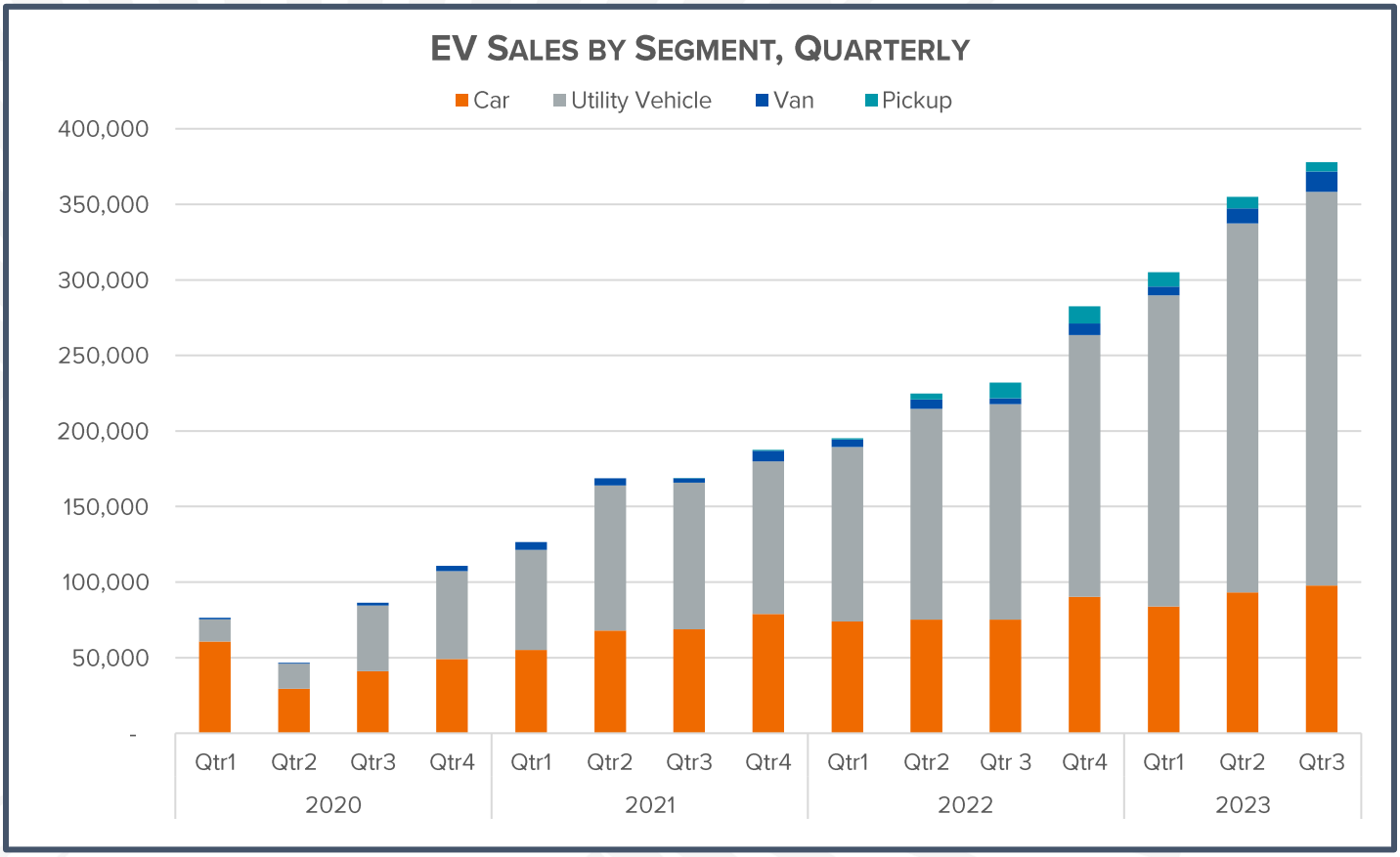
61 Battery Electric Vehicles
- 21 Cars
- 33 Utility Vehicles
- 4 Pickups
- 3 Vans

48 Plug-in Hybrid Vehicles
- 17 Cars
- 30 Utility Vehicles
- 1 Van

2 Fuel Cell Electric Vehicles
- 1 Car
- 1 Utility Vehicle

See more information about
EV CHOICE HERE

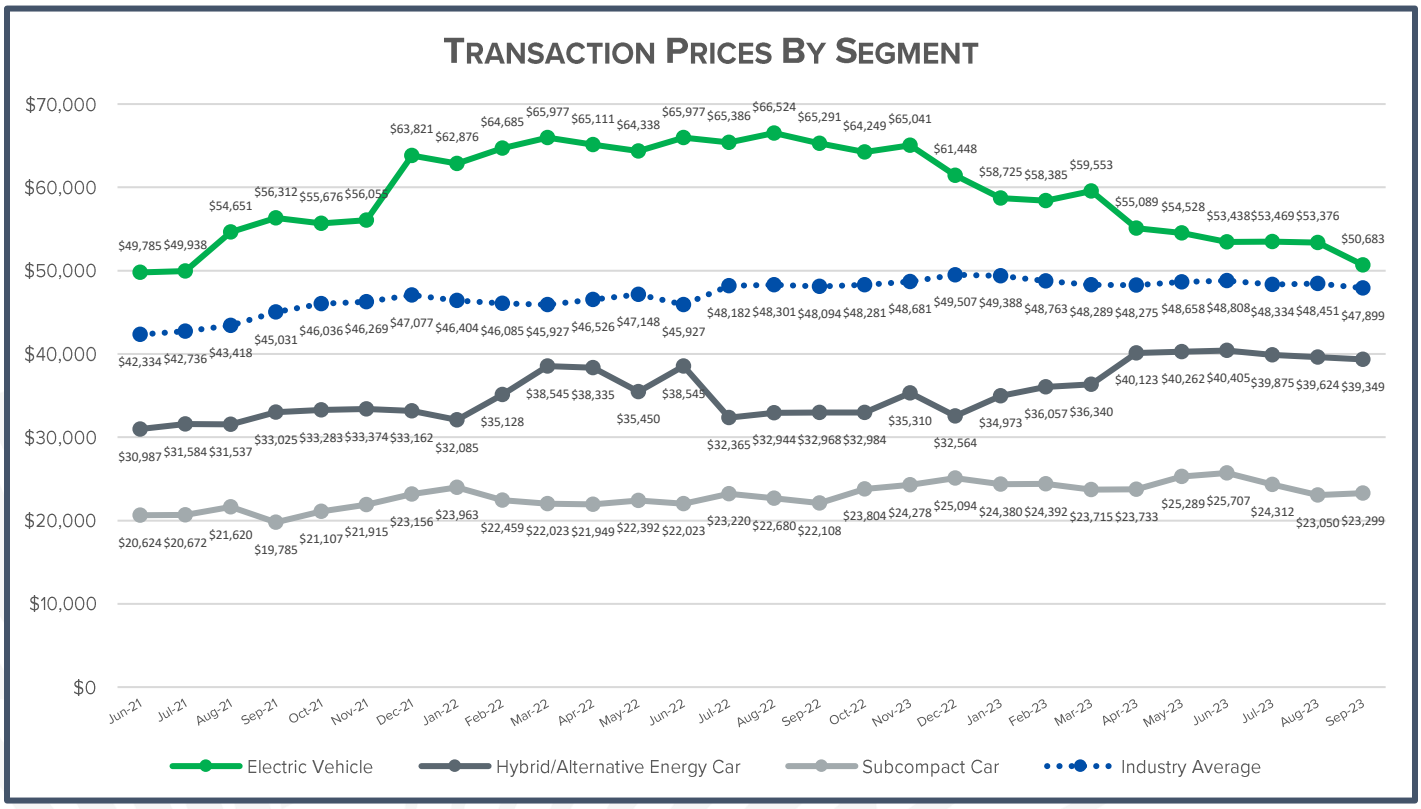




Source: Figures compiled by Alliance for Automotive Innovation with new registrations for retail and fleet data provided by S&P Global Mobility covering January 1, 2020 – September 30, 2023

ELECTRIC VEHICLE TRANSACTION PRICES

The cost of the average EV in the third quarter of 2023 was about $52,500 while the average cost of all new light-duty vehicles in that time period was about $48,200. Year-over-year, EV prices declined more than $13,000 from the third quarter of 2022 while the average cost of all new light vehicles was mostly unchanged.[2]



ELECTRIC VEHICLE SALES BY STATE

For the Third Quarter of 2023:

California continued to lead the nation in EV sales, with BEVs, PHEVs and FCEVs making up 28 percent of new light-duty vehicle registrations in the third quarter of 2023. There are currently ten additional states[3] and the District of Columbia with new vehicle EV registrations above 10 percent.

The market share of new EVs registered increased in all but two states[4], year-over-year, in the third quarter of 2023. Twenty-one states and the District of Columbia witnessed an increased market share of EVs by 2 pp or more. Making the largest increases were Washington (9.0 pp), Colorado (8.3 pp), California (8.0 pp), New Jersey (5.8 pp), and Maryland (5.6 pp).

For the First Three Quarters of 2023:

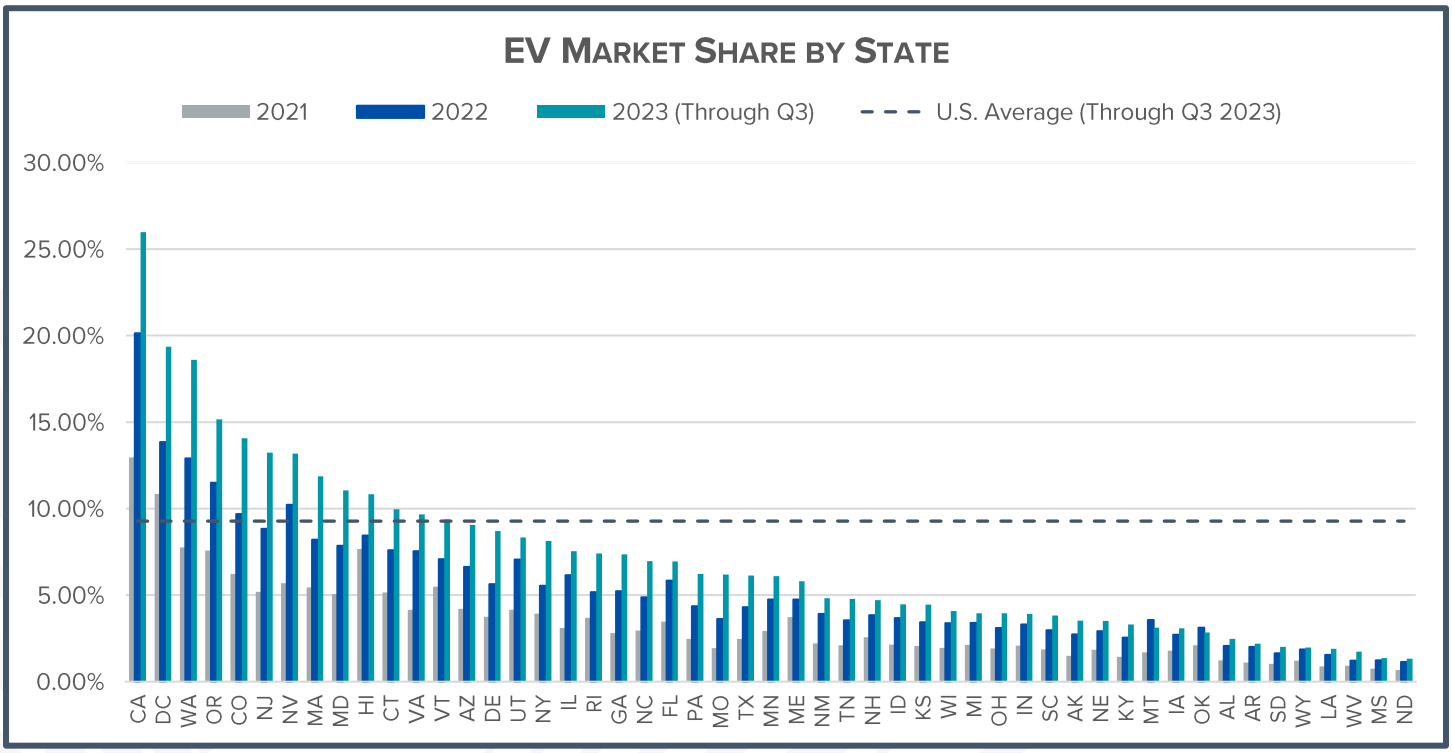
Through the first three quarters of the year, EV sales represented 9.3 percent of the market – a 2.8 pp increase over the same period of 2022. Nearly 26 percent of sales in California were EVs over this period, but Washington realized the greatest increase in market share, year-over-year with a 7.6 pp increase. Following Washington, the states with

[2] Average transaction prices from Kelley Blue Book, monthly press releases
[3] States with more than a 10 percent market share of EVs: California, Washington, District of Columbia, Colorado, Oregon, New Jersey, Nevada, Massachusetts, Maryland, Hawaii, Connecticut and Vermont.
[4] The two states are: Arkansas and Montana

the largest market share gains were California (7.3 pp), District of Columbia (7.3 pp), New Jersey (5.2 pp), and Colorado (5.0 pp). Twenty-one states and DC increased their year-over-year EV market share by 2 pp or more. Fifteen states increased by less than 1 pp. One state, Montana, decreased.

While some states continue to have strong EV sales, 18 states had new EV registrations of less than 4 percent; 5 of those states were under 2 percent. All states had a market share above 1.0 percent for new EV sales.

Nine states and the District of Columbia had an EV market share above 10 percent while five states had an EV market share under 2 percent; California was the only state above 20 percent.[5]



YEAR TO DATE (2023 THROUGH Q3) EV MARKET SHARE BY STATE[6]

1	CA*	25.98%	**11**	CT*	9.95%	**21**	NC	6.96%	**31**	ID	4.47%	**41**	MT	3.12%
2	DC	19.36%	**12**	VA*	9.68%	**22**	FL	6.95%	**32**	KS	4.46%	**42**	IA	3.08%
3	WA*	18.60%	**13**	VT*	9.37%	**23**	PA	6.23%	**33**	WI	4.08%	**43**	OK	2.84%
4	OR*	15.15%	**14**	AZ	9.06%	**24**	MO	6.20%	**34**	MI	3.96%	**44**	AL	2.46%
5	CO*	14.07%	**15**	DE	8.71%	**25**	TX	6.14%	**35**	OH	3.95%	**45**	AR	2.19%
6	NJ*	13.24%	**16**	UT	8.33%	**26**	MN*	6.09%	**36**	IN	3.91%	**46**	SD	2.02%
7	NV*	13.18%	**17**	NY*	8.13%	**27**	ME*	5.80%	**37**	SC	3.83%	**47**	WY	1.98%
8	MA*	11.86%	**18**	IL	7.54%	**28**	NM	4.82%	**38**	AK	3.53%	**48**	LA	1.89%
9	MD*	11.06%	**19**	RI*	7.42%	**29**	TN	4.79%	**39**	NE	3.51%	**49**	WV	1.73%
10	HI	10.84%	**20**	GA	7.35%	**30**	NH	4.71%	**40**	KY	3.31%	**50**	MS	1.36%
												51	ND	1.32%

[5] Figures compiled by Alliance for Automotive Innovation with new registrations for retail and fleet data provided by S&P Global Mobility covering January 1, 2021 – September 30, 2023
[6] Figures compiled by Alliance for Automotive Innovation with new registrations for retail and fleet data provided by S&P Global Mobility covering January 1, 2023 – September 30, 2023
*Denotes states that have adopted California's ZEV program

Third Quarter 2023, New Light-Duty Vehicle Registrations By Powertrain					Change In Market Share (2023 Q3 vs 2022 Q3), New Light-Duty Vehicle Registrations Powertrain			
State	Advanced Powertrain Market Share				Advanced Powertrain Market Share (Percentage Point Change)			
	PHEV	BEV	FCEV	EV Total	PHEV	BEV	FCEV	EV Total
AK	0.76%	2.51%	0.00%	**3.27%**	0.03	0.16	0.00	**0.19**
AL	0.49%	2.12%	0.00%	**2.61%**	-0.03	0.33	0.00	**0.30**
AR	0.47%	1.80%	0.00%	**2.27%**	0.03	-0.15	0.00	**-0.12**
AZ	1.13%	7.72%	0.00%	**8.85%**	0.22	1.50	0.00	**1.72**
CA*	3.74%	24.18%	0.21%	**28.13%**	1.17	6.68	0.17	**8.02**
CO*	4.49%	13.45%	0.00%	**17.94%**	2.71	5.56	0.00	**8.27**
CT*	4.01%	7.18%	0.00%	**11.19%**	1.59	1.66	0.00	**3.25**
DC	3.85%	15.45%	0.00%	**19.30%**	0.61	3.76	0.00	**4.37**
DE	2.65%	7.04%	0.00%	**9.69%**	1.35	2.08	0.00	**3.43**
FL	0.94%	6.47%	0.00%	**7.41%**	-0.05	1.25	0.00	**1.20**
GA	0.74%	7.34%	0.00%	**8.08%**	0.02	2.55	0.00	**2.56**
HI	1.17%	10.06%	0.01%	**11.24%**	-0.59	2.71	0.00	**2.12**
IA	0.92%	2.50%	0.00%	**3.42%**	0.17	0.63	0.00	**0.80**
ID	1.43%	3.74%	0.00%	**5.17%**	0.55	0.49	0.00	**1.04**
IL	1.25%	6.57%	0.00%	**7.83%**	0.20	1.22	0.00	**1.42**
IN	0.82%	3.71%	0.00%	**4.53%**	-0.02	1.00	0.00	**0.98**
KS	1.03%	3.85%	0.00%	**4.88%**	0.23	1.34	0.00	**1.57**
KY	0.78%	3.10%	0.00%	**3.88%**	0.13	0.89	0.00	**1.02**
LA	0.52%	1.37%	0.00%	**1.89%**	0.15	0.35	0.00	**0.50**
MA*	4.72%	8.52%	0.00%	**13.24%**	2.55	2.94	0.00	**5.49**
MD*	3.47%	9.29%	0.00%	**12.76%**	1.80	3.76	0.00	**5.56**
ME*	3.39%	3.30%	0.00%	**6.69%**	1.50	0.41	0.00	**1.91**
MI	0.77%	3.22%	0.00%	**3.98%**	-0.43	0.80	0.00	**0.37**
MN*	1.30%	5.51%	0.00%	**6.81%**	0.46	1.77	0.00	**2.23**
MO	4.22%	3.34%	0.00%	**7.56%**	3.14	0.65	0.00	**3.80**
MS	0.42%	1.14%	0.00%	**1.56%**	0.09	0.16	0.00	**0.25**
MT	1.13%	2.08%	0.00%	**3.22%**	0.32	-1.48	0.00	**-1.16**
NC	1.11%	5.94%	0.00%	**7.05%**	0.26	1.74	0.00	**2.00**
ND	0.49%	1.02%	0.00%	**1.51%**	0.19	0.08	0.00	**0.26**
NE	1.12%	3.01%	0.00%	**4.14%**	0.20	0.78	0.00	**0.98**
NH	1.78%	3.15%	0.00%	**4.92%**	0.58	0.02	0.00	**0.60**
NJ*	3.45%	10.88%	0.00%	**14.34%**	1.99	3.78	0.00	**5.77**
NM	1.28%	4.23%	0.00%	**5.51%**	0.45	0.95	0.00	**1.40**
NV*	1.73%	12.10%	0.00%	**13.83%**	0.49	2.19	0.00	**2.68**
NY*	4.19%	4.99%	0.00%	**9.17%**	2.60	1.11	0.00	**3.71**
OH	0.89%	3.26%	0.00%	**4.16%**	0.06	0.79	0.00	**0.85**
OK	3.61%	1.75%	0.00%	**5.35%**	3.16	0.43	0.00	**3.59**
OR*	4.02%	12.29%	0.00%	**16.31%**	1.42	2.70	0.00	**4.12**
PA	2.66%	4.46%	0.00%	**7.12%**	1.49	1.37	0.00	**2.86**
RI*	4.39%	4.95%	0.00%	**9.34%**	2.67	1.41	0.00	**4.08**
SC	0.74%	3.48%	0.00%	**4.21%**	-0.01	0.90	0.00	**0.88**
SD	0.86%	1.30%	0.00%	**2.16%**	0.39	0.10	0.00	**0.49**
TN	0.64%	4.31%	0.00%	**4.95%**	-0.05	1.21	0.00	**1.16**
TX	0.65%	5.95%	0.00%	**6.59%**	0.07	1.60	0.00	**1.67**
UT	1.66%	7.30%	0.00%	**8.95%**	0.63	1.06	0.00	**1.69**
VA*	1.45%	8.01%	0.00%	**9.47%**	0.14	2.22	0.00	**2.36**
VT*	4.14%	6.86%	0.00%	**11.00%**	1.84	1.97	0.00	**3.82**
WA*	2.89%	18.77%	0.00%	**21.67%**	1.43	7.62	0.00	**9.04**
WI	0.97%	3.65%	0.00%	**4.62%**	0.18	1.00	0.00	**1.17**
WV	0.76%	1.31%	0.00%	**2.07%**	0.42	0.43	0.00	**0.85**
WY	0.89%	1.33%	0.00%	**2.22%**	0.46	-0.23	0.00	**0.23**
U.S.	**2.05%**	**8.06%**	**0.02%**	**10.13%**	**0.82**	**2.22**	**0.02**	**3.06**

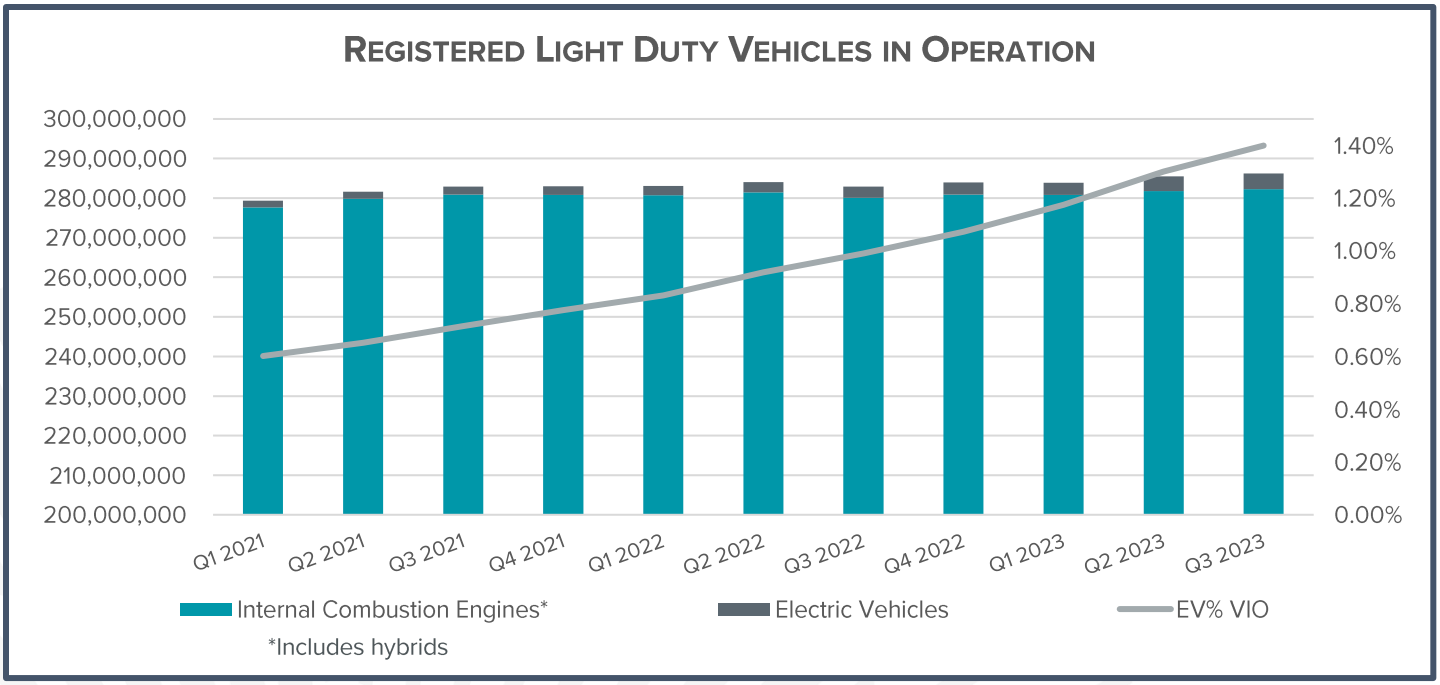
*Denotes states that have adopted California's ZEV program
Source: Figures compiled by Alliance for Automotive Innovation with new registrations for retail and fleet data provided by S&P Global Mobility covering July 1 – September 30, 2022, and July 1 - September 30, 2023

2023 New Light-Duty Vehicle Registrations By Powertrain (YTD)					Change In Market Share (2023 vs 2022 YTD), New Light-Duty Vehicle Registrations Powertrain			
State	Advanced Powertrain Market Share				Advanced Powertrain Market Share (Percentage Point Change)			
	PHEV	BEV	FCEV	EV Total	PHEV	BEV	FCEV	EV Total
AK	0.84%	2.68%	0.00%	**3.53%**	0.25	0.78	0.00	**1.02**
AL	0.51%	1.95%	0.00%	**2.46%**	-0.06	-0.47	0.00	**0.54**
AR	0.51%	1.68%	0.00%	**2.19%**	-0.03	-0.12	0.00	**0.15**
AZ	1.18%	7.88%	0.00%	**9.06%**	-0.21	-2.62	0.00	**2.83**
CA*	3.43%	22.34%	0.21%	**25.98%**	-0.80	-6.46	-0.04	**7.30**
CO*	4.12%	9.95%	0.00%	**14.07%**	-2.13	-2.86	0.00	**4.99**
CT*	3.34%	6.62%	0.00%	**9.95%**	-1.03	-1.80	0.00	**2.84**
DC	3.98%	15.38%	0.00%	**19.36%**	-0.59	-5.29	0.00	**5.89**
DE	2.09%	6.62%	0.00%	**8.71%**	-0.76	-2.78	0.00	**3.54**
FL	0.90%	6.05%	0.00%	**6.95%**	0.02	-1.46	0.00	**1.43**
GA	0.70%	6.65%	0.00%	**7.35%**	0.07	-2.59	0.00	**2.52**
HI	1.05%	9.79%	0.00%	**10.84%**	0.76	-3.73	0.01	**2.96**
IA	0.87%	2.21%	0.00%	**3.08%**	-0.04	-0.46	0.00	**0.50**
ID	1.30%	3.17%	0.00%	**4.47%**	-0.45	-0.50	0.00	**0.94**
IL	1.15%	6.40%	0.00%	**7.54%**	-0.01	-1.83	0.00	**1.84**
IN	0.85%	3.07%	0.00%	**3.91%**	-0.02	-0.81	0.00	**0.83**
KS	0.89%	3.58%	0.00%	**4.46%**	-0.07	-1.19	0.00	**1.26**
KY	0.77%	2.54%	0.00%	**3.31%**	-0.09	-0.82	0.00	**0.91**
LA	0.46%	1.44%	0.00%	**1.89%**	-0.05	-0.38	0.00	**0.43**
MA*	3.99%	7.87%	0.00%	**11.86%**	-1.53	-2.87	0.00	**4.40**
MD*	2.70%	8.36%	0.00%	**11.06%**	-0.97	-2.96	0.00	**3.93**
ME*	2.67%	3.13%	0.00%	**5.80%**	-0.60	-0.72	0.00	**1.32**
MI	0.99%	2.97%	0.00%	**3.96%**	0.24	-0.89	0.00	**0.65**
MN*	1.27%	4.82%	0.00%	**6.09%**	-0.30	-1.57	0.00	**1.87**
MO	2.79%	3.41%	0.00%	**6.20%**	-1.87	-1.36	0.00	**3.23**
MS	0.38%	0.98%	0.00%	**1.36%**	-0.03	-0.12	0.00	**0.15**
MT	1.06%	2.06%	0.00%	**3.12%**	-0.24	0.53	0.00	**-0.28**
NC	1.04%	5.92%	0.00%	**6.96%**	-0.13	-2.38	0.00	**2.51**
ND	0.58%	0.74%	0.00%	**1.32%**	-0.29	0.03	0.00	**0.27**
NE	1.07%	2.45%	0.00%	**3.51%**	-0.15	-0.59	0.00	**0.75**
NH	1.63%	3.08%	0.00%	**4.71%**	-0.45	-0.70	0.00	**1.15**
NJ*	2.69%	10.56%	0.00%	**13.24%**	-1.10	-4.09	0.00	**5.18**
NM	1.19%	3.63%	0.00%	**4.82%**	-0.34	-0.76	0.00	**1.09**
NV*	1.64%	11.54%	0.00%	**13.18%**	-0.29	-3.49	0.00	**3.78**
NY*	3.43%	4.70%	0.00%	**8.13%**	-1.69	-1.22	0.00	**2.91**
OH	0.92%	3.04%	0.00%	**3.95%**	-0.14	-0.85	0.00	**0.99**
OK	1.47%	1.37%	0.00%	**2.84%**	-0.38	0.07	0.00	**0.31**
OR*	3.55%	11.60%	0.00%	**15.15%**	-0.71	-4.13	0.00	**4.84**
PA	2.09%	4.15%	0.00%	**6.23%**	-1.02	-1.26	0.00	**2.28**
RI*	3.22%	4.20%	0.00%	**7.42%**	-1.40	-1.22	0.00	**2.61**
SC	0.77%	3.06%	0.00%	**3.83%**	0.02	-0.99	0.00	**0.96**
SD	0.83%	1.19%	0.00%	**2.02%**	-0.32	-0.19	0.00	**0.51**
TN	0.64%	4.15%	0.00%	**4.79%**	0.09	-1.43	0.00	**1.34**
TX	0.65%	5.49%	0.00%	**6.14%**	-0.05	-2.03	0.00	**2.07**
UT	1.52%	6.82%	0.00%	**8.33%**	-0.36	-1.34	0.00	**1.71**
VA*	1.32%	8.35%	0.00%	**9.68%**	0.14	-3.03	0.00	**2.90**
VT*	3.38%	6.00%	0.00%	**9.37%**	-0.89	-2.10	0.00	**2.98**
WA*	2.97%	15.63%	0.00%	**18.60%**	-1.36	-6.23	0.00	**7.59**
WI	0.92%	3.17%	0.00%	**4.08%**	-0.10	-0.89	0.00	**0.99**
WV	0.63%	1.11%	0.00%	**1.73%**	-0.26	-0.34	0.00	**0.61**
WY	0.81%	1.17%	0.00%	**1.98%**	-0.37	0.11	0.00	**0.26**
U.S.	**1.77%**	**7.49%**	**0.02%**	**9.28%**	**-0.47**	**-2.31**	**0.00**	**2.79**

*Denotes states that have adopted California's ZEV program
Source: Figures compiled by Alliance for Automotive Innovation with new registrations for retail and fleet data provided by S&P Global Mobility covering January 1 – September 30, 2022, and January – September 30, 2023

REGISTRATIONS AND INFRASTRUCTURE

Share of Registered EVs In U.S. Light-Duty Fleet Continues to Increase Incrementally. As sales of EVs increase, so does the total number of EVs operating on U.S. roads. While there are more than 286 million light-duty vehicles in operation (VIO) in the United States, EVs represent just 1.4 percent of all light vehicles in the country (just over 4 million EVs). EVs represented more than 1 percent of total VIO for the first time at the end of 2022. The EV VIO of 1.4 percent is an increase of 0.4 pp since the third quarter of 2022 and nearly double the EV VIO from the second quarter in 2021 (0.72 percent).[7]



U.S. Public Charging Infrastructure: Overview

While the U.S. Department of Energy notes that roughly 80 percent of all EV charging occurs at home, reliable and convenient access to workplace and public charging and refueling stations help to support customers that purchase EVs, or are considering purchasing an EV. Workplace and public charging infrastructure not only eases perceived "range anxiety" concerns but also increases consumer awareness of the technology. The bipartisan Infrastructure Investment and Jobs Act (IIJA) that was signed into law in November 2021, includes $5 billion in funding for states to establish a nationwide EV charging network along highway corridors and $2.5 billion in competitive grants to deploy publicly available EV charging, hydrogen fueling, propane fueling, and natural gas fueling stations through 2026. Here is a snapshot of publicly available EV charging and refueling infrastructure available across the United States at the end of the third quarter of 2023[8]:

Level 2: 50,749 Locations, 116,692 EVSE Ports
DC Fast: 8,072 Locations, 34,611 EVSE Ports
Hydrogen Refueling: 59 Stations (58 are in California)
U.S. Total: *57,688[9] Locations, 151,303 EVSE Ports*

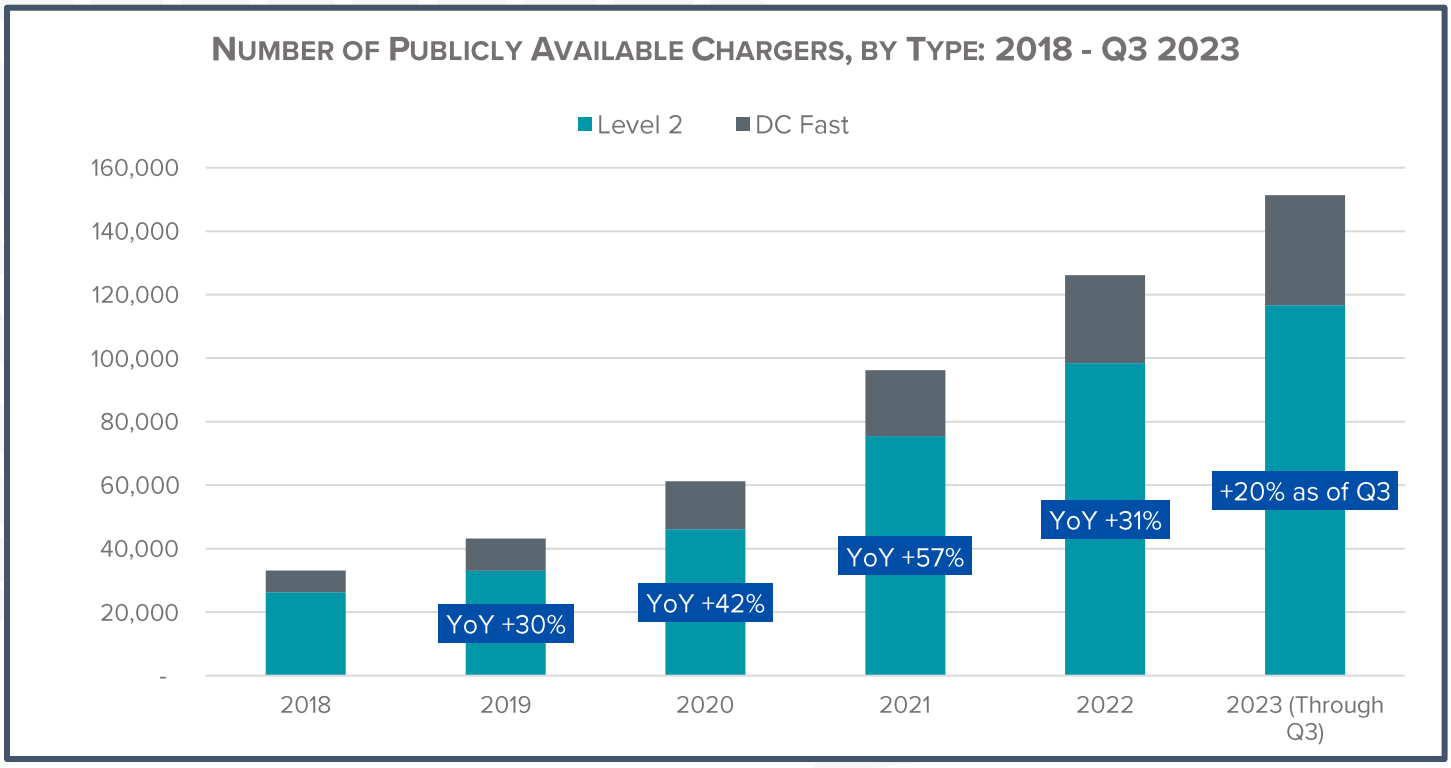
See Recommended Attributes for EV Charging Stations

[7] Registered vehicles in operation compiled by Alliance for Automotive Innovation with data provided by S&P Global Mobility as of September 30, 2023
[8] Charging information from U.S. Department of Energy Alternative Fuels Data Center, stations in operation as of 9/30/2023
Note: prior editions of this report excluded proprietary chargers
[9] Some station locations have both level 2 and DC fast installed.

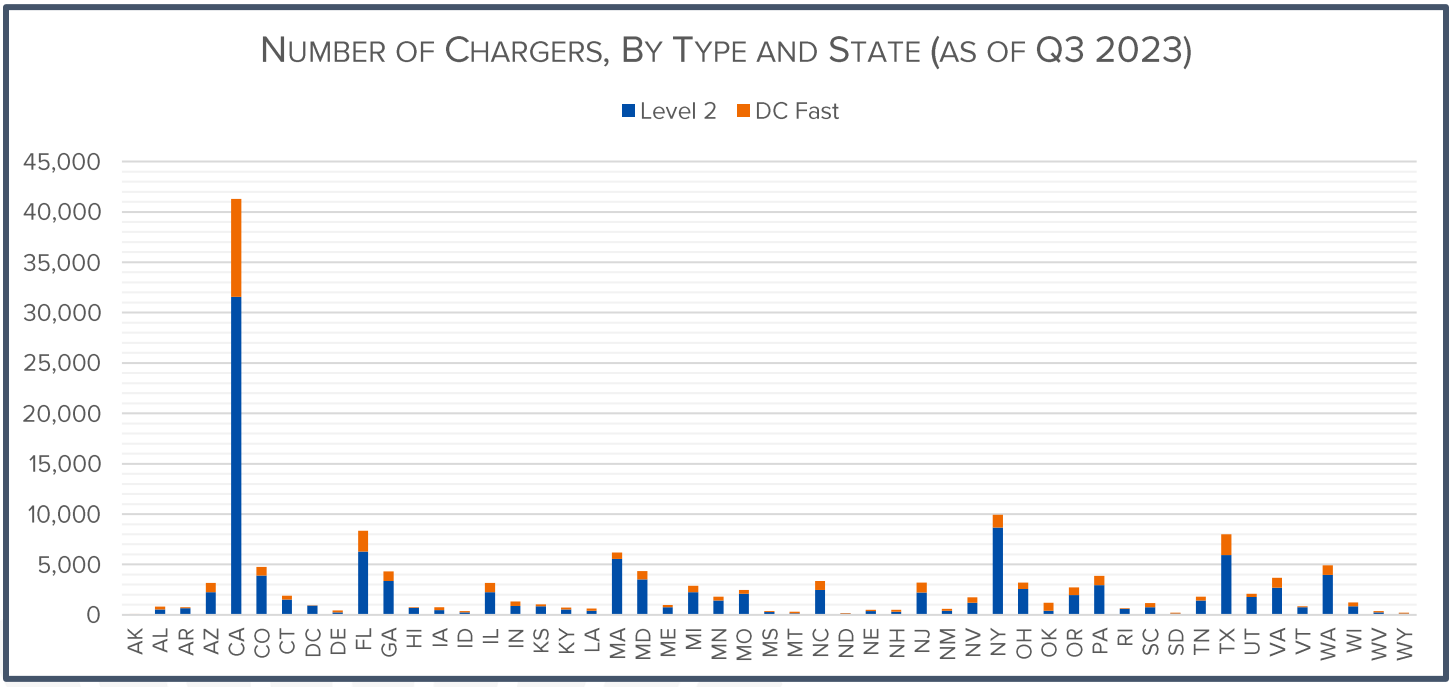
Level 2 Chargers and DC Fast Chargers. Both Level 2 and DC fast charging play important roles in electrifying the light-duty vehicle fleet. However, the key difference between Level 2 and DC Fast is how fast each will charge an EV's battery. Level 2 equipment is common for home, workplace, and public charging with longer dwell times. Level 2 chargers can fully charge a BEV from empty in 4-10 hours and a PHEV from empty in 1-2 hours. DC Fast charging equipment enables rapid charging of BEVs in 20 minutes to 1 hour along heavy-traffic corridors, in city centers, at transportation hubs, and fleet depots. Wider installation of both Level 2 chargers, DC Fast chargers, and hydrogen fueling will be necessary to support wider-scale adoption of EVs. The number of public Level 2 charging increased 23 percent at the end of the third quarter of 2023 over the third quarter of 2022. DC Fast chargers increased 37 percent. Total charging increased 26 percent (for context, EV sales increased 59 percent during this same period).[10]

Through December 5, 2023, Nearly Two-Thirds of Installed DC Fast Chargers Were Tesla (North American Charging Standard)[11]:

DC FAST CHARGERS INSTALLED		
Type	**Ports**	**%Total**
Tesla	23,068	65%
CCS Combo	12,652	35%
Total	35,720	100%

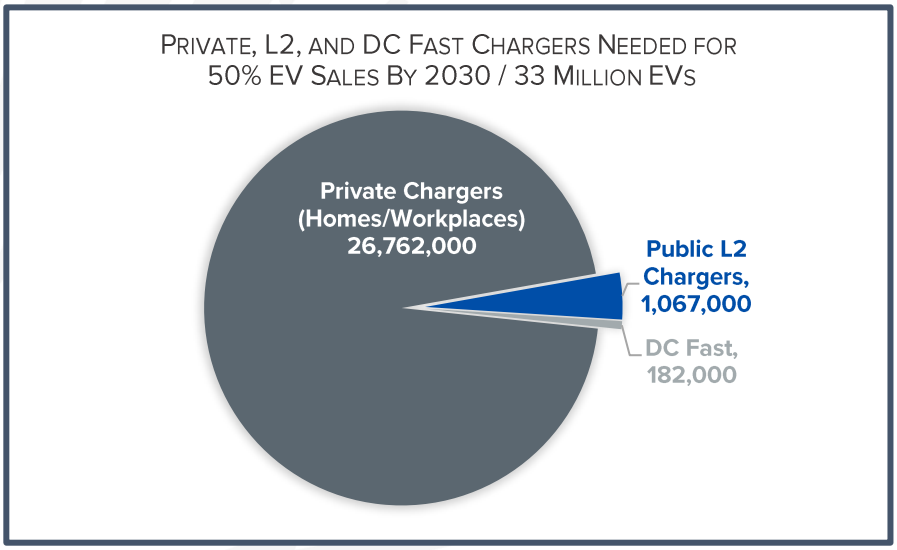


[10] Charging information from U.S. Department of Energy Alternative Fuels Data Center, stations in operation as of 9/30/2023
[11] Charging information from U.S. Department of Energy Alternative Fuels Data Center, 12/5/2023; does not include J1772 or CHAdeMO connectors



Infrastructure Investment Necessary

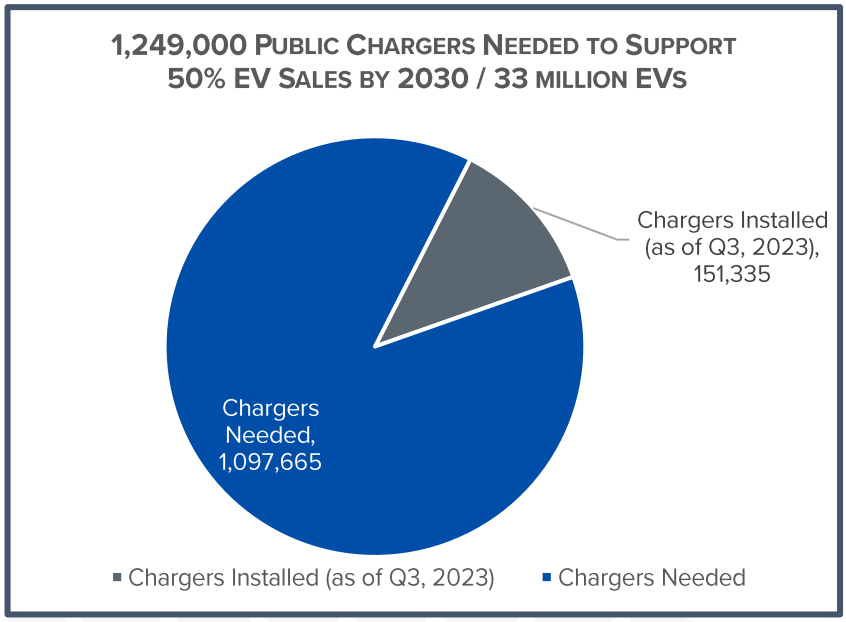
An assessment by the U.S. National Renewable Energy Laboratory (NREL) released in June 2023, estimated that a network of 28 million charging ports would be necessary to support 50 percent EV sales by 2030 (and 33 million EVs on the road).[12] NREL estimates that 96 percent of those charging ports would be privately accessible L1 and L2 chargers located at single-family homes, multifamily properties, and workplaces. The remaining 4 percent (1,249,000 ports) would be split between public L2 and high-speed DC Fast charging ports, with L2 making up 85% of those public chargers.



At the end of the third quarter of 2023, there were about 151,000 public charging ports across the country and 4 million EVs on the road. Total installed public charging ports are about 12 percent of the needed estimate to support EV penetration by 2030.

Nearly 1.1 million more public chargers (950,000 L2 and 147,000 DC Fast) will need to be installed to satisfy the necessary infrastructure estimate. This means that between the end of the third quarter in 2023 and December 31, 2030, 414 chargers need to be installed every day, for the next 7.2 years. Or nearly 3 chargers every 10 minutes through the end of 2030.

[12] National Renewable Energy Laboratory, "The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure," June 2023



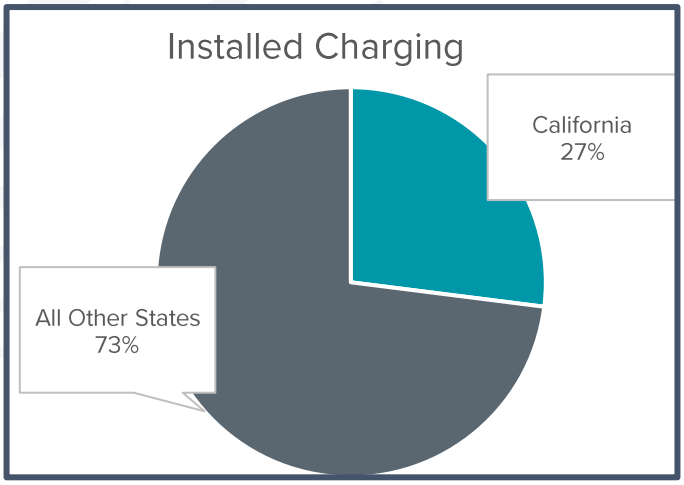
Between the end of the third quarter in 2023 and December 31, 2030, ***414 chargers need to be installed every day, for the next 7.2 years.*** *Or nearly 3 chargers every 10 minutes through the end of 2030.*

The Cost of This Substantial Infrastructure Necessity Will Largely Fall on Consumers and Commercial Real Estate Owners as They Install Home and Workplace Charging. According to NREL a national capital investment of $53–$127 billion in charging infrastructure is needed by 2030 (including as much as $72 billion for private residential charging) to support 33 million EVs. The large range of potential costs is a result of variable and evolving equipment and installation costs across charging networks, locations, and site designs[13]. Notably, the estimates exclude the cost of grid upgrades and distributed energy resources. The estimated cumulative capital investment includes[14]:

- $22–$72 billion for privately accessible Level 1 and Level 2 charging ports
- $27–$44 billion for publicly accessible fast charging ports
- $5–$11 billion for publicly accessible Level 2 charging ports.

Infrastructure Disparities by Geography

Geographic disparities in charging infrastructure are pervasive. At the end of the third quarter of 2023, nearly 27 percent of all public charging infrastructure was in California, which had 35.5 percent of all registered EVs.



[13] Various state and federal incentives are available to consumers or businesses that install EV charging infrastructure, including from power utilities.
[14] National Renewable Energy Laboratory, "The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure," June 2023

Vehicles in Operation and Charging by State

Public Charging Outlets And Registerd EVs (as of 9/30/2023)

	EV Level 2	EV DC Fast	H2** Fueling	Total	Percent EVs of Total VIO***	Share of Registered EVs****	EVs Per Charger	EVs Per 10K Residents
AK	75	28	-	103	0.53%	0.08%	30	41.24
AL	523	299	-	822	0.29%	0.37%	18	30.45
AR	665	108	-	773	0.28%	0.19%	10	25.47
AZ	2,252	909	-	3,161	1.46%	2.52%	32	140.89
CA*	31,568	9,710	58	41,336	4.56%	35.52%	34	359.68
CO*	3,908	857	-	4,765	1.81%	2.48%	21	174.58
CT*	1,516	391	-	1,907	1.34%	1.02%	21	114.18
DC	907	48	-	955	2.96%	0.25%	11	144.74
DE	266	171	-	437	1.10%	0.25%	23	103.80
FL	6,296	2,041	-	8,337	1.32%	6.23%	30	117.13
GA	3,359	950	-	4,309	0.96%	2.27%	21	86.29
HI	703	47	1	751	2.49%	0.71%	38	199.40
IA	486	280	-	766	0.40%	0.32%	17	40.35
ID	256	110	-	366	0.57%	0.28%	31	64.49
IL	2,251	920	-	3,171	1.08%	2.74%	35	86.24
IN	877	439	-	1,316	0.51%	0.79%	24	47.50
KS	854	203	-	1,057	0.48%	0.35%	13	48.31
KY	544	177	-	721	0.33%	0.34%	19	30.70
LA	406	215	-	621	0.27%	0.25%	16	21.89
MA*	5,559	633	-	6,192	1.76%	2.41%	16	139.71
MD*	3,511	840	-	4,351	1.62%	2.07%	19	137.55
ME*	769	216	-	985	0.95%	0.32%	13	94.75
MI	2,239	640	-	2,879	0.70%	1.50%	21	60.08
MN*	1,420	384	-	1,804	0.82%	1.07%	24	76.44
MO	2,099	361	-	2,460	0.56%	0.81%	13	52.68
MS	281	112	-	393	0.15%	0.11%	12	15.37
MT	169	152	-	321	0.37%	0.14%	18	54.56
NC	2,462	900	-	3,362	0.83%	1.99%	24	76.95
ND	119	78	-	197	0.17%	0.03%	7	18.16
NE	376	144	-	520	0.42%	0.22%	17	45.46
NH	321	171	-	492	1.00%	0.34%	27	98.99
NJ*	2,221	985	-	3,206	1.90%	3.47%	43	156.24
NM	414	201	-	615	0.63%	0.32%	21	60.80
NV*	1,205	542	-	1,747	2.01%	1.26%	29	166.43
NY*	8,674	1,249	-	9,923	1.49%	4.29%	17	87.97
OH	2,570	650	-	3,220	0.57%	1.53%	19	52.30
OK	398	808	-	1,206	0.80%	0.92%	31	93.62
OR*	1,970	742	-	2,712	2.06%	1.98%	29	189.49
PA	2,964	900	-	3,864	0.82%	2.25%	23	70.42
RI*	588	80	-	668	1.07%	0.23%	14	86.31
SC	764	407	-	1,171	0.45%	0.60%	21	47.22
SD	117	103	-	220	0.24%	0.06%	11	27.69
TN	1,411	411	-	1,822	0.55%	0.94%	21	55.91
TX	5,937	2,055	-	7,992	0.93%	5.67%	28	79.20
UT	1,762	327	-	2,089	1.44%	1.08%	21	136.86
VA*	2,688	981	-	3,669	1.19%	2.27%	25	106.91
VT*	756	112	-	868	1.89%	0.26%	12	166.31
WA*	3,976	943	-	4,919	2.28%	3.98%	32	211.59
WI	863	360	-	1,223	0.56%	0.75%	24	51.49
WV	256	116	-	372	0.24%	0.09%	10	20.98
WY	121	105	-	226	0.24%	0.04%	7	28.06
U.S.	**116,692**	**34,611**	**59**	**151,362**	**1.40%**	**100.00%**	**26**	**122.44**

*Denotes states that have adopted California's ZEV program; **Hydrogen count denotes stations
*** VIO is vehicles in operation; **** State share of U.S. Total
Source: Figures compiled by Alliance for Automotive Innovation with registered vehicle data provided by S&P Global Mobility as of September 30, 2023; Charging information from U.S. Department of Energy Alternative Fuels Data Center, as of 9/30/2023

REGISTRATIONS

EV registrations as a share of all registered light-duty vehicles are 1.4 percent (as of September 30, 2023). There are about 286 million registered light-duty vehicles in the U.S.

At the end of Q3 2023, California accounted for 35.5 percent of all registered light-duty EVs in the U.S.

States with highest portion of total EVs registered:

1. CA* (1,422,792, 4.56%)
2. DC (10,167, 2.96%)
3. HI (28,325, 2.49%)
4. WA* (159,445, 2.28%)
5. OR* (79,408, 2.06%1)
6. NV* (50,502, 2.01%)
7. NJ* (139,191, 1.90%)
8. VT* (10,416, 1.89%)
9. CO* (99,434, 1.81%)
10. MA* (96,427, 1.76%)
11. MD* (83,118, 1.62%)

States with worst ratio of registered EVs per public charger:

1. NJ*
2. HI
3. IL
4. CA*
5. WA*
6. AZ
7. ID
8. OK
9. FL
10. AK

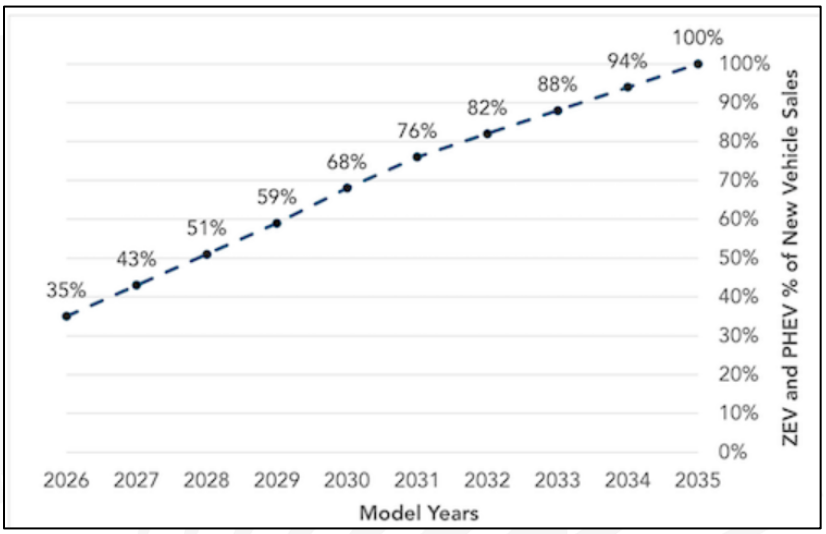
Read more about automakers plans for an ***ELECTRIC FUTURE HERE***

Spotlight On: ACC II State Adoption

Background

Under the Clean Air Act, California is allowed to set vehicle air pollution standards that are more aggressive than federal standards, which other states can also adopt. California adopted the Advanced Clean Cars II rule (ACC II) in 2022, and since then, several other states across the country have adopted or are in the process of adopting the rule. Those states[15] include Colorado, Delaware, Massachusetts, Maryland, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, Washington, and the District of Columbia[16]. Some states have adopted the rule through 2032[17], while others have adopted the rule through 2035.

Starting in Model Year 2026, ACC II will require 35 percent of auto manufacturers' sales to be zero-emission, ramping up to 100 percent in Model Year 2035.[18]



While certain states are adopting these aggressive sales mandates as a mechanism to achieve a zero-emission light-duty transportation future, data has shown that mandates alone do not move markets and no two states are exactly the same. Each state will face its own challenges in increasing EV sales and other characteristics will ultimately play a role. Many factors contribute to a state's EV adoption rate, including availability of charging infrastructure and both financial and non-financial consumer incentives. Demographics also play a role with climate, median income, population density, and political leanings of the state making a difference.

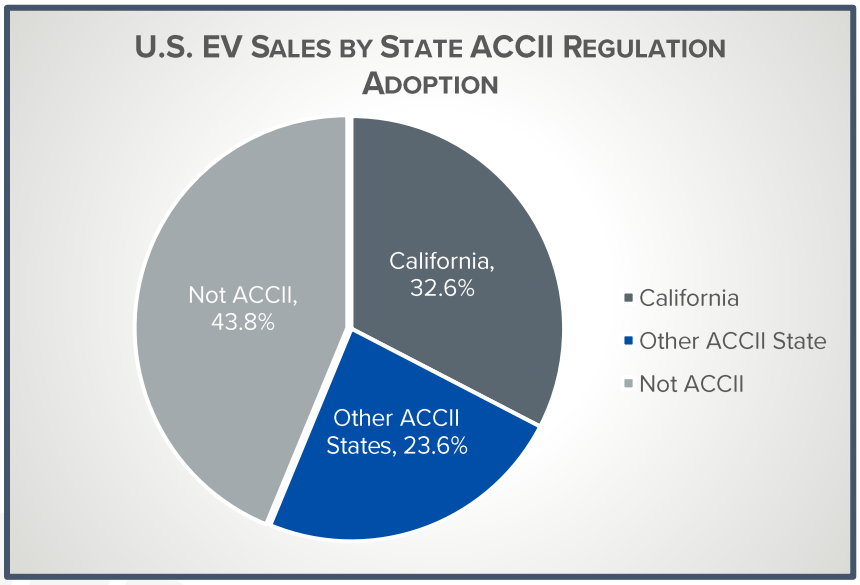
Auto Innovators is proactively engaging to enable the automotive industry's transformation to electric vehicles through actions such as participation in the Joint Office of Energy and Transportation's Electric Vehicle Working Group, development of a lithium-ion battery recycling policy framework, recommendations for attributes of EV charging stations, and recommendations for the implementation of IRA EV tax credits[19].

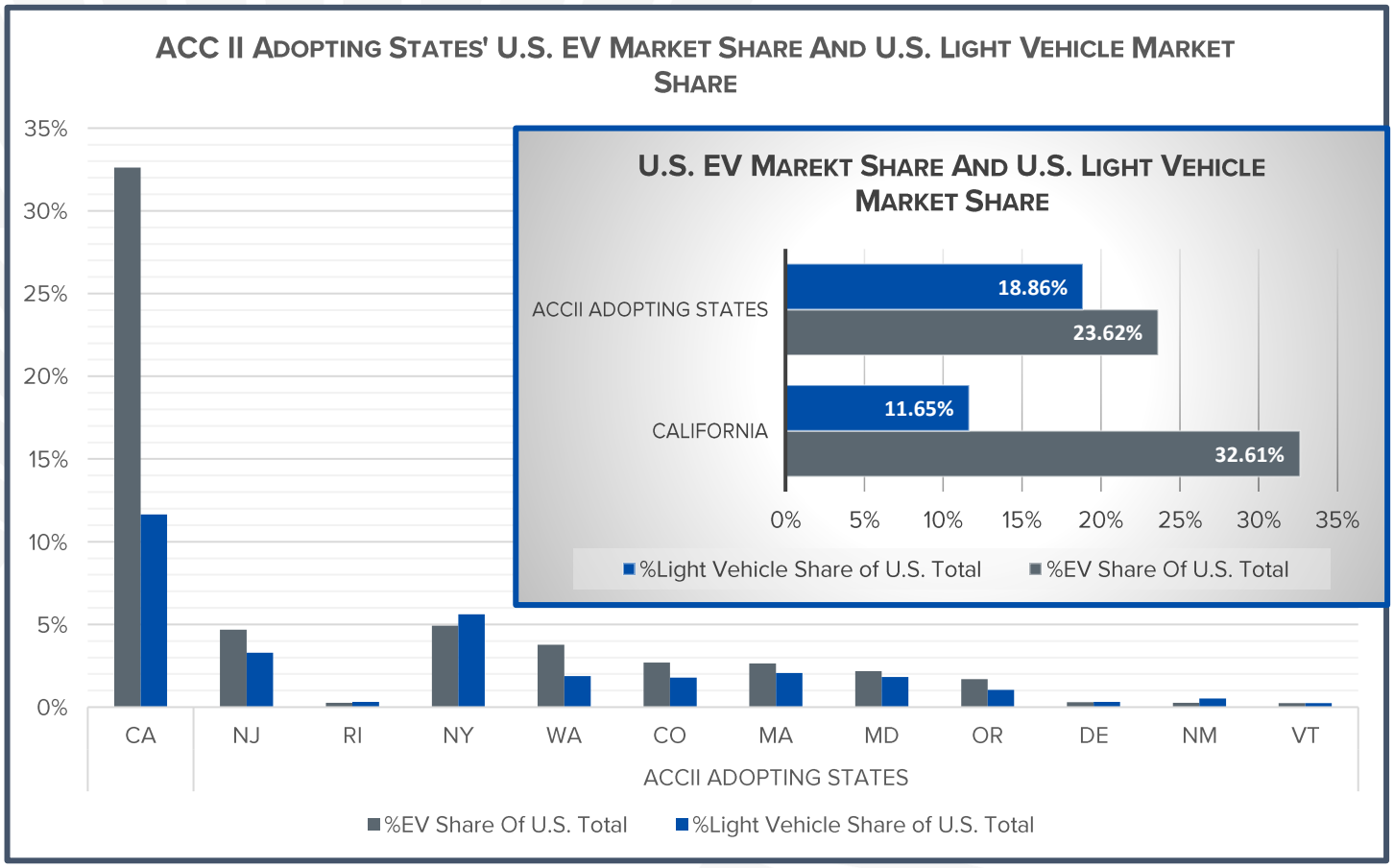
[15] Connecticut and Maine are still considering the regulation, but at the time of publication have not adopted. They are not considered ACC II states in this report.
[16] The District of Columbia adopted ACC II, but because vehicles are not sold within D.C., it is not considered an ACC II state for the purpose of this report.
[17] Colorado adopted ACC II through 2032 with a provision to reevaluate the regulation and possibly extend through 2035; New Mexico and Delaware also adopted the regulation through 2032.
[18] California Air Resources Board, https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii, Accessed 12/15/2023
[19] Alliance for Automotive Innovation, Blog, What We Know (and Don't Know) About the New EV Tax Credit Rules, 12/20/2022; Alliance for Automotive Innovation, blog Foreign Entity of Concern: Finally… Some Clarity, 12/1/2023

EV Marketplace in California, ACC II States, And Non-ACC II States

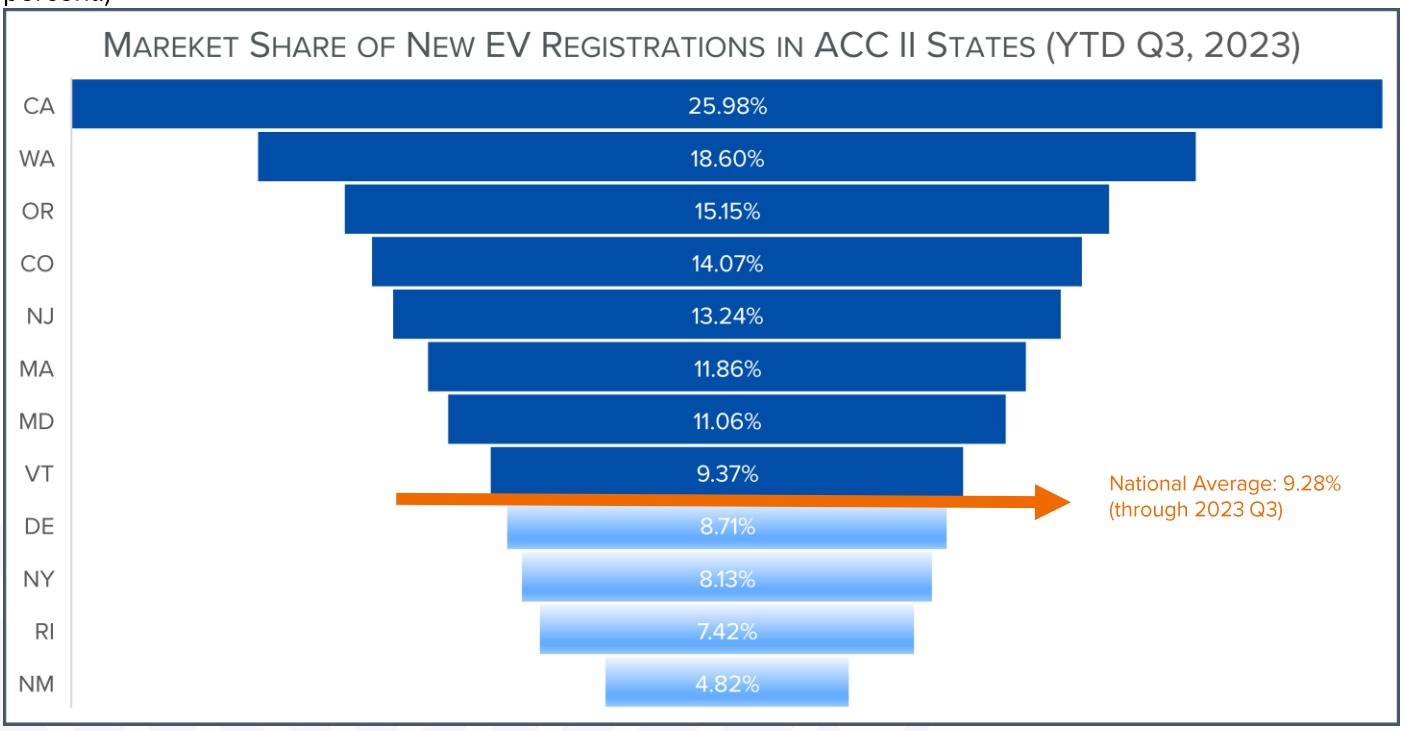
Through the third quarter of 2023, ACC II states represented nearly 31 percent of all U.S. light vehicle sales and 56. percent of all U.S. EV sales. Most of that EV market share is California's 33 percent contribution. The other ACCII adopting states combined to represent 24 percent; non-ACC II states accounted for 44 percent.

While California accounts for 11.7 percent of all light-duty vehicle sales in the U.S., it has an over-sized share of all U.S. EV sales (33 percent). Other ACC II adopting states' EV share (24 percent) is much closer to their overall light-duty vehicle share (19 percent).

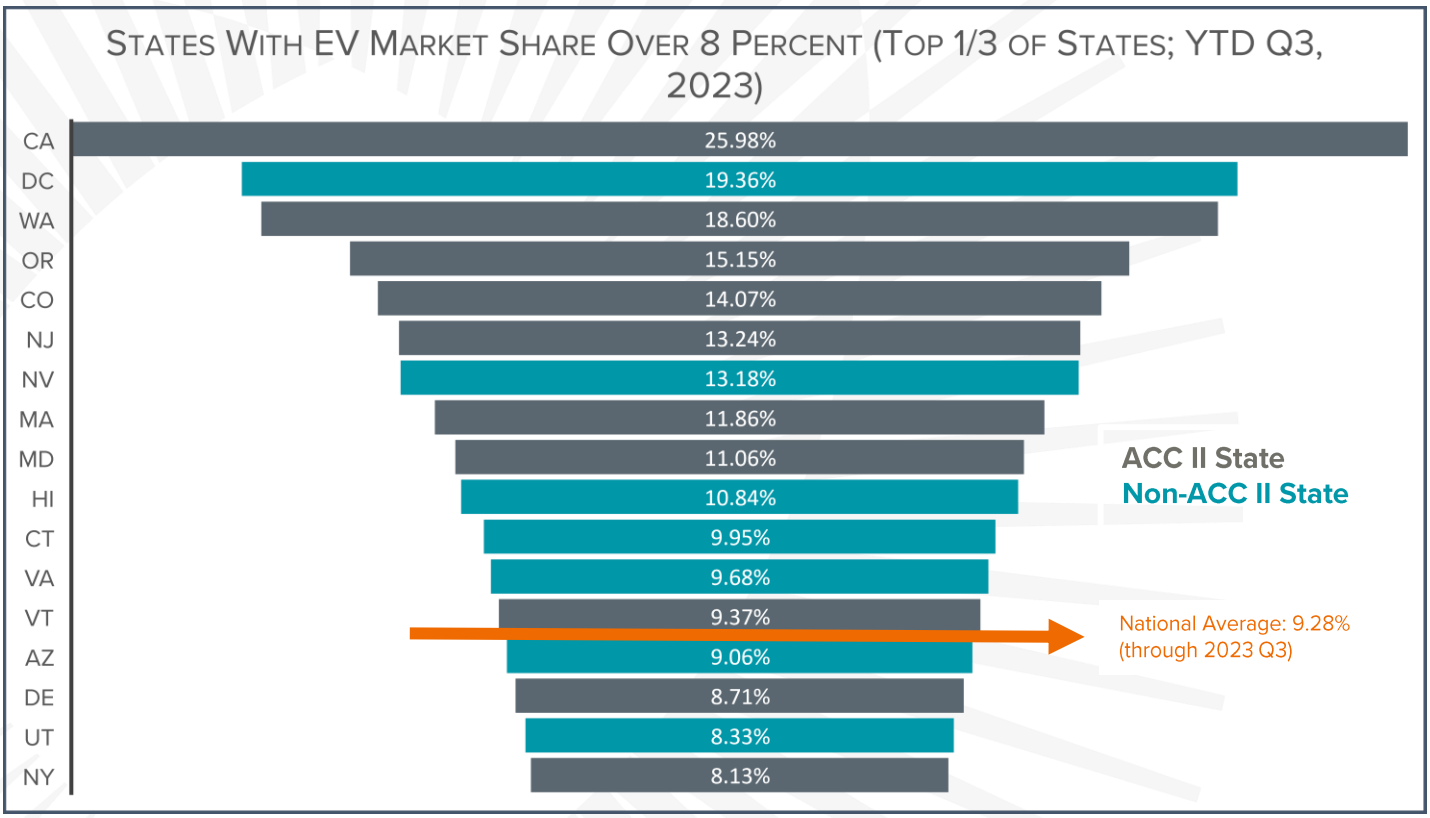




Nationwide, EV market share in 2023 through Q3 was 9.3 percent. Among ACC II states, there is a wide range of market share, with California reaching 26 percent while 5 states are under 10 percent (and New Mexico under 5 percent.)

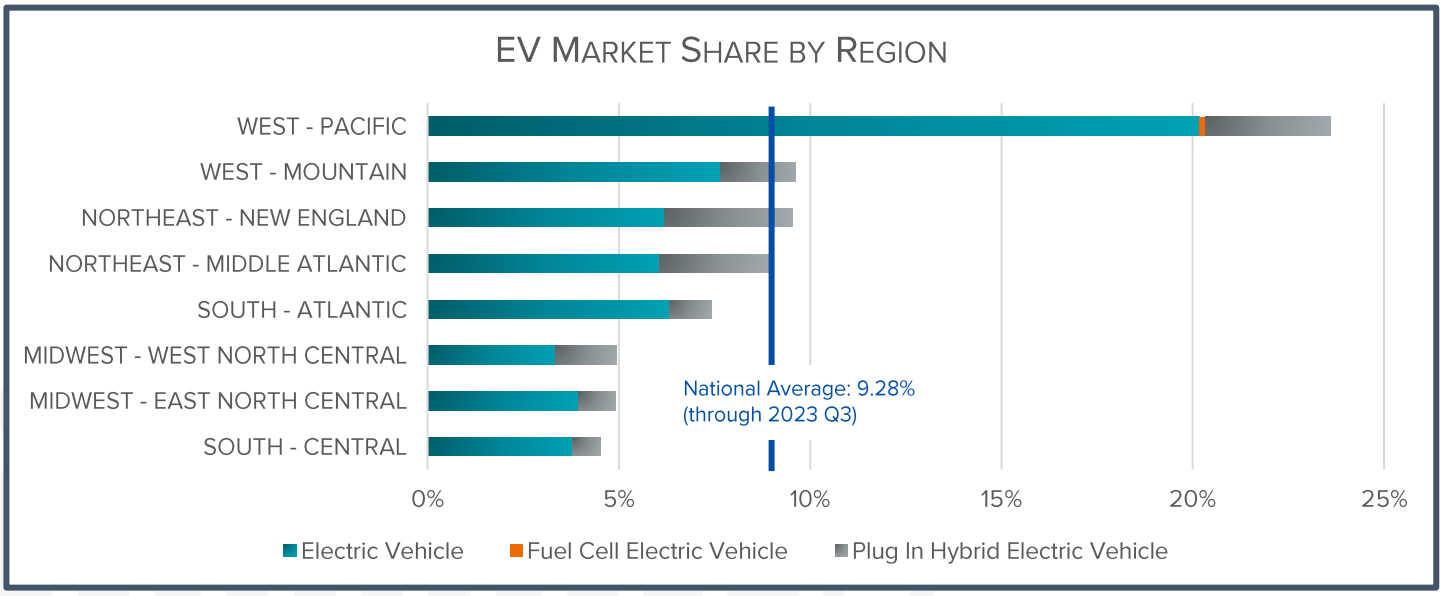


Looking at the top performing states by market share, nearly as many non-ACC II states are above 8 percent (7) as there are ACC II states (9 + California).



EV Market Share Variance by Region[20]

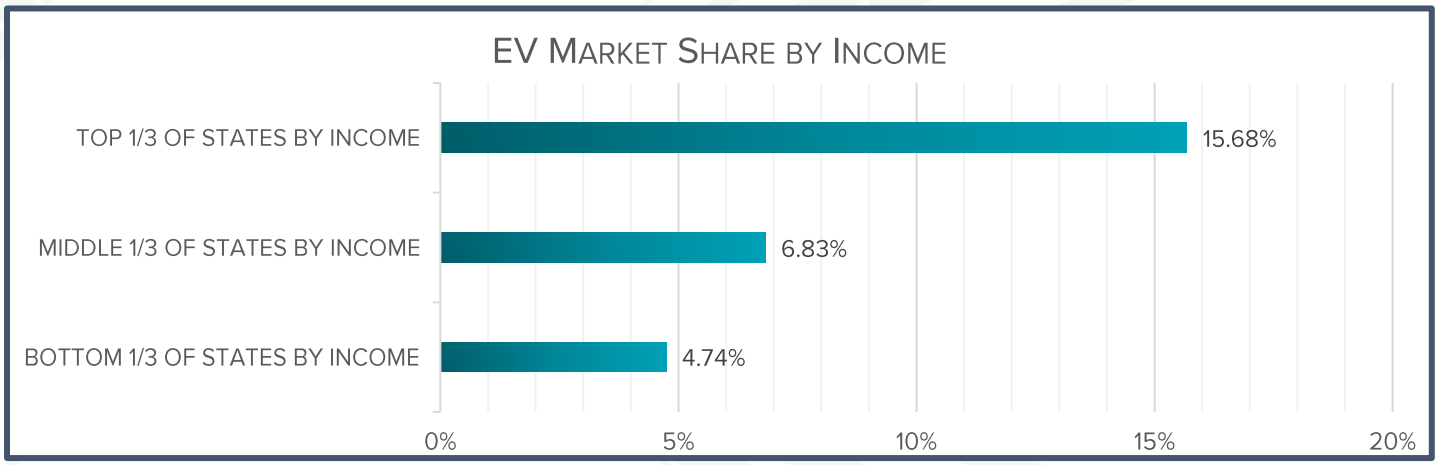
EV adoption rates vary widely based on geography. Coastal regions in the west and east have realized higher EV market share rates than regions in the middle of the country:



EV Market Share Variance by Income[21]

With EVs generally costing ~$5K more than internal combustion engine vehicles, it goes to follow that states with a higher median income level have a higher rate of EV sales. Dividing the 50 states and the District of Columbia into thirds (by median income level) shows that states in the top one-third income bracket have three-times the market share of the lowest third income bracket of states.

Of the states in the top third of EV sales (above 8 percent through the third quarter of 2023), 13 states were in the top income bracket while four were in the middle bracket; zero were in the lowest income bracket.

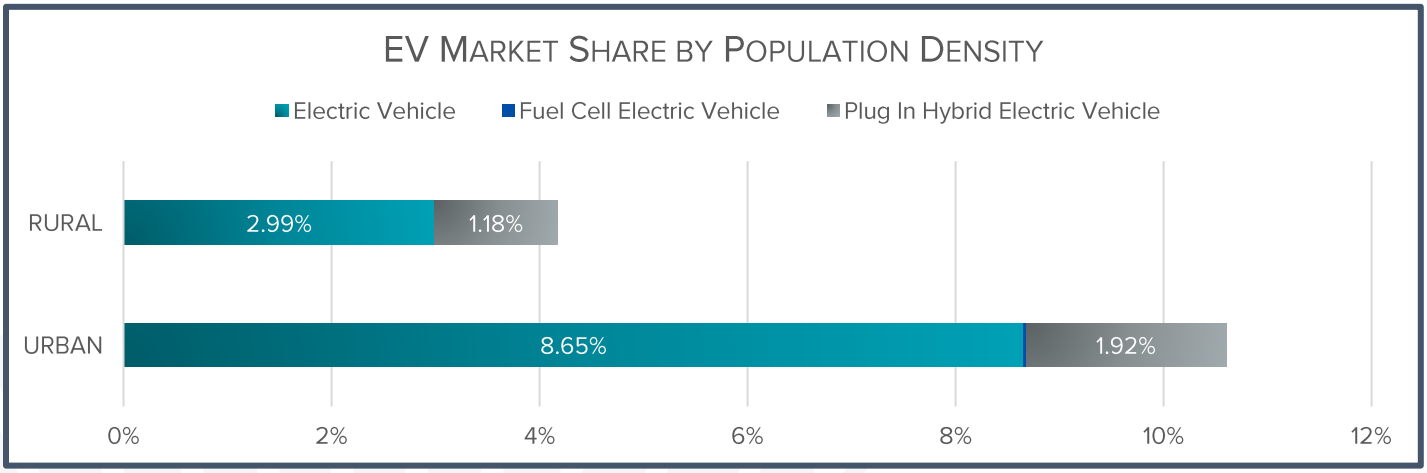


[20] For a list of states by region, see Appendix A
[21] For a list of states by income, see Appendix A

EV Market Share Variance by State Population Density[22]

Classifying states based on population density shows states with a more urban population have more than twice the EV market share (10.6 percent) than more rural states (4.2 percent). Only one rural state, Vermont, is in the top third of EV market share.

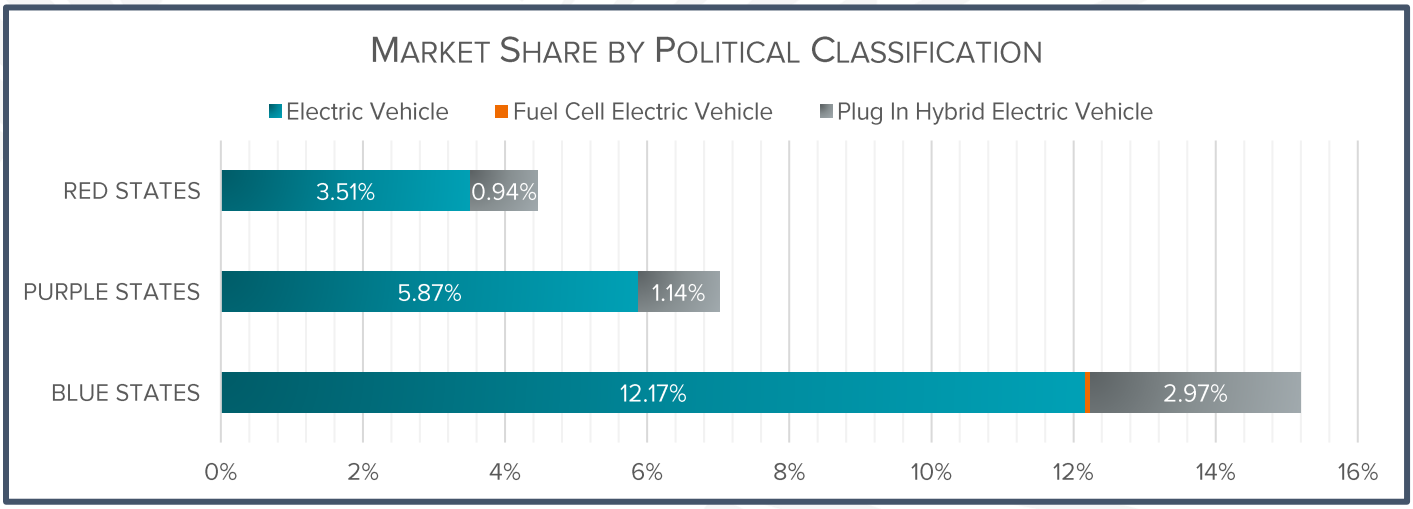
Notably, PHEV market share is 28 percent of all EV sales in rural states, while only 18 percent in urban states.



EV Market Share Variance by Political Classification[23]

State political leanings also affect the likelihood of a state having a higher EV market share. Not surprisingly, "blue states" – states that typically vote democratic and generally place a greater emphasis on environmental matters – have more than three times the EV market share than "red states." Purple states, or swing states, have half the market share of blue states.

Only one red state is in the top third of EV market share (Utah), while three states were purple (Nevada, Virginia, and Arizona); the remaining 13 states were blue.



[22] Rural states were defined as having a population with more than 30 percent living in rural areas. There are 21 states in the rural classification. For a list of states by population density, see Appendix A
[23] For a list of state political classifications, see Appendix A

Appendix A

STATE	ACC II STATE STATUS	EV MARKET SHARE (THROUGH Q3 2023)	INCOME BRACKET	POPULATION DENSITY	REGION	POLITICAL CLASSIFICATION
AK	NO	3.5%	TOP	RURAL	WEST - PACIFIC	RED
AL	NO	2.5%	BOTTOM	RURAL	SOUTH - CENTRAL	RED
AR	NO	2.2%	BOTTOM	RURAL	SOUTH - CENTRAL	RED
AZ	NO	9.1%	MIDDLE	URBAN	WEST - MOUNTAIN	PURPLE
CA	ACC II ADOPTED	26.0%	TOP	URBAN	WEST - PACIFIC	BLUE
CO	ACC II ADOPTED	14.1%	TOP	URBAN	WEST - MOUNTAIN	BLUE
CT	UNKNOWN/PENDING	10.0%	TOP	URBAN	NORTHEAST - NEW ENGLAND	BLUE
DC*	ACC II ADOPTED	19.4%	TOP	URBAN	SOUTH - ATLANTIC	BLUE
DE	ACC II ADOPTED	8.7%	MIDDLE	URBAN	SOUTH - ATLANTIC	BLUE
FL	NO	7.0%	BOTTOM	URBAN	SOUTH - ATLANTIC	PURPLE
GA	NO	7.3%	MIDDLE	URBAN	SOUTH - ATLANTIC	PURPLE
HI	NO	10.8%	TOP	URBAN	WEST - PACIFIC	BLUE
IA	NO	3.1%	MIDDLE	RURAL	MIDWEST - WEST NORTH CENTRAL	RED
ID	NO	4.5%	MIDDLE	RURAL	WEST - MOUNTAIN	RED
IL	NO	7.5%	MIDDLE	URBAN	MIDWEST - EAST NORTH CENTRAL	BLUE
IN	NO	3.9%	BOTTOM	URBAN	MIDWEST - EAST NORTH CENTRAL	RED
KS	NO	4.5%	MIDDLE	URBAN	MIDWEST - WEST NORTH CENTRAL	RED
KY	NO	3.3%	BOTTOM	RURAL	SOUTH - CENTRAL	RED
LA	NO	1.9%	BOTTOM	URBAN	SOUTH - CENTRAL	RED
MA	ACC II ADOPTED	11.9%	TOP	URBAN	NORTHEAST - NEW ENGLAND	BLUE
MD	ACC II ADOPTED	11.1%	TOP	URBAN	SOUTH - ATLANTIC	BLUE
ME	UNKNOWN/PENDING	5.8%	MIDDLE	RURAL	NORTHEAST - NEW ENGLAND	BLUE
MI	NO	4.0%	BOTTOM	URBAN	MIDWEST - EAST NORTH CENTRAL	PURPLE
MN	NO	6.1%	TOP	URBAN	MIDWEST - WEST NORTH CENTRAL	BLUE
MO	NO	6.2%	BOTTOM	RURAL	MIDWEST - WEST NORTH CENTRAL	RED
MS	NO	1.4%	BOTTOM	RURAL	SOUTH - CENTRAL	RED
MT	NO	3.1%	BOTTOM	RURAL	WEST - MOUNTAIN	RED
NC	NO	7.0%	BOTTOM	RURAL	SOUTH - ATLANTIC	PURPLE
ND	NO	1.3%	MIDDLE	RURAL	MIDWEST - WEST NORTH CENTRAL	RED
NE	NO	3.5%	MIDDLE	URBAN	MIDWEST - WEST NORTH CENTRAL	RED
NH	NO	4.7%	TOP	RURAL	NORTHEAST - NEW ENGLAND	BLUE
NJ	ACC II ADOPTED	13.2%	TOP	URBAN	NORTHEAST - MIDDLE ATLANTIC	BLUE
NM	ACC II ADOPTED	4.8%	BOTTOM	URBAN	WEST - MOUNTAIN	BLUE
NV	NO	13.2%	MIDDLE	URBAN	WEST - MOUNTAIN	PURPLE
NY	ACC II ADOPTED	8.1%	TOP	URBAN	NORTHEAST - MIDDLE ATLANTIC	BLUE
OH	NO	4.0%	BOTTOM	URBAN	MIDWEST - EAST NORTH CENTRAL	RED
OK	NO	2.8%	BOTTOM	RURAL	SOUTH - CENTRAL	RED
OR	ACC II ADOPTED	15.2%	MIDDLE	URBAN	WEST - PACIFIC	BLUE
PA	NO	6.2%	MIDDLE	URBAN	NORTHEAST - MIDDLE ATLANTIC	PURPLE
RI	ACC II ADOPTED	7.4%	TOP	URBAN	NORTHEAST - NEW ENGLAND	BLUE
SC	NO	3.8%	BOTTOM	RURAL	SOUTH - ATLANTIC	RED
SD	NO	2.0%	MIDDLE	RURAL	MIDWEST - WEST NORTH CENTRAL	RED
TN	NO	4.8%	BOTTOM	RURAL	SOUTH - CENTRAL	RED
TX	NO	6.1%	MIDDLE	URBAN	SOUTH - CENTRAL	RED
UT	NO	8.3%	TOP	URBAN	WEST - MOUNTAIN	RED
VA	NO	9.7%	TOP	URBAN	SOUTH - ATLANTIC	PURPLE
VT	ACC II ADOPTED	9.4%	TOP	RURAL	NORTHEAST - NEW ENGLAND	BLUE
WA	ACC II ADOPTED	18.6%	TOP	URBAN	WEST - PACIFIC	BLUE
WI	NO	4.1%	MIDDLE	RURAL	MIDWEST - EAST NORTH CENTRAL	PURPLE
WV	NO	1.7%	BOTTOM	RURAL	SOUTH - ATLANTIC	RED
WY	NO	2.0%	MIDDLE	RURAL	WEST - MOUNTAIN	RED

**DC is not included as an ACC II State in calculations*