



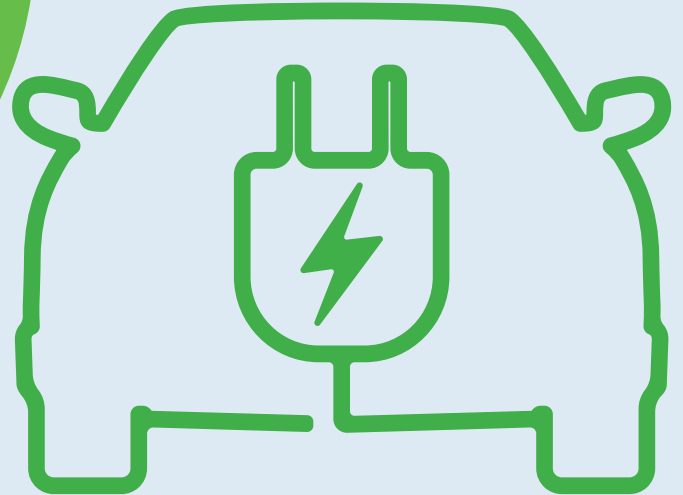
**ELECTRIFYING**



**INFRASTRUCTURE**

***Part 1***

# THE EV FUTURE



**W**hether you like them or hate them, electric vehicles are paving the way for the future of mobility in the United States. To increase the momentum of the transition from vehicles with internal combustion engines (ICEs) to electric vehicles (EVs), the Infrastructure Investment and Jobs Act of 2021 is **set to invest \$7.5 billion to build out a national network of EV chargers**. According to Whitehouse.gov<sup>1</sup>, the legislation will provide funding for the deployment of **500,000 EV chargers along highway corridors nationwide** in support of President Biden's goal that by 2030, half of all new vehicle sales will be zero-emissions cars.

Most consultants agree that for EV market share to grow, **the infrastructure supporting EVs must be scalable at an individual and national level**, and the overall cost to manufacture EVs must reach parity with the cost to manufacture ICEs.

According to BloombergNEF<sup>2</sup> – a strategic research provider covering global commodity markets and disruptive technologies, and McKinsey & Company<sup>3</sup> – a global management consulting firm, the U.S. is well on its way to meeting President Biden's goal. This assertion is supported by not only the federal funding and fuel economy rules, but also by funding and emissions requirements at the state level.

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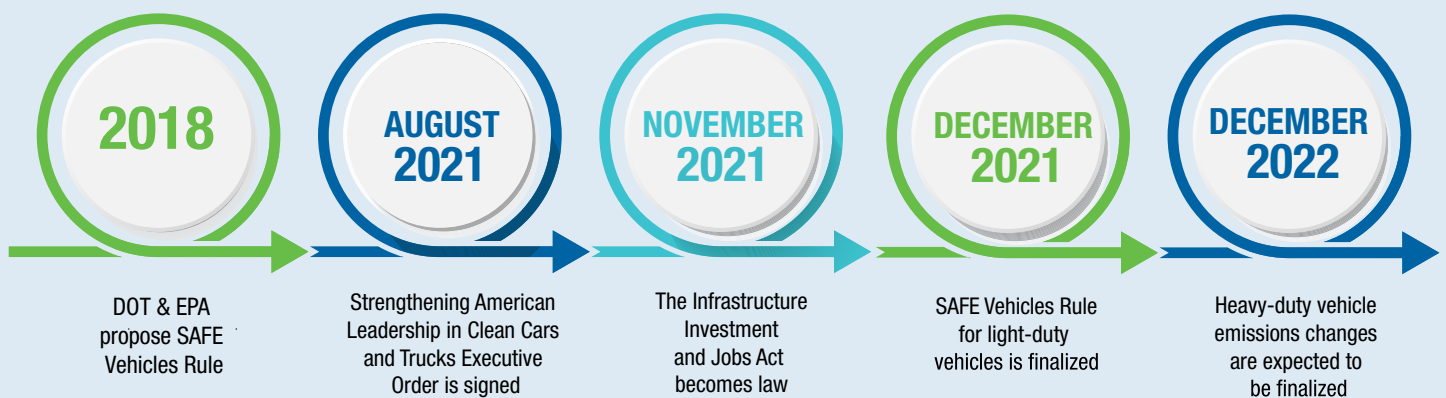
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# FEDERAL RULES



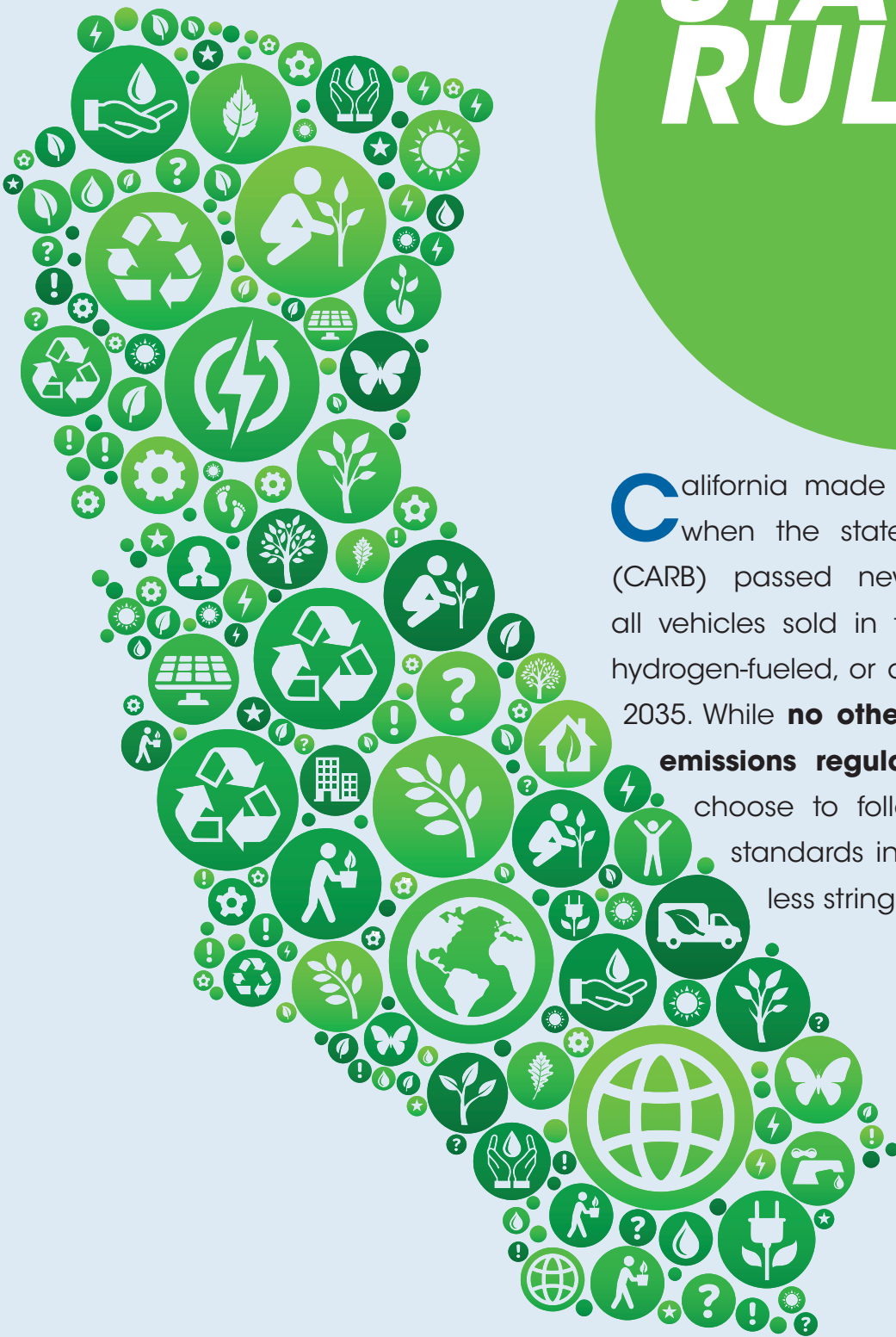
In 2018, the U.S. Department of Transportation (DOT) and Environmental Protection Agency (EPA) proposed the Safer Affordable Fuel Efficient (SAFE) Vehicles Rule<sup>4</sup> to establish new standards for Corporate Average Fuel Economy (CAFE) and tailpipe carbon dioxide emissions for passenger cars and light-duty trucks manufactured from 2021 through 2026. After an extensive comment period and years of research, **the EPA issued its final rule in 2021**, setting the most robust emissions standards ever established in the U.S. in the light-duty vehicle sector.

***In August 2021, President Biden issued an executive order on Strengthening American Leadership in Clean Cars and Trucks<sup>5</sup> to accomplish two things:***

- 1. Set a non-binding target of making **50%** of passenger cars and light-duty trucks zero-emission vehicles by 2030.***
- 2. Direct the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) to **develop standards for fuel economy and greenhouse gas emissions for medium and heavy-duty vehicles to be finalized by December 2022.*****

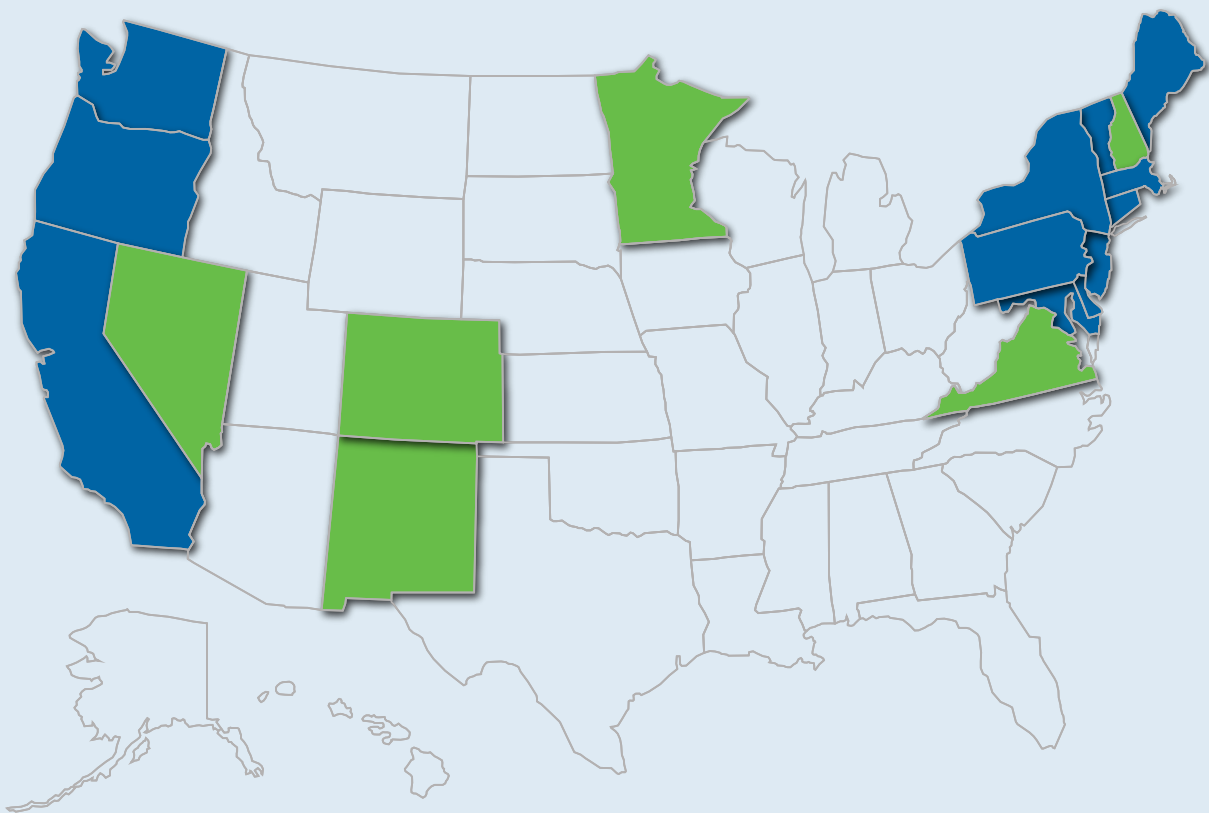


# STATE RULES



California made headlines early in 2022 when the state's Air Resources Board (CARB) passed new regulations requiring all vehicles sold in the state to be electric, hydrogen-fueled, or at least plug-in hybrid by 2035. While **no other state can set its own emissions regulations**, other states can choose to follow California's emission standards instead of the traditionally less stringent, federal standards.

Currently, 12 other states and the District of Columbia have stated that they will continue to comply with the CARB standards, and six more states are expected to follow suit over the next five years<sup>6</sup>. Together, **these 20 states represent 40 percent of the country** and depending on who's in office over the next ten years, we can expect federal standards to continue to tighten.



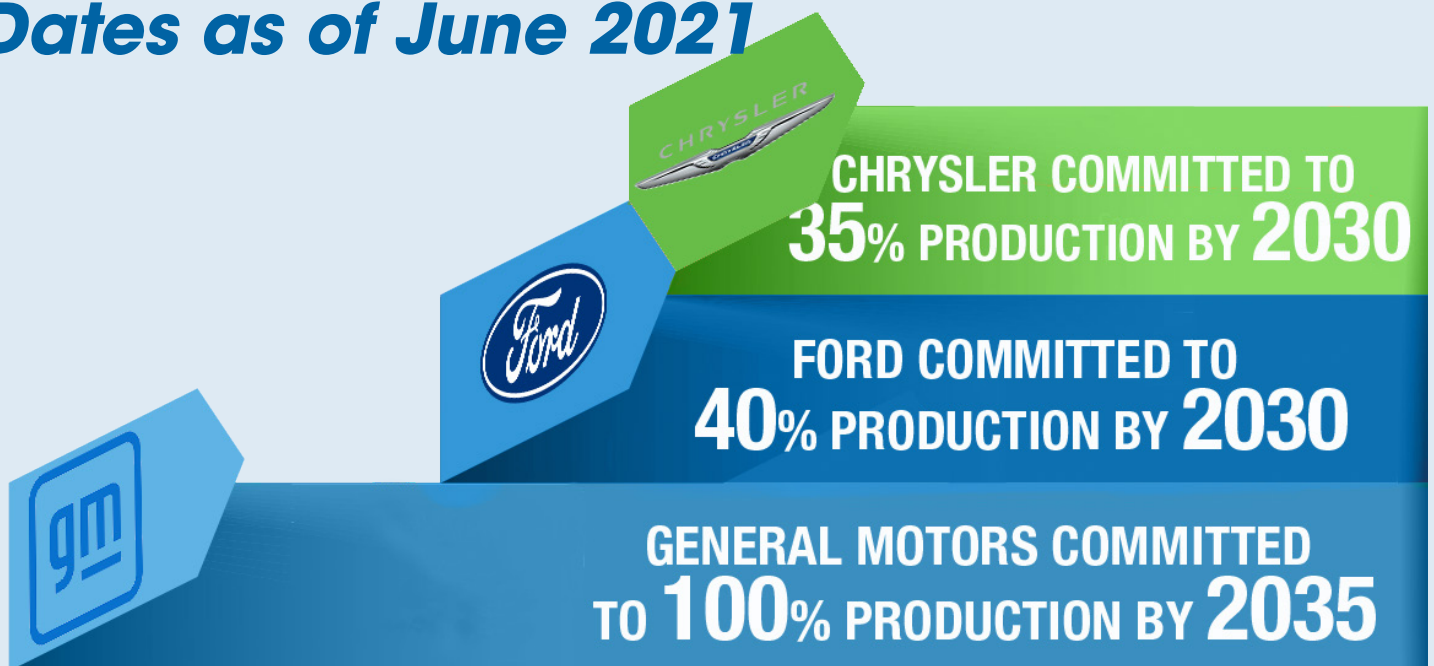
States in compliance with CARB

States expected to comply with CARB within the next 5 years

# MANUFACTURERS and DEALERS

Subsidies also sparked EV manufacturing. In December 2021, Michigan passed a \$1.5 billion bill to expand state incentives for EV production<sup>7</sup>, resulting in **General Motors publicly stating that it would invest nearly \$7 billion** in the state to convert a factory to support EV and battery manufacturing.

## Big 3 EV Commitment Dates as of June 2021





Some OEMs have already adjusted their dealer contracts, setting dedicated targets for infrastructure and process updates. For example, **Ford Motor Company rolled out an EV certification program**<sup>8</sup> in September 2022, in which the OEM asked its nearly 3,000 dealers to invest upward of **\$1 million** for infrastructure upgrades. While Ford is allowing dealers to opt out of making the investments, GM is requiring the updates or simply buying out the dealers who don't want to invest<sup>9</sup>.

We are at the beginning of a long roadmap toward an EV future, but that does not mean that dealers can continue with the “*wait and see*” approach. **It's time to start investing in EV infrastructure while federal and state funds are available.** Once those subsidies go away, the cost to upgrade your auto group to simply compete could put you behind the eight ball.






# INVENTORY REQUIREMENTS

**S**ooner or later, **EVs will make up 20% of your auto group's inventory** and will only grow from there.




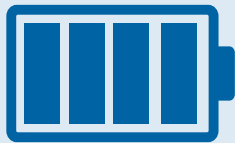
How will you keep those vehicles charged and ready for a test drive? How will you preserve the battery life for your entire EV fleet during the sweltering summer or frigid winter months? How will you track not just your total inventory but also the battery life of each specific vehicle? How will you educate consumers about the charging requirements they will need for their homes to accommodate their driving habits?

According to BDO International<sup>10</sup>, a global tax and financial advisory firm representing the fifth largest accounting network, dealers need to consider the needs of hundreds of networked stations across inventory lots that extend into showrooms and service bays to ensure a frictionless sales process.

When thinking of charging stations at scale, the conversation turns to **how to power those stations**. There are currently five options to consider, using:

-  Energy directly from the public power grid
-  Energy supplied from a combination of the public power grid and a renewable energy system
-  Off-grid renewable energy only, typically using two or more renewable energy sources
-  Off-grid renewable energy with a battery storage system
-  A combination of the public power grid, off-grid renewable energy, and battery storage

Those power grid options determine the types of charging stations you can install:

LEVEL 1 CHARGING	LEVEL 2 CHARGING	LEVEL 3 CHARGING	LEVEL 4 CHARGING
			
NORMAL CHARGING	SEMI-FAST CHARGING	FAST CHARGING	ULTRA-FAST CHARGING
Use of standard power outlets that are mostly available in residential installations	Current levels exceed the standard domestic outlet but can be set up in residential and commercial areas or buildings	Power levels are very high compared to standard industrial or domestic socket outlets and a specific infrastructure is required	Voltage rating is higher than fast charging

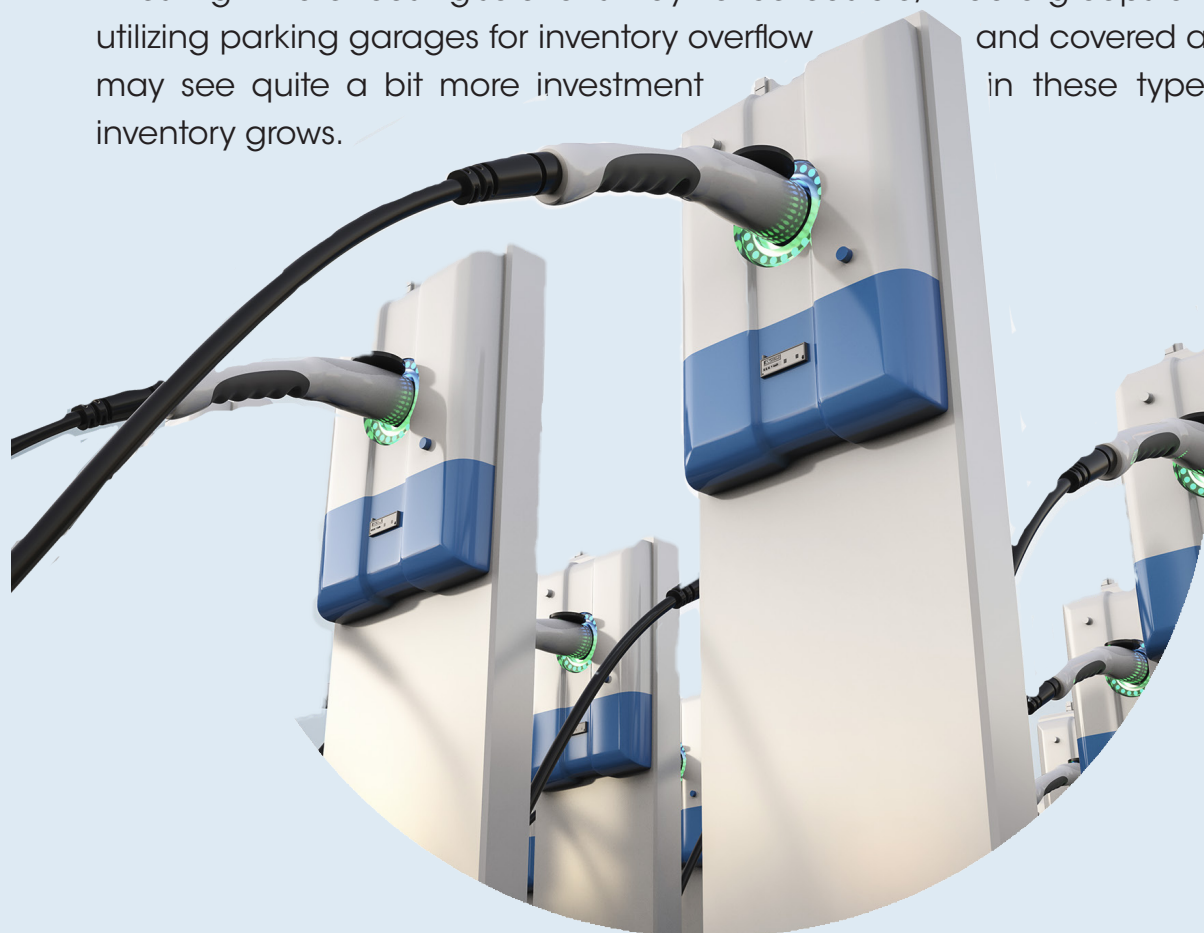
Source: BDO International<sup>10</sup>

Essentially, the faster the charging, the more sophisticated the power system. For simplicity's sake, let's look at the cost to install a level 2 charger. According to BDO International<sup>10</sup>, the **average upfront cost is \$6,000**. Multiply this by 20 chargers and you already reach a price tag of **\$120,000**. Multiply this again by every location in your auto group and you can see how the **cost rises exponentially**.

Smaller independent dealerships without service bays can probably make level 2 charging stations work for them. However, **franchise auto groups with sophisticated service bays will need to invest in a more robust power grid to support level 3 and level 4 charging**. Charging station requirements also vary by manufacturer regarding number of chargers, the ratio of slow to fast chargers, and the number of chargers that can support multiple units. Two things are certain here:

***Dealers will need fast chargers or ultra-fast chargers in the service center, and they will need a charger in the showroom or delivery area for demos.***

Aside from power stations, dealers also need to consider how to protect EVs from the elements. According to AutoTrader.com<sup>11</sup>, temperatures above 95 degrees Fahrenheit or below 20 degrees can affect an electric car's range, charging time, and overall performance. While investing in warehousing solutions may not be feasible, auto groups are well accustomed to utilizing parking garages for inventory overflow and covered awnings on the lot. We may see quite a bit more investment in these types of solutions as EV inventory grows.



# SERVICE BAYS

**A**s EV manufacturing and market share ramp up, so will the need to service these vehicles. While they share many of the same drivetrain parts, **servicing the engine and battery requires different technology** in the service bay than ICE vehicles. Going forward, dealerships will need bays for both ICE and EV units, but several questions remain.



**Experts from across the industry agree that EV units will still need tires, brakes, wheel balancing, alignments, and other wear item maintenance.** According to John Peron, the Managing Director of Hunter Engineering Canada, traditional service bay sizes range between 12-15 ft wide by 30 ft long. However, some EVs require a bay roughly 18 ft wide by 35-40 ft long. Simply resizing the bays could reduce the number of bays in each service center, reducing the number of vehicles a dealership can process through its service center in a given day. This begs these questions for consideration:

Should dealers leave their current service centers alone to continue to service ICE vehicles and invest in a second center for EV units?

Should dealers reconfigure their current service center and assign bays that can handle both EV and ICE units?

As EVs evolve, will the bay infrastructure also continue to evolve?

Currently, the largest investment goes into the special tools and equipment needed to service and charge electric powertrains and batteries. **Going forward, service centers may look more like computer labs rather than grease factories.** There are no easy answers to any of these questions. However, they all need to be addressed to continue operating successful fixed operations in the dealership.

# ***SUBSIDIES AND DIVERSIFICATION***

**C**harging stations and electrical upgrades combined can generate a hefty price tag, especially for older dealerships with outdated electrical work. Here's the good news, with federal and state subsidies, it's possible to significantly reduce the sticker price of upgrading dealership infrastructure to support EV sales. **The federal EV tax credit should offset up to \$30,000** of the initial investment<sup>10</sup>, and local incentives can help chip away more of the cost. Utility incentives for EV charging station installations can be found in every state, supported at either the state level or the regional utility level.

***Charging  
Stations***

***Electrical  
Upgrades***

***Service  
Bay  
Upgrades***

**Oklahoma City, Oklahoma**

The **CLEAN AIR Grants** program issues grants for alternative fuel and advanced technology vehicle projects.

**Austin Energy provides commercial customers a rebate for 50%** of the cost to install qualified EV charging stations at workplaces.

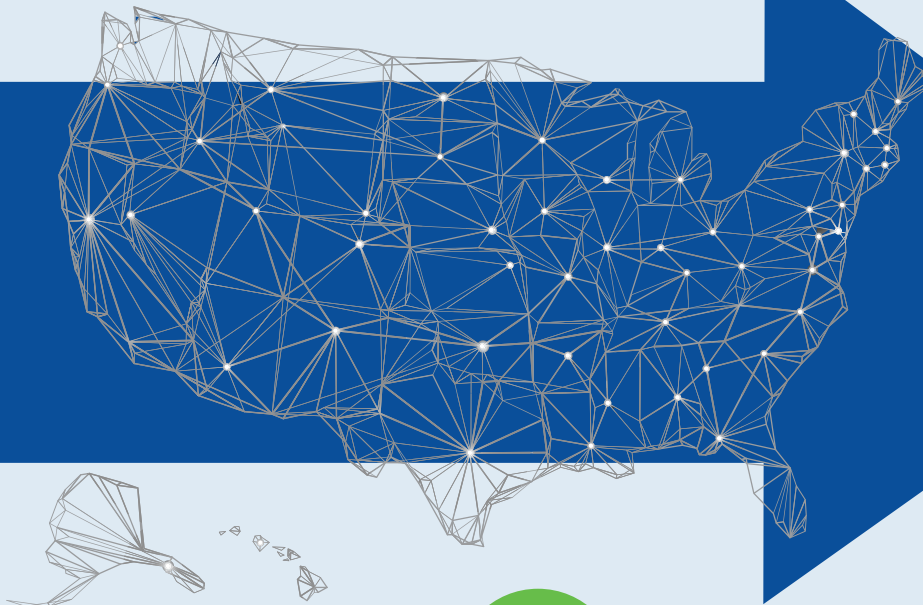
Austin, Texas ★

**Florida - State Incentive**

Local governments may offer funding to property owners within their jurisdiction to help finance EV charging station installations on their property.

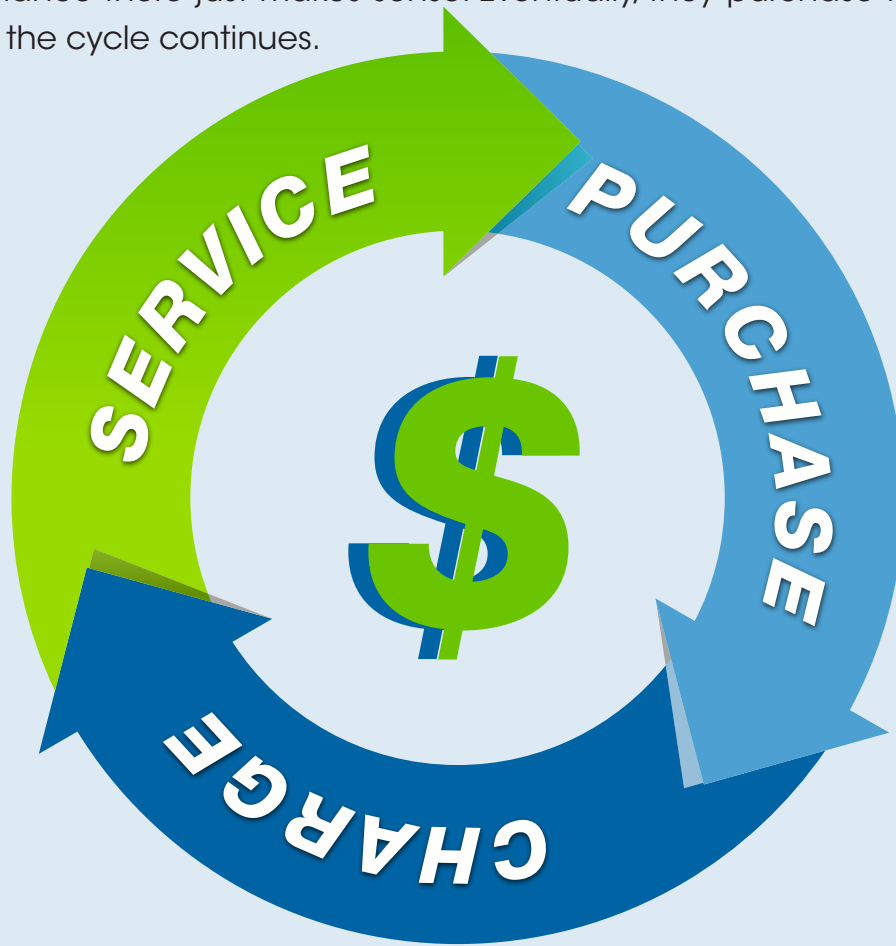
Source: US Department of Energy<sup>13</sup>

# **EV INFRASTRUCTURE INCENTIVES SPAN THE NATION**





Additional incentives are available for businesses that make charging stations publicly available. This provides dealers with an opportunity to diversify their income-driving services. **No one is stating that a publicly available charging station must be free, so why not make the most of this opportunity?** When a local customer purchases an EV from one of your dealerships, they get into the habit of returning to the dealership to charge the vehicle regularly. While the vehicle charges, they may browse the lot, grab some coffee from the service center, and even ask a question about their vehicle that's been nagging at them. Now they are accustomed to returning to the dealership on a regular basis, and getting regular maintenance there just makes sense. Eventually, they purchase their next car at the dealership and the cycle continues.



It's also already common practice for dealerships to **partner with local police and fire departments to service their fleets**. Imagine the benefits of partnering with these essential services to provide them with use of your charging infrastructure.

Electrifying your infrastructure can seem like a daunting task, but it doesn't have to be. As you embark on your EV journey, EFG is here to support you every step of the way. We can assist with floor planning best practices, process implementation, training, and more. Contact us today to put EFG in your corner.

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# NOTES

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