

Industrial Strategy for Electric Vehicles: The U.S. Case

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Agenda

- Biden policies for EV transition
- Status of EV transition
 - Employment
 - EV penetration
 - Chargers
 - Suppliers
- Obstacles
- Lessons

Biden policies for EV transition

- Goal-setting (8/2021)
 - 50 % of US vehicle sales in US EVs by 2030
- Supply side subsidies
 - for batteries and components, plant conversion, EV chargers
- Demand side subsidies
 - Consumer subsidies for purchase, leasing
- Regulations
 - Fuel economy, Made in America
- Tariffs, proposed ban on Chinese software in connected vehicles

Outcomes so far

Auto employment is the highest since 2006



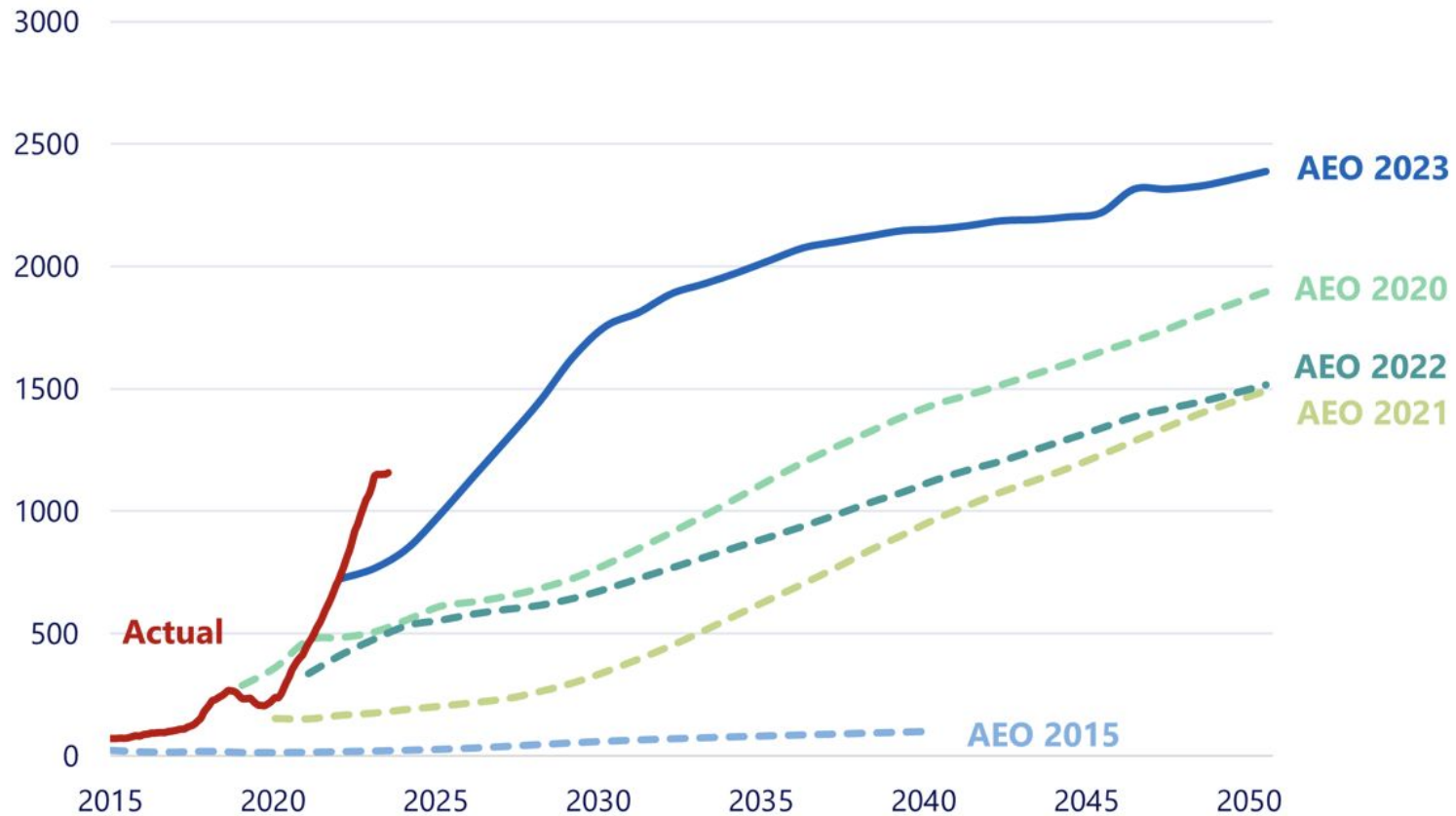
If EV transition
not successful
whole industry
Is at risk

Auto industry
connected to
service jobs
not shown on
Chart:
Also at risk:
Software
Design
R&D

BLS.gov All employees, thousands,
motor vehicles and parts

Figure 9. Annual EV Sales Projections Over Time

Thousands of units sold per year



Sources: U.S. Energy Information Administration, Argonne National Laboratory.

Note: Projections from EIA Annual Energy Outlook. Actuals from ANL Light Duty Electric Drive Sales Monthly Sales Updates, shown as a rolling 12-month sum to account for seasonality.

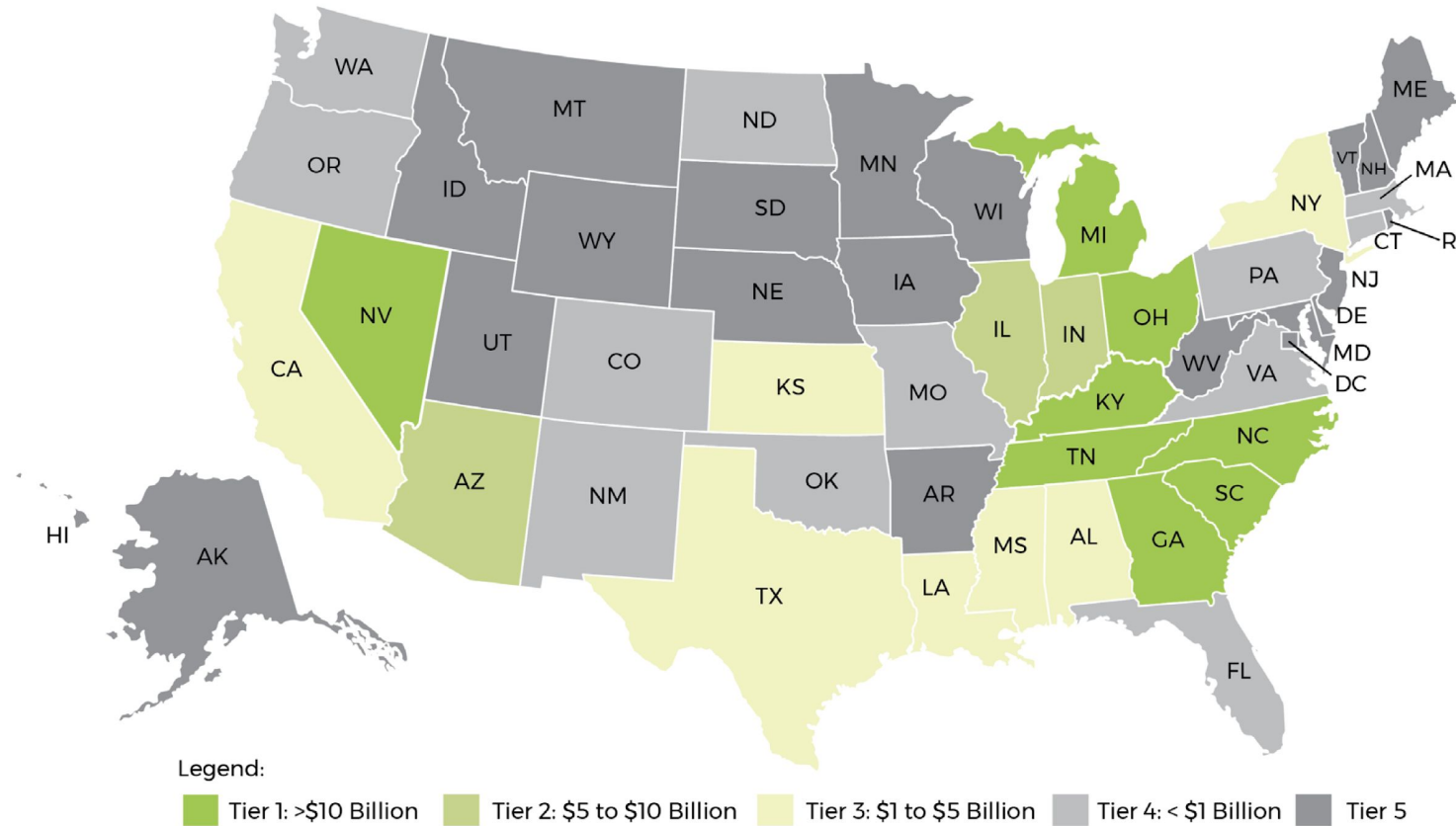
As of June 27, 2024 at 12:00pm.

Source: “Building a Thriving Clean Energy Economy in 2023 and Beyond: A Six-Month Update,” by Heather Boushey and Justina Gallegos, Presidential Council of Economic Advisors, July 1, 2024.

<https://www.whitehouse.gov/briefing-room/blog/2024/07/01/building-a-thriving-clean-energy-economy-in-2023-and-beyond-a-six-month-update/>

Announced EV Ecosystem Investment

- ▶ 185 distinct manufacturing investments announced at 162 project sites in the past 9 years
- ▶ \$188 billion in private investment announced
- ▶ These investments will result in 195,000 created or retained jobs, and could generate up to 876,000 addition jobs in secondary employment¹



Source: “U.S. Electric Vehicle Manufacturing Investments and Jobs: Characterizing the Impacts of the Inflation Reduction Act after 18 Months,” Environmental Defense Fund, March 2024.
https://www.edf.org/sites/default/files/2024-03/EDF_US_EV_Manufacturing_Investments_Spring2024.pdf

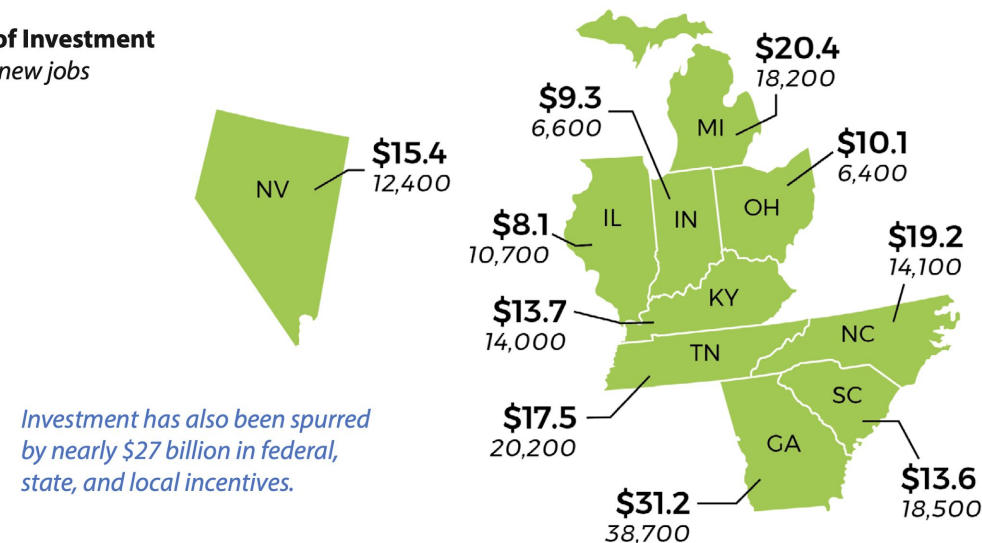
Announced EV, EV Battery, Battery Component, and Battery Recycling Investment & Employment

January 2015 - February 2024

Manufacturing	Investment	Announced Created/Retained Jobs
Passenger vehicles	\$39.9 billion	62,700
Medium heavy duty vehicles	\$13.8 billion	24,000
EV components	\$4.0 billion	9,600
EV batteries	\$99.7 billion	81,100
EV battery components	\$24.0 billion	15,000
EV battery recycling	\$6.4 billion	2,200
Total	\$188 billion	194,500

84% of Announced Investment is in 10 States

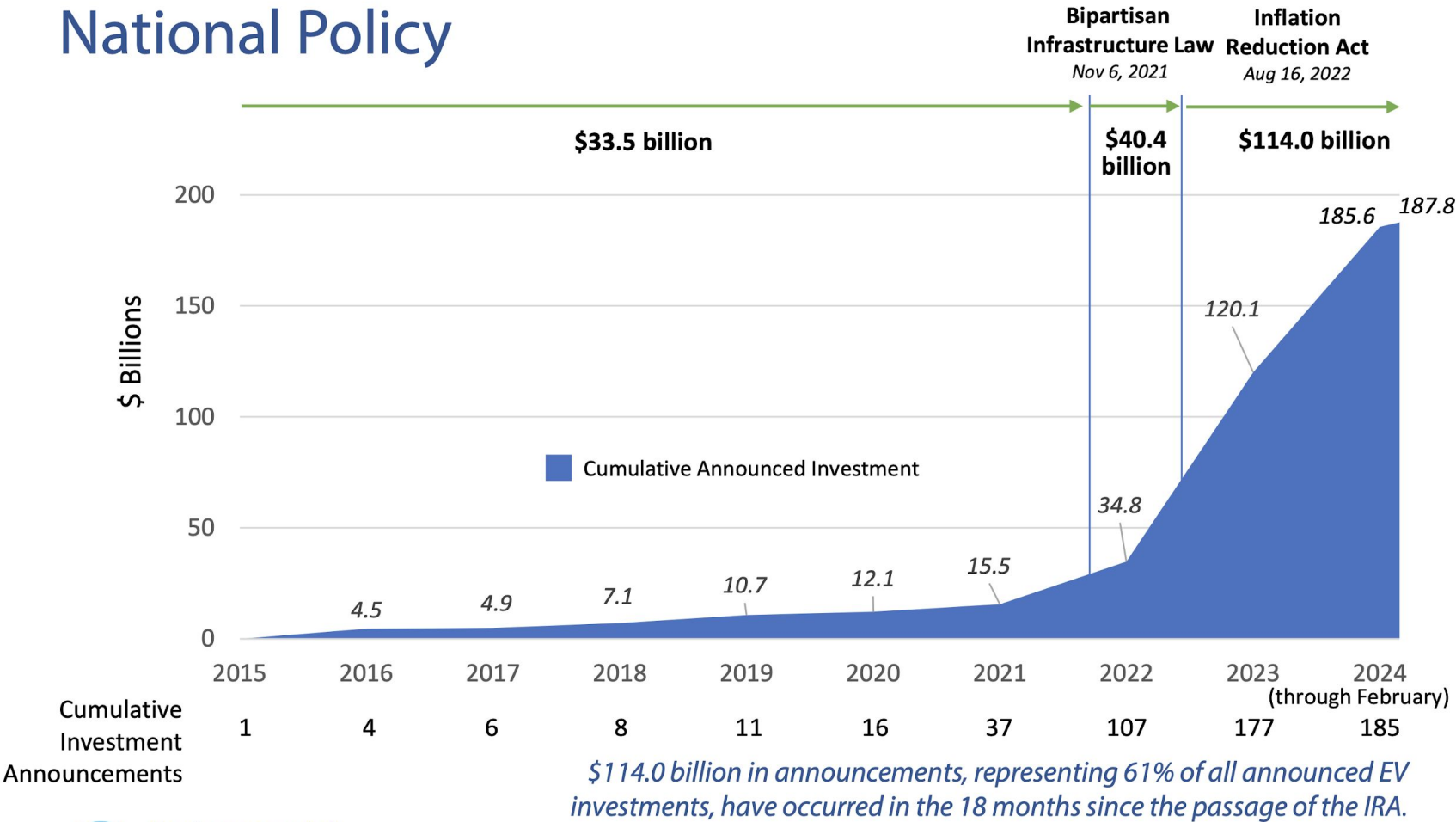
\$ Billions of Investment
Number of new jobs



Private investment

Source: "U.S. Electric Vehicle Manufacturing Investments and Jobs: Characterizing the Impacts of the Inflation Reduction Act after 18 Months," Environmental Defense Fund, March 2024.
https://www.edf.org/sites/default/files/2024-03/EDF_US_EV_Manufacturing_Investments_Spring2024.pdf

EV Investment is Spurred by National Policy

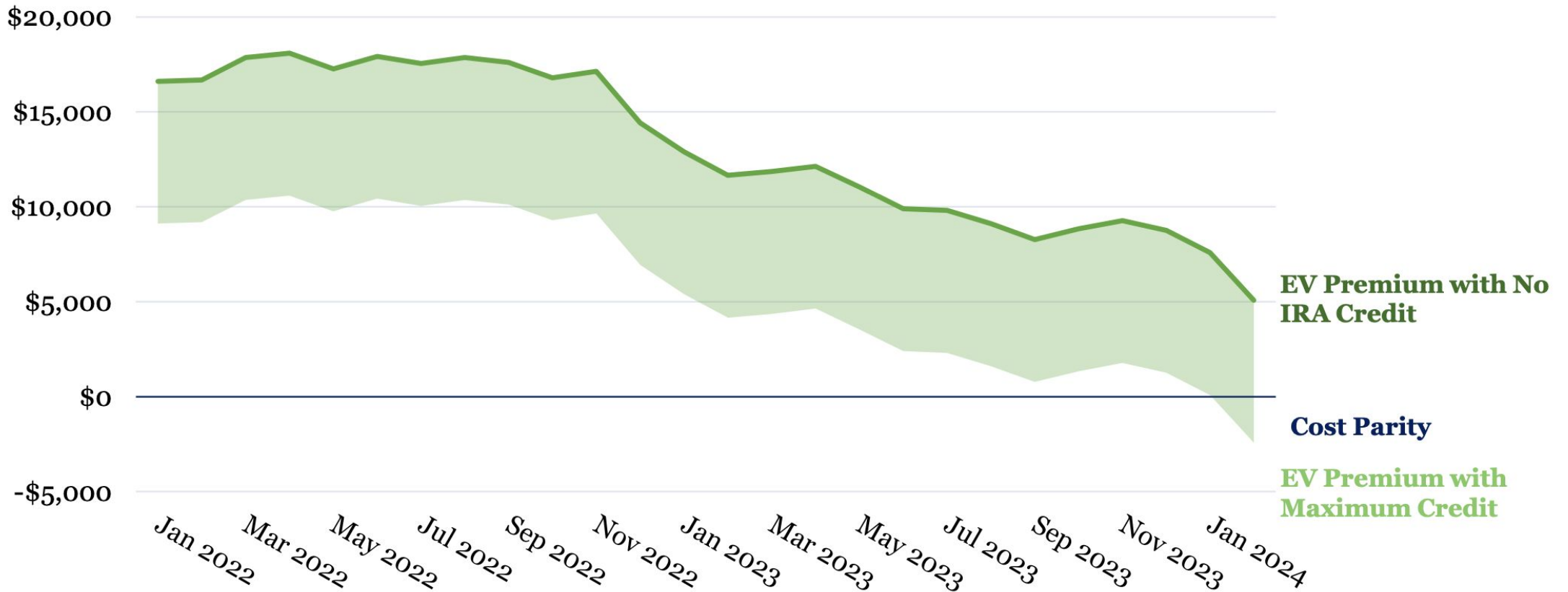


¹Climate Nexus; *Job Impacts from the Shift to Electric Cars and Trucks* and Nevada Governor's Office of Economic Development; *Economic Impact of Tesla Gigafactory on Washoe and Storey Counties*

Source: "U.S. Electric Vehicle Manufacturing Investments and Jobs: Characterizing the Impacts of the Inflation Reduction Act after 18 Months," Environmental Defense Fund, March 2024.
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Average Difference in Cost Between New EVs and All New Vehicles

Dollars per vehicle



Source: Cox Automotive, based on average transaction cost
As of March 18, 2024.

Source: “Growing the Economy from the Middle Out: Laying the Foundation for Growth that is Strong, Stable, and Broadly Shared,” slideshow by Heather Boushey, President’s Council of Economic Advisors, White House, October 2024.

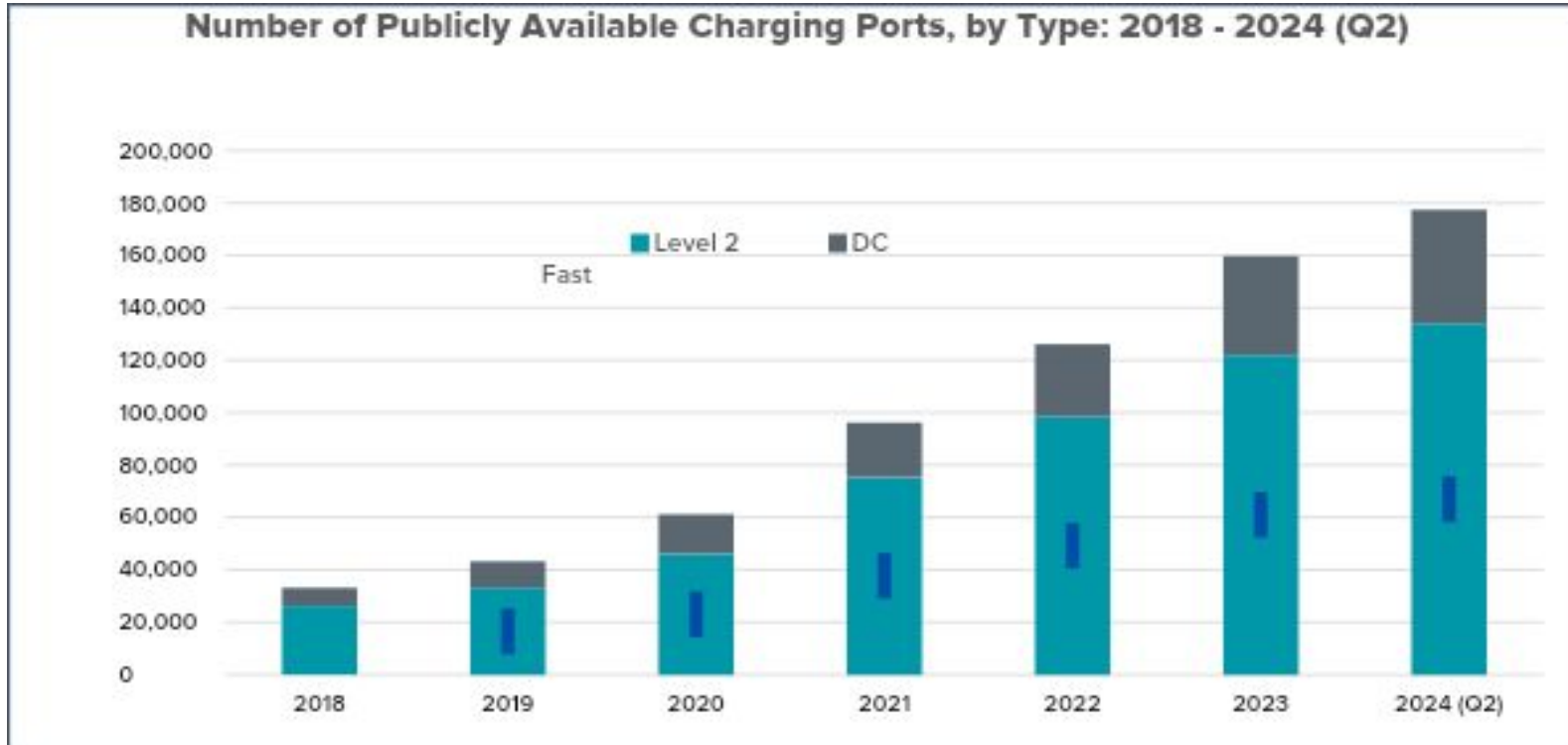
Charging Infrastructure

Level 2: 56,002 Locations, 133,939 EVSE Ports

DC Fast: 10,338 Locations, 43,391 EVSE Ports

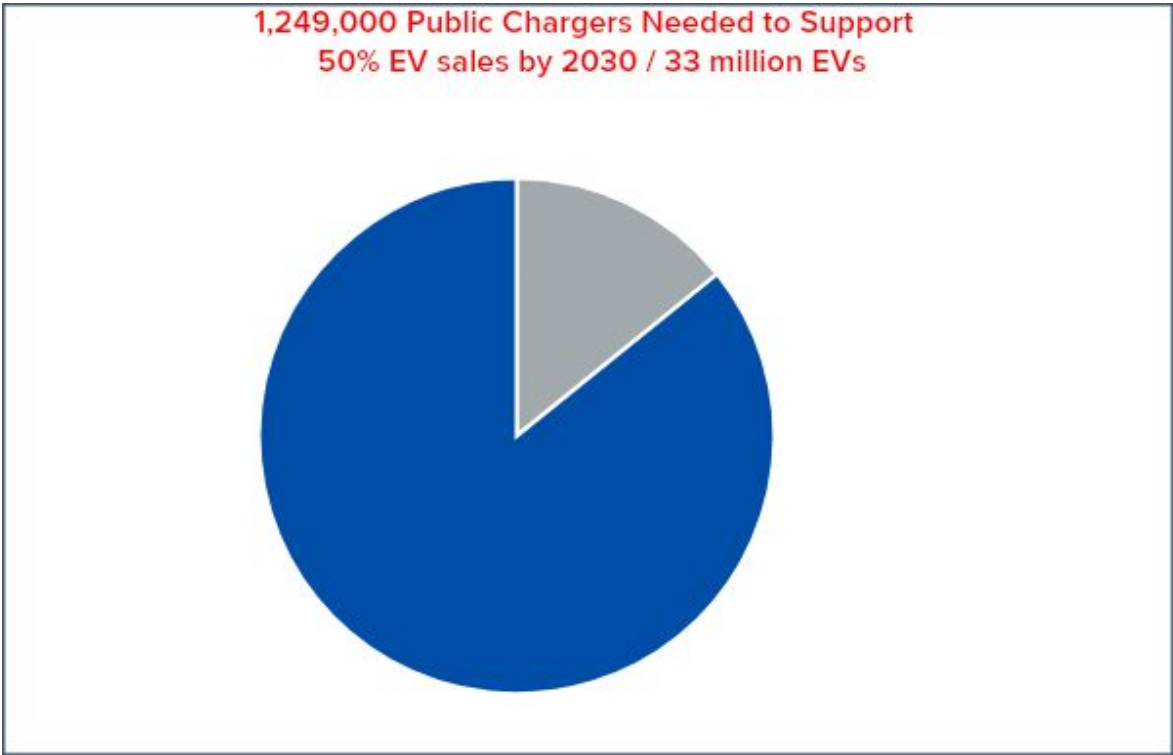
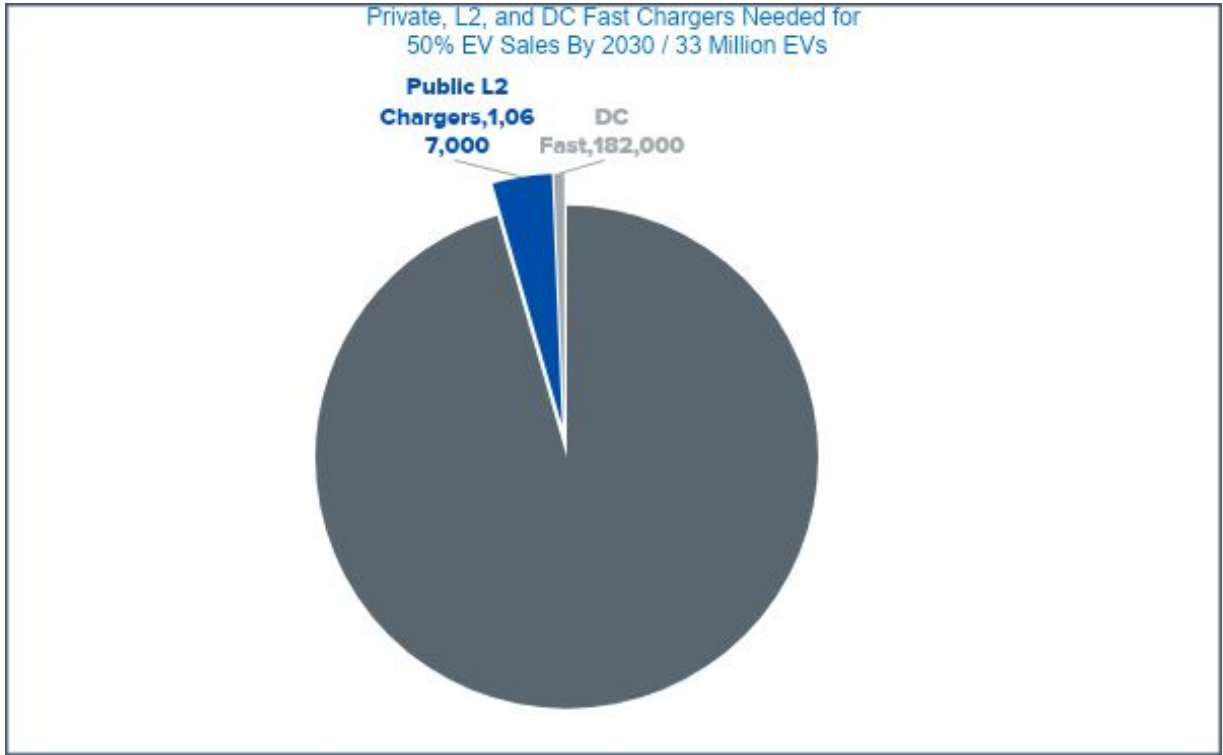
Hydrogen Refueling: 58 Stations (57 are in California)

U.S. Total: 65,083 Locations, 177,330 EVSE Ports



- The number of public L2 charging ▲10% Q2 2024 vs Q2 2023
- DC Fast chargers ▲14%
- However, total charging ports ▲11% from the end of 2023.
- (For context, E-VIO ▲7% from the end of 2023 to the end of the second quarter of 2024.)

Charging is Lacking



Small suppliers

- Jobs at risk from transition
 - But opportunities in autos, and clean energy
 - Federal efforts to ease the transition
 - Technical assistance (DOE)
 - Financing (SBIC) and Grants (DOE)
 - High cost of vetting
 - Workforce (Battery Workforce Initiative)
 - **Design new jobs to be good jobs:** don't just train workers for employer-defined jobs, but build coalition to design and adopt high standards.
- See [FACT SHEET: Taking Action to Support Auto Workers and Manufacturers, Including in Michigan | The White House](#)

Potential future policies

- **Promote small firm investment with grants to anchor firms & their suppliers.**
- Anchor firms and their suppliers would apply for grant funds (which they would match).
- The large firm's support would show they believe these suppliers are viable and strategic, which eases 2 problems that small firms face in investing in new products or processes:
 - 1) provides some demand certainty to suppliers
 - most small suppliers can afford at most one bet
 - High potential social return not just to green products, but smart processes (sensors etc)
 - 2) reduce the government's vetting costs, since the large firm has already done some vetting and is sharing the risk.

Lessons

- Role of place- and technology- based analysis
 - Total jobs similar, but 200,000 jobs will be disrupted; ½ in IN MI OH
 - Possible to solve excess ICE supply AND insufficient heat pump supply
- Investment crowded in due to joint goal-setting, identification of bottlenecks
 - Charging, battery components, small firms
- Importance of active stakeholders and state capacity
 - UAW action □ battery salaries increased from \$16.50 to \$30/hour
 - DOE learning + personnel □ stronger community benefits agreements
 - Most states lack experience with any project like EV charging
- Job and climate goals not necessarily in conflict
 - Biden adm created a US fast charging industry without slowing roll-out
 - Creation of agile suppliers and good jobs would promote both
- Policies so far do not fully incentivize organizational/supply chain transformation