

# Effective State Policies for Electric Vehicle Markets

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Jane Hill, Sam Krause, Chris Hendrick, Cole Thompson

# Outline

U.S. FEDERAL EV POLICY ENVIRONMENT



STATE LEVEL ADOPTION OF EV



STATE CASE STUDIES



TAKE-AWAYS



QUESTIONS

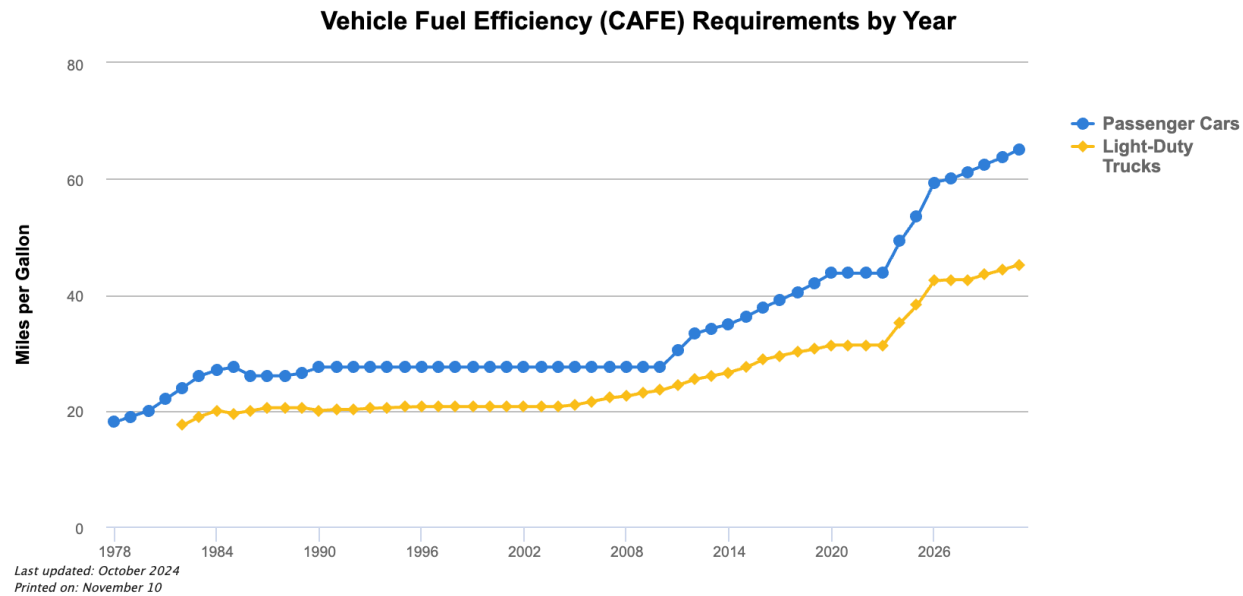
# Federal Policy Overview

Advanced Energy Research Project Grants (ARPA-E)	Advanced Technology Vehicle (ATV) and Alternative Fuel Infrastructure Manufacturing Incentives	Alternative Fuel Infrastructure Tax Credit	Alternative Fuel Vehicle (AFV) Research and Development Grants	Carbon Reduction Program (CRP)	Charging and Fueling Infrastructure Grants
Electric Vehicle (EV) Charging Infrastructure Connection Funding	Electric Vehicle (EV) Charging Reliability Grants	Electric Vehicle (EV) Charging and Clean Transportation Grants	Electric Vehicle (EV) Infrastructure Grants and Loan Guarantees	Electric Vehicle and Fuel Cell Electric Vehicle Manufacturing Tax Credit	Federal Transportation Facility Improvement Program
Heavy Duty Zero Emission Vehicle (ZEV) and Infrastructure Grants	Large-Scale Electric Vehicle (EV) Charger Planning and Siting Grants	National Electric Vehicle Infrastructure (NEVI) Formula Program	Neighborhood Electric Vehicle (EV) Charging Infrastructure Grants	Rural Community Electric Vehicle (EV) Loan Guarantees	Community Clean Energy Support Program (NREL)

"Electricity Laws and Incentives in Federal." *Alternative Fuels Data Center: Electricity Laws and Incentives in Federal*, [afdc.energy.gov/fuels/laws/ELEC?state=US](https://afdc.energy.gov/fuels/laws/ELEC?state=US). Accessed 7 Nov. 2024.

"Federal EV Policy." *Electrification Coalition*, Electrification Coalition, 9 Apr. 2024, [electrificationcoalition.org/work/federal-ev-policy/](https://electrificationcoalition.org/work/federal-ev-policy/).

# CAFE Standards



- Enacted in 1975
- Encourage automakers to manufacture more fuel-efficient vehicles
- Manufacturers must meet increasingly stringent standards
- CAFE Credits

“Maps and Data - Vehicle Fuel Efficiency (CAFE) Requirements by Year.” *Alternative Fuels Data Center: Maps and Data - Vehicle Fuel Efficiency (CAFE) Requirements by Year*, [afdc.energy.gov/data/10562](https://afdc.energy.gov/data/10562). Accessed 10 Nov. 2024.

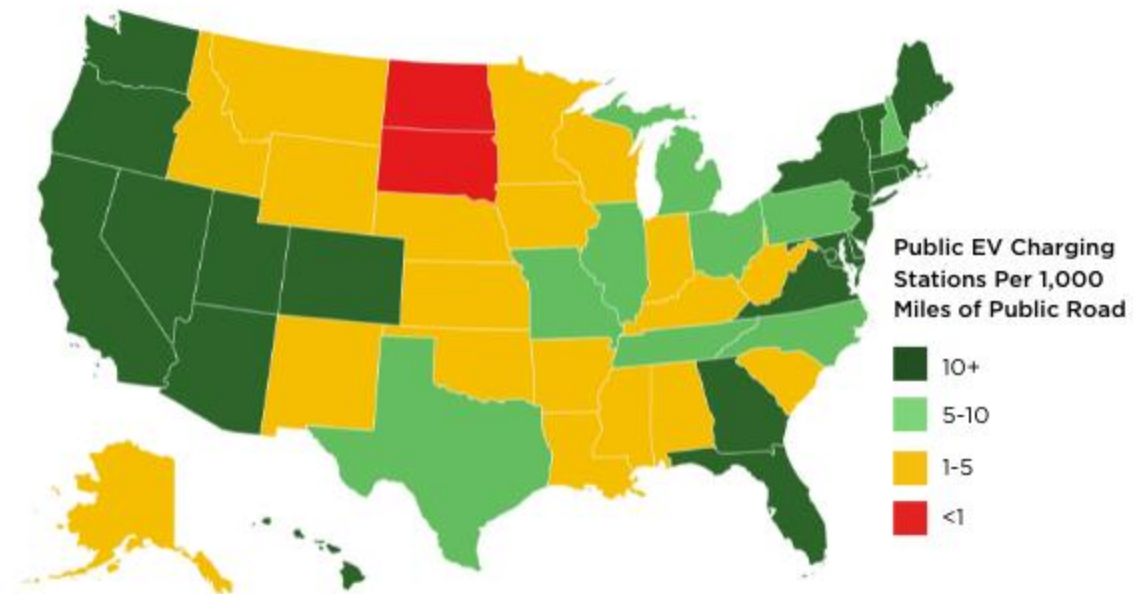
# Recovery Act of 2009

- Directed funding toward development and adoption of EV technology – \$6 billion
  - Electric Vehicle Manufacturing Grants
    - \$2 million toward grants
      - Support domestic manufacturing
  - Infrastructure Development
    - \$400 million towards deployment of EV Charging stations
      - Stakeholders: state & local governments, businesses, utility companies (both public and private)
  - Research and Development
    - \$400 million to fund research into advanced vehicle technologies
  - Battery Manufacturing and Recycling
    - \$500 million to fund domestic battery manufacturing and recycling
  - Federal Income Tax Credits
    - \$2500 to \$7500 for a new qualified Plug-in-Electric (PEV)
      - Manufacturer-specific and phases out

# Bipartisan Infrastructure Law (BIL)

- \$7.5 billion for EV-related infrastructure
  - Nationwide network of 500,000 EV Chargers
  - Must be manufacture in the U.S.
  - NEVI
    - \$5 billion over five years to states
    - States must submit EV Infrastructure Deployment Plan
  - Grant Program - Charging and Fueling Infrastructure (CFI)
    - \$2.5 in competitive grant funding
      - Focus on rural, disadvantages and hard-to-reach communities
  - Recycling Batteries and Battery Components
    - \$44.8 million new funding

## EV CHARGING INFRASTRUCTURE BY STATE\*



Graphic By: Jaxon Tolbert and Sydney O'Shaughnessy

\*EV charging data as of August 2021, public road mileage as of 2019.

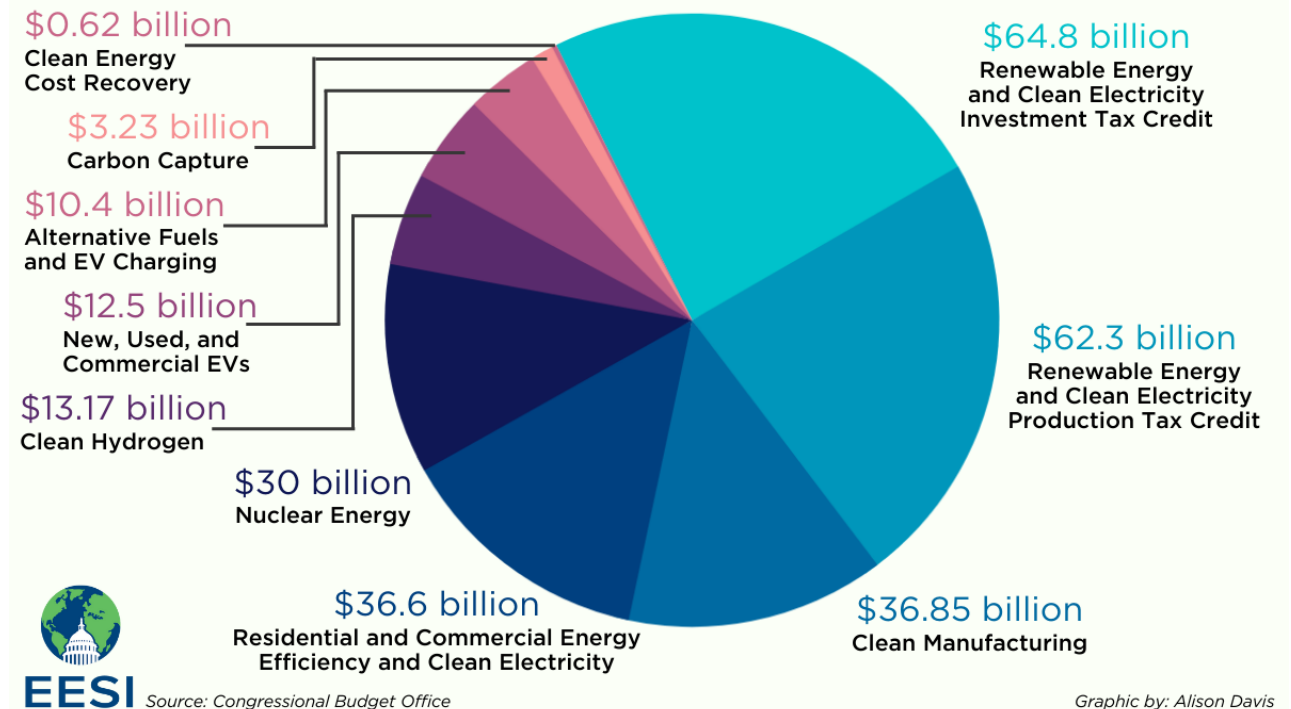


Environmental and Energy Study Institute (EESI). "Beyond Cities: Breaking through Barriers to Rural Electric Vehicle Adoption." *EESI*, [www.eesi.org/articles/view/beyond-cities-breaking-through-barriers-to-rural-electric-vehicle-adoption](http://www.eesi.org/articles/view/beyond-cities-breaking-through-barriers-to-rural-electric-vehicle-adoption). Accessed 10 Nov. 2024.

# Inflation Reduction Act

- Clean Vehicle Consumer Tax Credit
  - \$7500 per vehicle through 2032
  - Income cap
  - Not all vehicles qualify
  - Eliminates manufacturer quota
- Used Clean Vehicle Consumer Tax Credit
  - \$4000 or 30% of sales price
    - Sale price must be less than \$25000
  - Income Cap
- Advanced Manufacturing Production Credit
  - Tax credit awarded to producers of critical minerals in U.S.

## Carrots Over Sticks: Green Tax Credits in the Inflation Reduction Act



Environmental and Energy Study Institute (EESI). "How the Inflation Reduction Act and Bipartisan Infrastructure Law Work Together to Advance Climate Action." EESI, [www.eesi.org/articles/view/how-the-inflation-reduction-act-and-bipartisan-infrastructure-law-work-together-to-advance-climate-action](https://www.eesi.org/articles/view/how-the-inflation-reduction-act-and-bipartisan-infrastructure-law-work-together-to-advance-climate-action). Accessed 10 Nov. 2024.

# State Influence on EV Adoption

- States play a vital role in EV adoption rates
- Different types of state level EV policies
  - Some overlap
- Each state has different needs
  - Some policies that work in one state will not always work in other states





# Types of State Level Policies

## Financial Incentives

- Tax Credits & Exemptions
- Cash Rebates
- Charging Rebates

## Emissions Standards & Goals

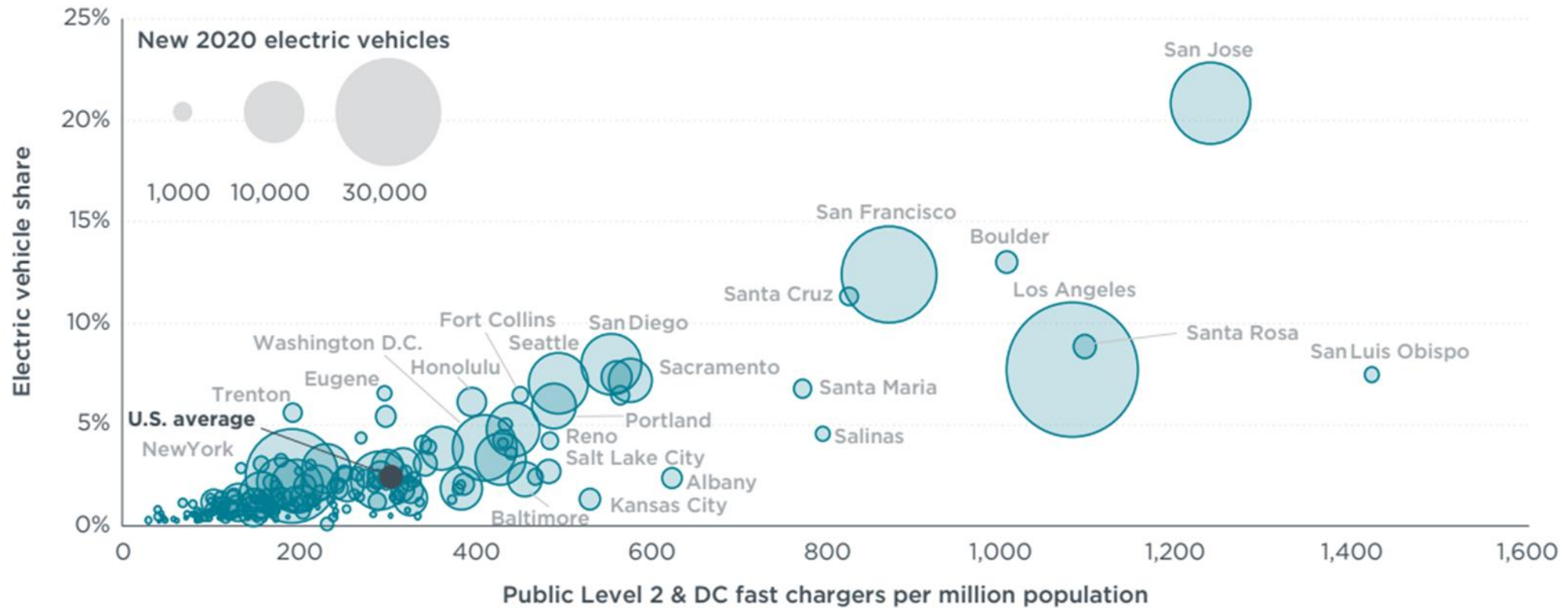
- California's ZEV Policy
- Low Carbon Fuel Standards
- Electrifying Fleet Vehicles

## Infrastructure

- Charging in Cities
- Charging Infrastructure Along Major Roads & Highways
- Financial Incentives for Building Charging Infrastructure

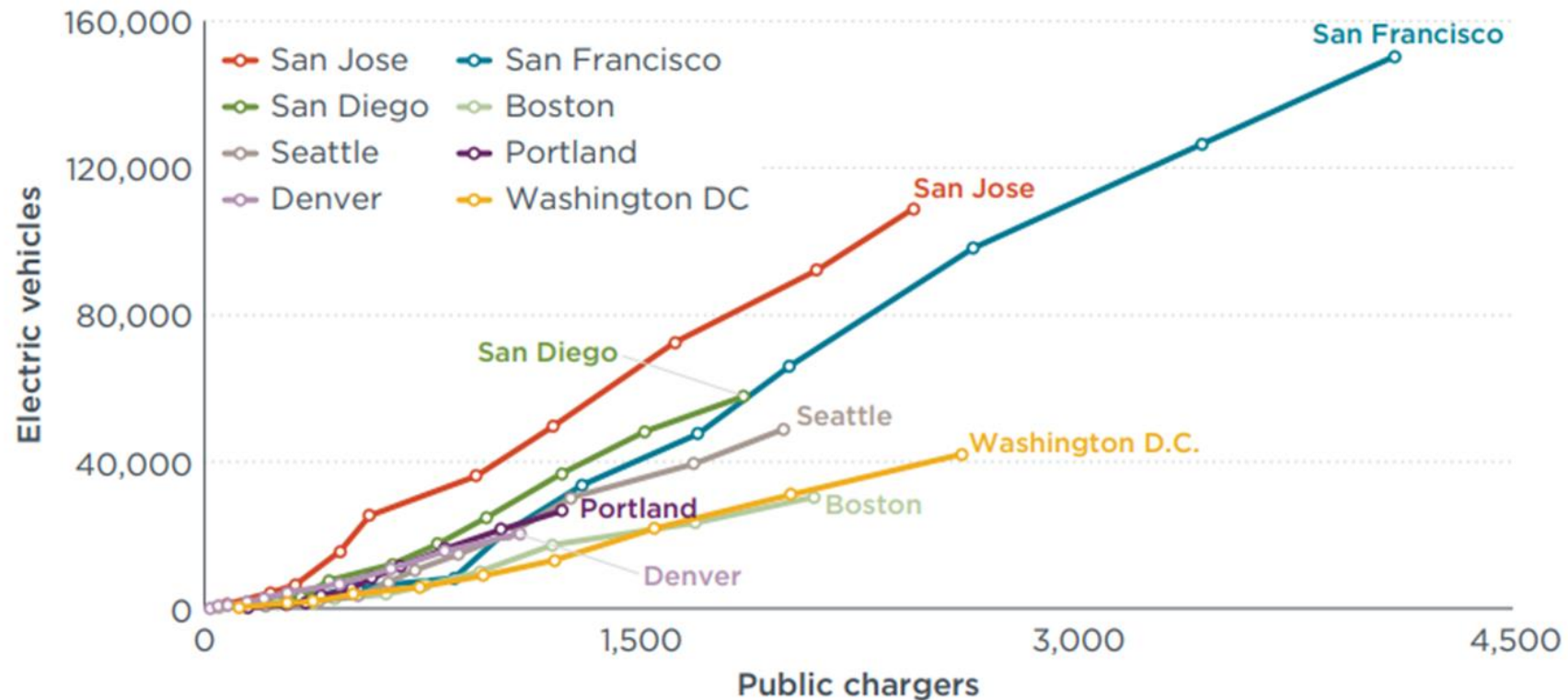
# State Level Charging Infrastructure

## Charging infrastructure and EV adoption



# State Level Charging Infrastructure

More public chargers = higher uptake in EVs



# Colorado Charging Infrastructure Policies

- **Charge Ahead Colorado Grant Program**
  - Grants up to \$250,000 for installing fast chargers across CO
- **CO Bill HB24-1173**
  - Reformed permitting process for approval of EV chargers
- **Revised Building Energy Code Standards**
  - Ensures that all new residential buildings have access to EV chargers
- **Direct Current- Fast Charging Plazas**
  - Installing fast chargers along rural corridors
  - Ensuring that disadvantaged groups have access to charging



State with the most announced EV manufacturing investments (2024-2030)?

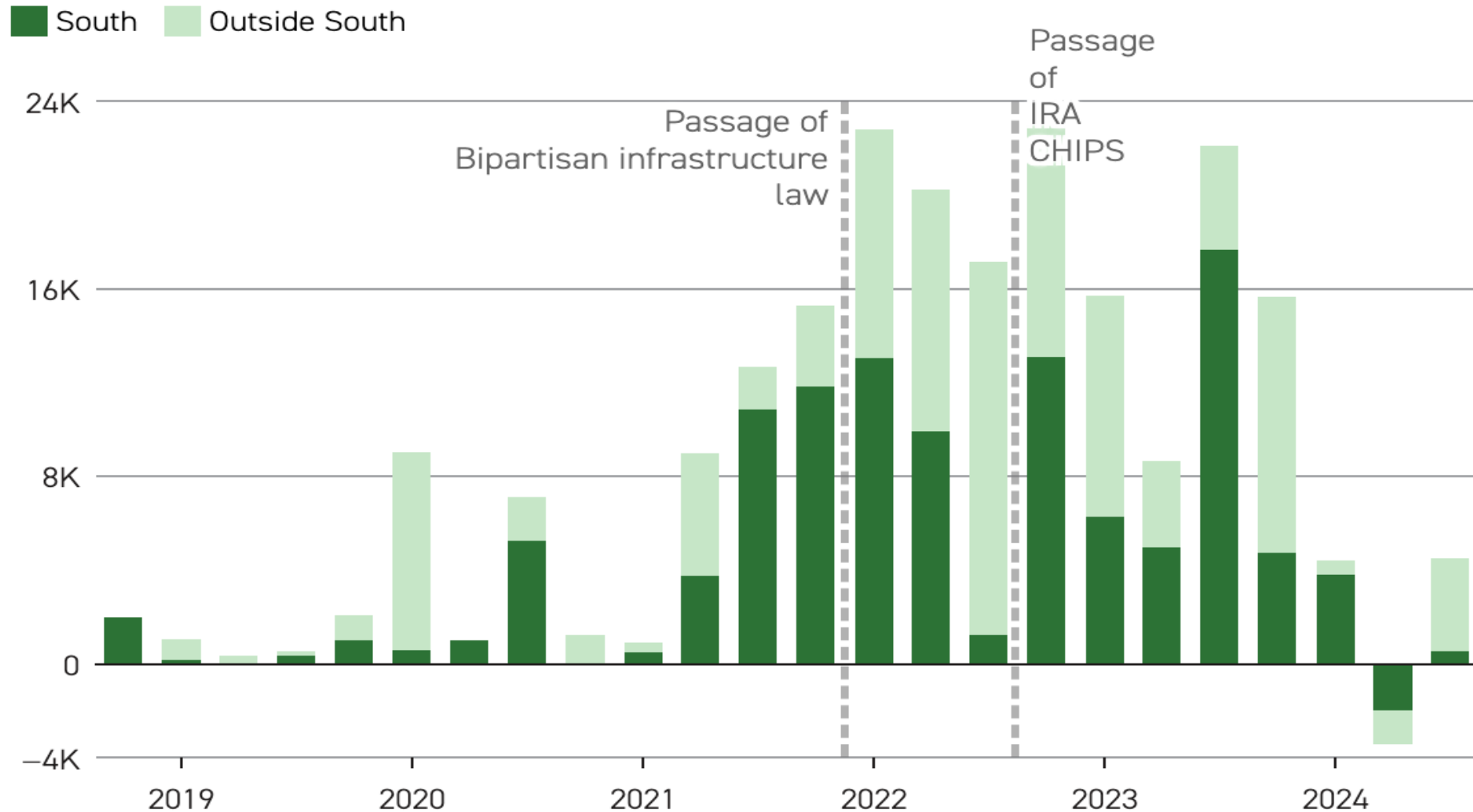
- A. Arizona
- B. California
- C. Georgia
- D. Texas

Georgia Manufacturing investments  
\$31.5 Billion



# Majority of new EV jobs are headed to the South

Net jobs announced among EV and battery investments, by quarter



Note: Negative values reflect downward revisions to previous announcements. Southern states include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia.

Source: Atlas Public Policy and Utah State University

# Georgia EV Goals

## Investments

- Georgia is receiving \$135 million in federal funds to build EV charging stations, with a focus on rural and underserved communities
- Nearly \$77 Billion in Private Investments for Battery Manufacturing

## Jobs

- Manufacturing is 10% of Georgia GDP
- 32,000 EV related jobs created since 2018

## Companies

- SK Battery- advanced manufacturing plant near Atlanta
- Hyundai- EV Assembly Factory
- Rivian- EV Assembly Factory
- Three Projects together bring in 17.5 Billion into GA economy

# GA State Incentives

## NEVI (National Electric Vehicle Infrastructure) Formula Grant Program

- DOT budget to create charging infrastructure, build out 1,523 miles of EV corridors

## Diesel Emission Reduction Grants

- EPA funding for projects that replace diesel school busses with EV's

## Alternative Fuel and Advanced Vehicle Job Creation Tax Credit

- A business that manufactures alternative energy products for use in battery, biofuel, and electric vehicle enterprises may claim an annual tax credit for five years

## Electric Vehicle (EV) Charging Station Tax Credit

- 10% (up to \$2500) income tax credit for businesses for charging station installation

## Advanced Manufacturing Production Credit

- Tax credit equal to 10% of the cost of production is awarded to the producers of applicable critical minerals used in EV battery manufacturing



# -GA State Incentives continued

## High Occupancy Vehicle (HOV) and High Occupancy Toll (HOT) Lane Exemption

- EV's with alternative fuel license may use HOV and Toll lanes free

## Georgia Electric Mobility and Innovation Alliance (EMIA)

- Partnership between government, industries, electric utilities, non-profits to bring new EV investments

## Promotion of Electric Vehicle (EV) Manufacturing

- Georgia Dept of Economic Development created EV Manufacturing Commission to develop, market, promote, and recruit the growth of the EV industry through continued investment and job creation

# GA Utility / Private Incentives

## Electric Vehicle (EV) Charging Station Rebate – Tennessee Valley Authority (TVA)

- Establish and fund a network of direct current (DC) fast charging stations every 50 miles along interstates and major highways through the Fast Charge Network Program (Program). Up to \$150,000 per DC fast charging station

## Electric Vehicle (EV) Time-Of-Use (TOU) Rate Incentive - Georgia Power

- TOU rate for residential customers who own an EV through Georgia Power

## Residential Electric Vehicle (EV) Charger Rebate – Georgia Power

- \$200 rebate for Level 2 EV chargers installed between January 1, 2024, and December 31, 2024

## Electric Vehicle (EV) Infrastructure Support – Georgia Power and National Electric Highway Coalition

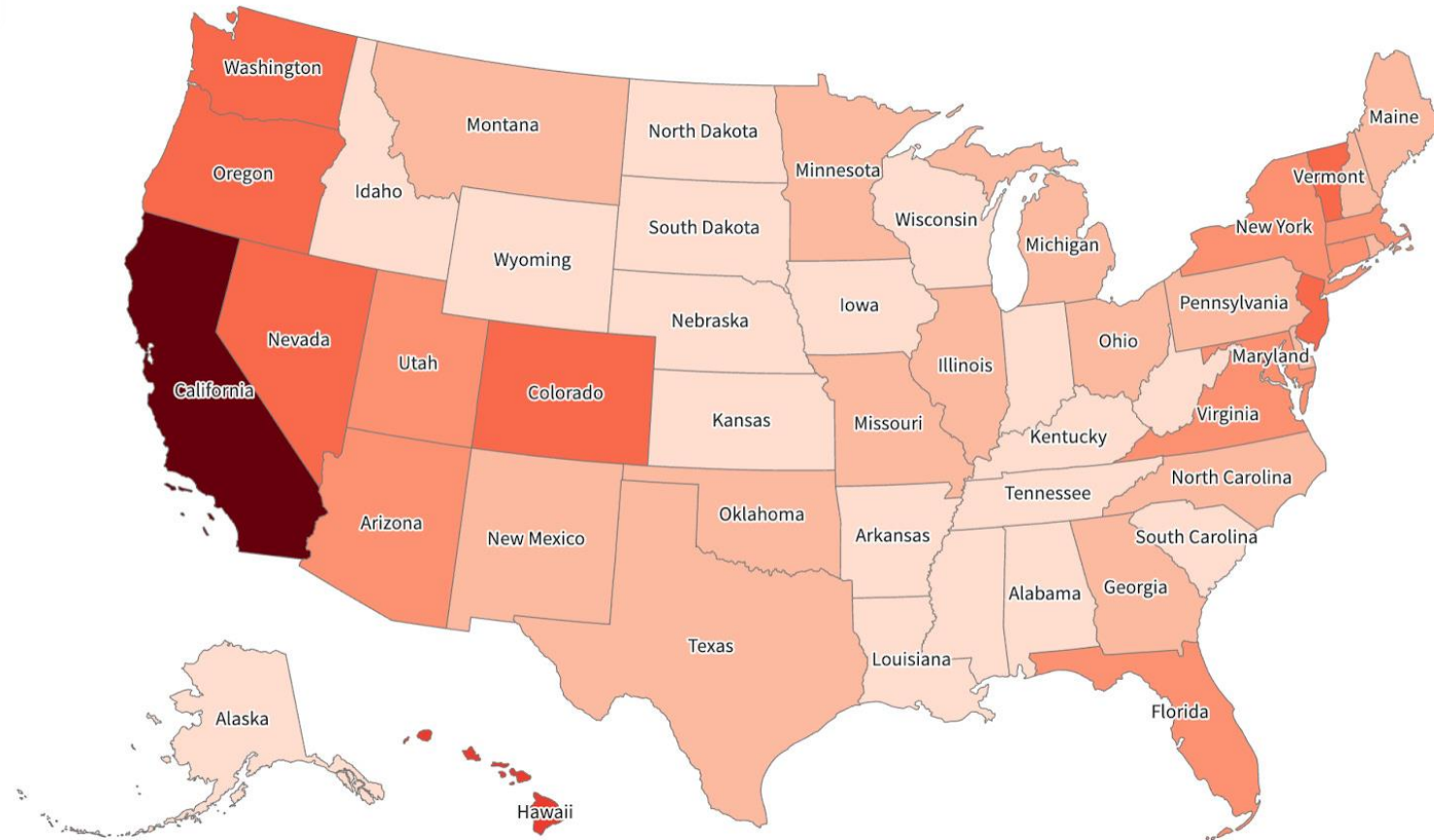
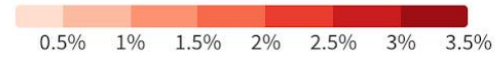
- Create a network of direct current fast charging (DCFC) stations connecting major highway systems from the Atlantic Coast to the Pacific

# Georgia Considerations

- GA may have considerable State and private incentives for manufacturing and infrastructure but limited incentives for EV ownership and registration,
- No ZEV incentives
- No consumer side tax credits for EV purchase EXCEPT for \$7,500 (New) and \$4000 (Used) EV IRA Tax Credit
- Georgia provides an example of a policy landscape which focuses on job creation, manufacturing, economic development
- With its already robust EV manufacturing outline, GA could do more to incentivize EV ownership (tax credits for new and used EV's)

# Share of cars that are electric by US state

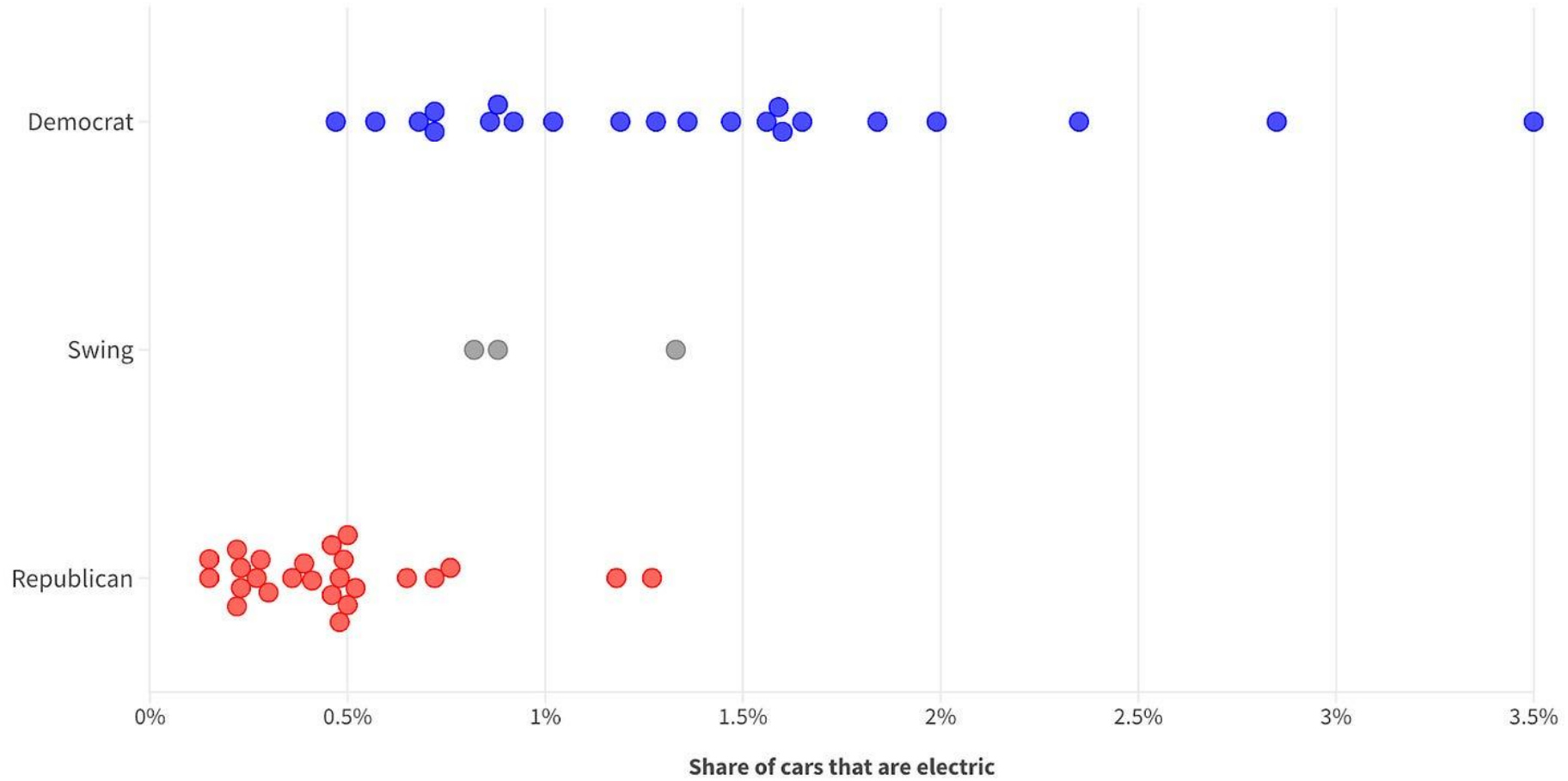
Based on vehicle registration counts of light-duty vehicles in 2022. "Electric" includes battery-electric and plug-in hybrids.



Source: [US Department of Energy, Alternative Fuels Data Center.](#)

## Share of cars that are electric by US state

One dot is one state, in 2022. "Electric" includes battery-electric and plug-in hybrids.



Source: US Department of Energy. Alternative Fuels Data Center

# California Zero Emission Vehicle Policy History

1967- California Air Resources Board (CARB)

- Governor Reagan creates CARB in response to automobile smog in Southern California

2006 - Assembly Bill 32  
Global Warming Solutions Act

- First California law requiring a decrease in GHG Emissions, calling for a reduction to 1990 levels by 2020.

2012 Executive Order B-16-12  
Advanced Clean Cars I

- Sets the goal of 1.5 million ZEVs on the road by 2025 through infrastructure planning and streamlined permitting (1% of new cars sold are ZEV)

2018 Executive Order B-48-18

- Updates the ZEV goal to 5 million by 2030 and boosts infrastructure investments. Includes \$2.5 billion initiative will bring 250,000 vehicle charging stations and 200 hydrogen fueling stations to California by 2025. (7% of new cars sold are ZEV)

# California Zero Emission Vehicle Policy History

2020- Executive Order N-79-20

- Phase out gas-powered passenger vehicles by 2035 and medium to heavy-duty vehicles by 2045. (8% of new vehicles sold are ZEVs.)

2022 - The California Climate Crisis Act and CARB's Advanced Clean Cars II

- California must achieve net zero by 2045 and rapidly scale down emissions of light-duty passenger cars, pickup trucks and SUVs. (19% of new vehicles sold are ZEV's)

2023- CARB adopts Advanced Clean Fleets

- Zero-emission truck and bus California fleet by 2045 everywhere feasible. (25% of new cars sold are ZEV)

2026

- 50% of transit agency bus purchases will be ZEV (35% of new vehicles sold will be ZEV)

# California Zero Emission Vehicle Incentives

2010-2023 – CARBS Clean Vehicle Rebate Project is started

- The CVRP offered up to \$7,500 in rebates for ZEV's. Now rebates are available through the federal government

2024- Alternative Fuel Vehicle (AFV) Manufacturing Incentive Authorization

- Capital investment incentive program for facilities that manufacture fuel or components for AFV's

CARB Clean Cars 4 All

- Income dependent incentives to expand the availability of ZEV to more of the population

Local Programs

- Various programs in different cities or counties to encourage the purchase of ZEV's



# Take-aways

- Federal policy influences the acceleration of state level adoption of EV, EV infrastructure and EV manufacturing
- States have different EV goals
  - Some state policy techniques focus on EV ownership and emission standards
  - Some state policy techniques focus on EV manufacturing industry/job creation
- What will the EV policy landscape look like under a new administration?
  - Will state policies be more important than ever?



# Resources

- <https://theicct.org/publication/credit-trading-in-the-us-corporate-average-fuel-economy-cafe-standard/#:~:text=Based%20upon%20the%20new%20provisions,and%20third%20methods%20of%20compliance.>
- <https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards>
- <https://afdc.energy.gov/data/10562>
- <https://www.nera.com/experience/2021/economic-impacts-of-eliminating-the-manufacturers--cap-on-the-pl.html?lang=en>
- [https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy#:~:text=ARRA%20directed%20\\$6%20billion%20toward,to%20support%20operationalizing%20these%20technologies.](https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy#:~:text=ARRA%20directed%20$6%20billion%20toward,to%20support%20operationalizing%20these%20technologies.)
- <https://afdc.energy.gov/laws/arra.html#:~:text=Provides%20%242%20billion%20toward%20grants,hybrid%20electric%20systems%20and%20component>  
S.
- <https://www.energy.gov/articles/biden-harris-administration-announces-nearly-45-million-slash-electric-vehicle-battery#:~:text=WASHINGTON%20D.C.%20%E2%80%93%20As%20part%20of,electric%20drive%20vehicle%20batteries%20and>
- [https://www.whitehouse.gov/briefing-room/blog/2023/12/11/full-charge-the-economics-of-building-a-national-ev-charging-network/#:~:text=To%20this%20end%2C%20the%20Bipartisan,Vehicle%20Infrastructure%20\(NEVI\)%20program.](https://www.whitehouse.gov/briefing-room/blog/2023/12/11/full-charge-the-economics-of-building-a-national-ev-charging-network/#:~:text=To%20this%20end%2C%20the%20Bipartisan,Vehicle%20Infrastructure%20(NEVI)%20program.)
- <https://www.whitehouse.gov/briefing-room/blog/2023/12/11/full-charge-the-economics-of-building-a-national-ev-charging-network/>
- [https://www.whitehouse.gov/briefing-room/blog/2023/12/11/full-charge-the-economics-of-building-a-national-ev-charging-network/#:~:text=To%20this%20end%2C%20the%20Bipartisan,Vehicle%20Infrastructure%20\(NEVI\)%20program.](https://www.whitehouse.gov/briefing-room/blog/2023/12/11/full-charge-the-economics-of-building-a-national-ev-charging-network/#:~:text=To%20this%20end%2C%20the%20Bipartisan,Vehicle%20Infrastructure%20(NEVI)%20program.)
- <https://afdc.energy.gov/laws/12744>
- <https://www.transportation.gov/rural/ev/toolkit/ev-infrastructure-funding-and-financing/federal-funding-programs>
- <https://www.energy.gov/energysaver/new-and-used-clean-vehicle-tax-credits#:~:text=For%20used%20clean%20vehicle%20purchases,or%20less%2C%20for%20other%20filers>
- <https://electrificationcoalition.org/work/federal-ev-policy/inflation-reduction-act/>
- <https://www.iea.org/policies/16282-inflation-reduction-act-2022-sec-13502-advanced-manufacturing-production-credit>
- <https://ww2.arb.ca.gov/>
- <https://business.ca.gov/industries/zero-emission-vehicles/zev-timeline/>
- <https://afdc.energy.gov/laws/all?state=GA>
- <https://driveelectric.gov/files/2030-charging-network.pdf>



**QUESTIONS**