

CALIFORNIA

Auto Dealers Guide to EVs



About the Center for Sustainable Energy® (CSE)

CSE is a nonprofit with one simple mission—decarbonize. We offer clean energy program administration and technical advisory services with the experience and streamlined efficiency of a for-profit operation and the passion and heart of a nonprofit. We work nationwide with energy policymakers, regulators, public agencies, businesses and others as an expert implementation partner and trusted resource. EnergyCenter.org

About the California New Car Dealers Association (CNCDA)

For more than 95 years, CNCDA has represented the interests of California's franchised new car dealers. CNCDA members are primarily engaged in the retail sale and lease of new and used motor vehicles, but also provide customers with automotive products, parts, service and repair. Our members sold more than 2 million new cars and trucks in 2018 and employ more than 135,000 Californians, significantly contributing to our state's economy. As the nation's largest state association of franchised new car and truck dealers—with more than 1,200 members—CNCDA serves its members by providing legal compliance and legislative, regulatory and legal advocacy. cncda.org.

About the Clean Vehicle Rebate Project (CVRP)

CVRP promotes clean vehicle adoption by offering rebates of up to \$7,000 for the purchase or lease of new, eligible zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles. CSE administers CVRP throughout the state for the California Air Resources Board. CleanVehicleRebate.org.



Table Of Contents

Welcome to the California Auto Dealers Guide to EVs 4

What are Electric Vehicles? 5

What is Different About Selling EVs? 6

Common EV Misconceptions 16

Profile of an EV Owner 19

What do EVs Offer Car Shoppers? 20

Why are EVs Well Suited to California? 22

Review of California EV Auto Sales 24

EVs Have a Long History in the Auto Market. 26

Conclusion 26

EV Resources. 27

Appendix – Electric Vehicle Incentives in California 28

Welcome to the California Auto Dealers Guide to EVs

The Center for Sustainable Energy (CSE) and California New Car Dealers Association (CNCDA) have prepared this guide to provide dealership management and sales staff additional resources on information relevant to electric vehicle (EV) sales, such as EV technology, features, benefits and incentives.

This guide is sponsored by the Clean Vehicle Rebate Project (CVRP) that supports California’s goal of 5 million zero-emission vehicles (ZEVs) on the roads by 2030 and 250,000 electric vehicle charging stations by 2025.

When consumers choose to purchase or lease EVs, this helps California meet its target of reducing greenhouse gas emissions to zero across all sectors (including electricity and transportation) by 2045 and achieving the air quality requirements established in the federal Clean Air Act.

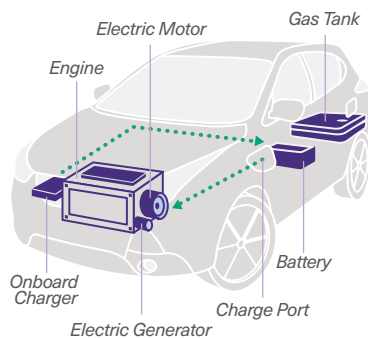
This guide is intended to serve as a helpful resource for dealership staff to assist in addressing questions customers may have when shopping for an EV—questions that may be much different than those that are asked in transactions involving internal combustion engine vehicles.

What are Electric Vehicles?

Three types of electrified powertrains are available on the market today: plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs). CVRP rebates during October 2018–October 2019 were 71% BEVs, 27% PHEVs and 2.5% FCEVs.

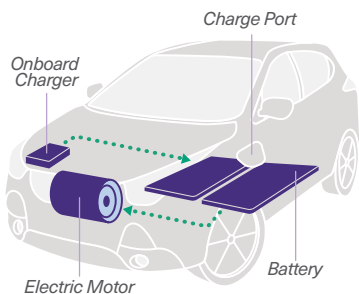
Plug-in hybrid electric vehicles

PHEVs run on electrical power stored in an onboard battery until the battery is depleted, at which point the vehicle runs on an internal combustion engine either as a generator to power electric motors or to directly power the drive wheels. With both systems, PHEVs are able to increase fuel economy and decrease emissions.



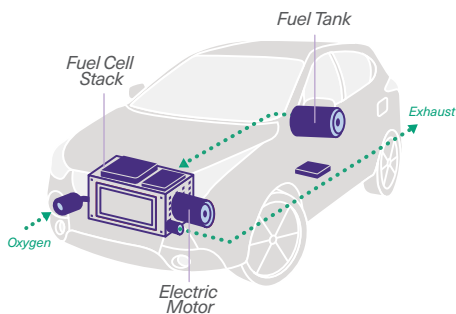
Battery electric vehicles

BEVs run entirely on electrical power stored in an onboard battery and do not have an internal combustion engine. BEVs need to be plugged in and charged by electric vehicle supply equipment. They are classified as ZEVs because they run on charged energy and do not emit any exhaust.



Fuel cell electric vehicles

FCEVs are functionally the same as BEVs but forego the battery in favor of a pressurized tank of hydrogen. This feeds a hydrogen fuel cell that uses the chemical energy from combining hydrogen and oxygen to power the motor. FCEVs are ZEVs.



What is Different About Selling EVs?

Consumers have many reasons behind their choice in vehicles: purchase price, gas prices, family size, length of commute, choice of leisure activity, vehicle appearance and styling—and the list goes on. Every customer’s list of priorities will differ based on their individual circumstances. Because new EVs tend to be more expensive upfront than gas-powered counterparts, they may seem out of reach for many low- and middle-income consumers. This price differential can be greatly decreased thanks to numerous rebates, incentives and favorable lease terms.

There’s a learning curve for most customers looking at EVs, so salespeople often spend the most time answering questions such as the following:

- + How long does it take to charge up?
 - + What’s Level 1, Level 2, Level 3 charging?
 - + Where can I find charging?
 - + What’s the cost of charging?
 - + Are incentives available?
- + Should I buy a plug-in hybrid or all-electric?
 - + What is the vehicle range?
 - + What about battery degradation?

Dealers are expected to know the answers to these questions and more—and this guide will help answer them. While sales staff are experts on the vehicles they sell, they are not experts in things like charging infrastructure, utility rates, incentives and electric vehicle drivetrain systems, especially because those details are constantly changing.

Dealer training on EVs usually comes via the vehicle manufacturer, which makes sense due to the differences in vehicle range and attributes across vehicle makes and individual manufacturer’s available models. CNCDA actively encourages member dealers to designate at least one salesperson to be the on-lot EV expert and has partnered with Plug In America on their PlugStar dealer training program.

Present-day electric vehicles on two primary paths

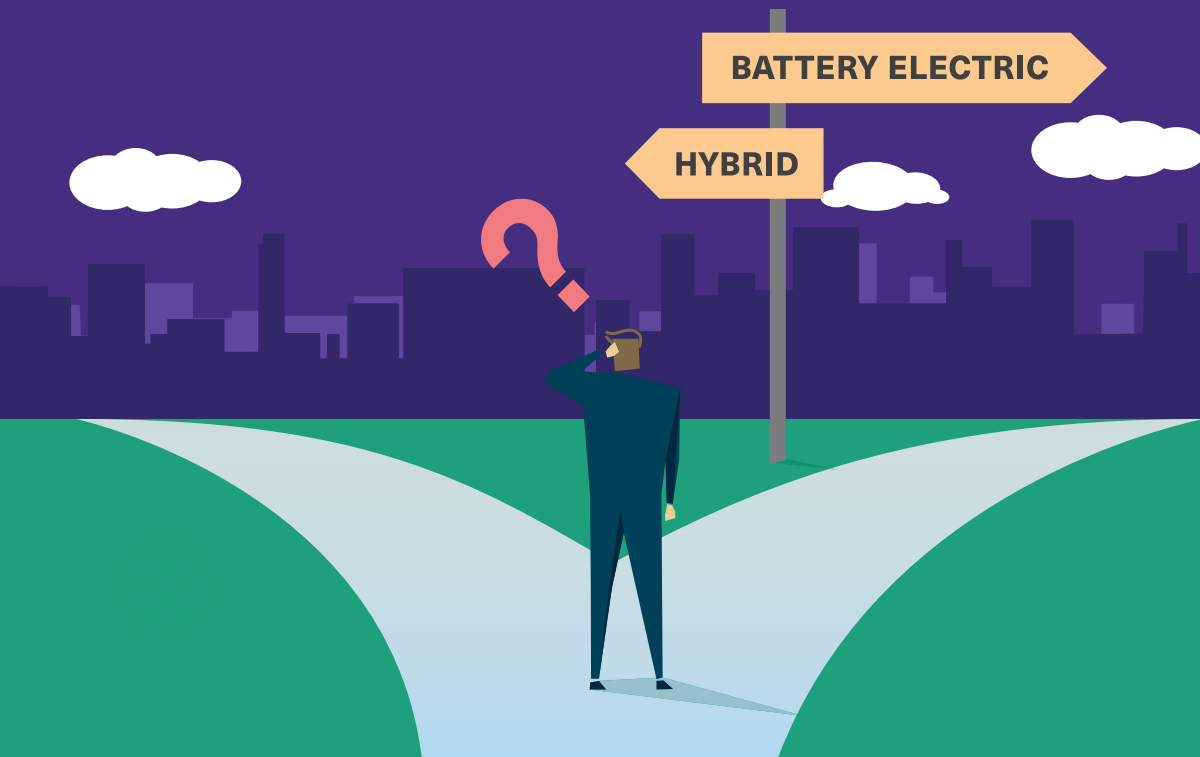
Hybrid path

Hybrids were designed to maximize the efficiency of small internal combustion engines by implementing regenerative braking to capture the forward momentum of the vehicle, store it in a small battery and use that energy to help propel the vehicle.

Hybrids increased their electric range and fuel options by adding larger batteries and plugging in. Plug-in hybrids are a great solution, but are somewhat more expensive to produce with the additional parts for dual propulsion systems.

Battery electric path

Battery EVs started off with 100% electric drive at a relatively high price, small battery size and limited range. Today's batteries have greater density, increased range and decreased charging times. Research and development advancements have reduced EV battery prices, in many cases allowing manufacturers to offer purely electric drive vehicles at prices just 10-15% higher than an equivalent gas vehicle.



Marketing EVs

With all of the acronyms attempting to encompass electric vehicle technology, the marketplace can be confusing for consumers. Terms such as ZEV, PEV, PHEV, FCEV, PZEV, BEV, HEV, LEV, SULEV and others are incredibly confusing for the average person.

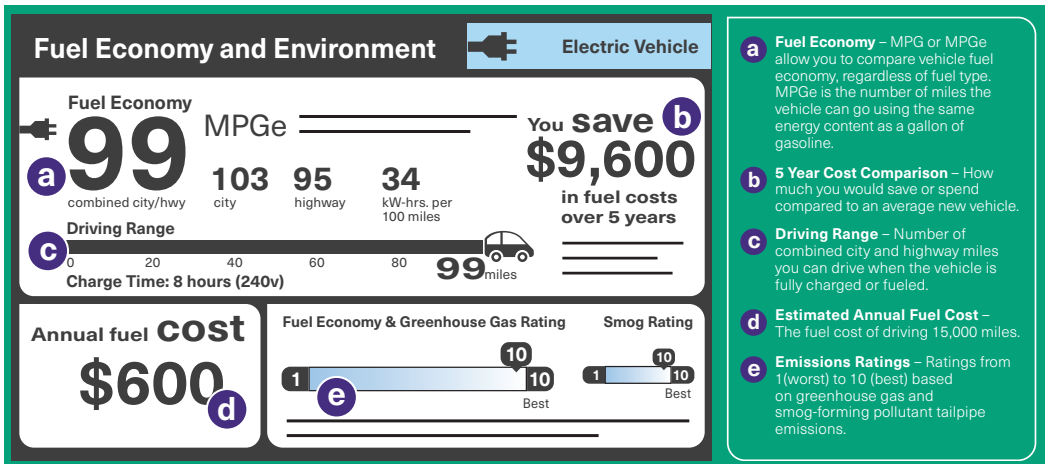
To help combat some of this confusion, EVs should be marketed clearly, with obvious descriptors about all-electric range and how the vehicle is fueled. A consumer should not need to do separate research on a vehicle just to find out whether the vehicle is a hybrid or a plug-in electric hybrid—this should be obvious in the advertisement.

On-lot advertising

On the lot, a great way to educate customers about the difference an EV can make is the Fuel Economy and Environment Label that lists miles-per-gallon equivalents and information on fuel cost savings.

EV on-lot best practices

- + Designate one of more salespeople at the dealership as EV experts.
- + Ensure that EVs are charged and ready for a test drive.
- + Display EVs prominently.





Online advertising

Website filters on dealership websites also are important to help customers looking to purchase an EV. Consumers already have the option to search through available vehicles by attributes such as model, color, price, year, body style and drivetrain—dealers should ensure that website filters also allow them to search for available vehicles by fuel type.

EV marketing best practices

Don't assume customers know how a vehicle is fueled just by the model name or number. Be clear about what type of vehicle is being featured, without using acronyms.

If a vehicle is a hybrid, clearly state whether it is a traditional hybrid that does not come with a plug or a plug-in hybrid and explain the difference.

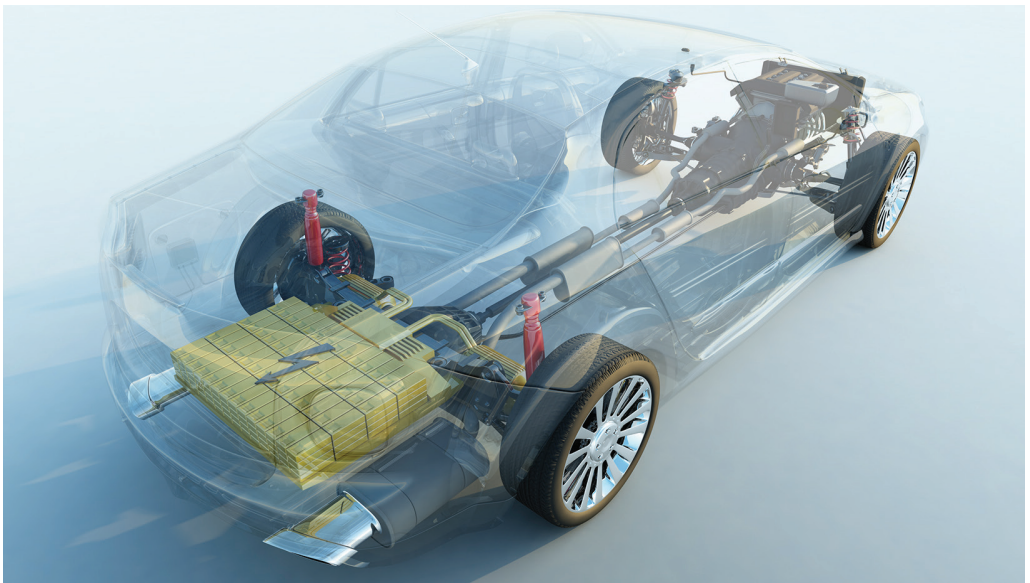
- + Clearly list a vehicle's all-electric range.
- + Let customers know which charging system a vehicle comes with and what types of outlets can be used.
- + Include "fuel type" website filters for vehicles available for sale on the dealership lot.

EV performance

Electric motors offer full torque starting from zero rpm, allowing EVs of all types and sizes to accelerate quickly from a stop—compared to most internal combustion engine vehicles that usually have some amount of lag time when accelerating from a stop. With batteries typically mounted low on the chassis of an EV, it decreases the vehicle's center of gravity and improves handling characteristics.

Power output from an EV can be measured in kilowatts (kW) or horsepower (HP). For a quick

comparison, kW size can be multiplied by 1.3 to show the equivalent horsepower range. For example, an EV might produce 120 kW, or 156 HP, during full acceleration ($120 \text{ kW} \times 1.3 = 156 \text{ HP}$). A comparable gas vehicle in the same class may have 140 HP, but the gas vehicle only has 126 pounds of torque compared with the EV, which has almost 300 pounds of torque. Torque is what pushes you into your seat during acceleration.



Level 1	Level 2	Level 3 - DCFC
<p>Standard current via electrical outlet</p> <p>8-12 hours to fully charge, although larger batteries could take 1-2 days</p> <p>Inside or outside locations</p> <p>Standard outlets and standard J1772 coupler</p> <p>In-vehicle power conversion</p>	<p>Requires installation of charging equipment and may require utility upgrades</p> <p>4-8 hours to fully charge</p> <p>Inside or outside locations</p> <p>Public use, often requiring payment and provider network interfaces</p> <p>Home use to decrease charging times</p>	<p>Requires installation of charging equipment and may require utility upgrades</p> <p>80% charge in as little as 30 minutes</p> <p>Relatively high-cost compared to Level 2 chargers</p> <p>Requires dedicated circuits</p>

Charging infrastructure

EVCS are typically classified by three levels of power: Level 1, Level 2 and Level 3 (technically called direct current fast charging [DCFC]). The primary distinction between these levels is the input voltage, with higher voltages providing faster charging times. Level 1 uses 110/120 volts, Level 2 uses 208/240 volts and DCFC uses 208 to 480 volts and usually requires three-phase power inputs. Numerous manufacturers produce each level of EVCS, which include a variety of products with varying prices, applications and functionality.

As part of Governor Jerry Brown's 2018 ZEV mandate, California has a goal for 250,000 electric vehicle charging

stations (EVCS) by 2025. Throughout the state, stakeholders are working to incentivize and install stations to meet the goal. Local air districts and the state's three largest utilities—Pacific Gas and Electric, Southern California Edison and San Diego Gas & Electric—have offered financial support to site hosts interested in installing EV charging. The state supports public charging station installations directly through regional rebate projects under the California Electric Vehicle Infrastructure Project (see [EV Resources page 27](#)).

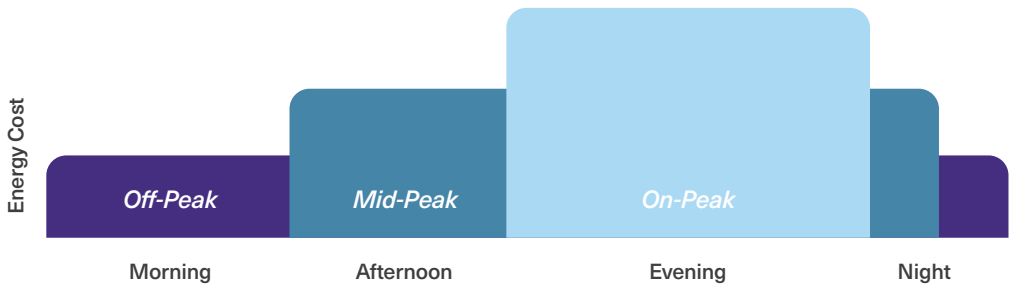
Home charging and time-of-use rates

While electricity pricing varies greatly, according to the U.S. Energy Information Administration, the average cost for homeowners in California is about 15¢ per kilowatt-hour (kWh). At this price point, charging a 40-kWh EV battery with a 150-mile range would cost about 4¢ per mile (or about \$6 to fully charge). Meanwhile, fueling a 25-mpg gas vehicle at an average statewide gas price of \$3.53 per gallon would cost about 14¢ per mile (or about \$21 for enough gas to drive approximately 150 miles).

The cost to charge an EV at home depends on the vehicle's battery size and the local price of electricity. Most utilities offer time-of-use (TOU) rates that greatly reduce costs by charging during times of lower rates, such

as overnight. All utility companies have website pages dedicated to EV charging and available rates.

TOU rates have at least two different time periods: on-peak, when the price of electricity is highest, and off-peak, when the price of electricity is lowest. Some rates have additional periods, such as mid-peak and super off-peak. Customers can utilize TOU programs paired with scheduling EV charging during off-peak periods to lower the cost of electricity required to meet their charging demands. Many utilities offer TOU rates specifically for EV owners and charging stations. This incentivizes end-users to use less electricity during peak demand and helps avoid the need for increased distribution capacity on the electrical grid.



This chart is an example. Time-of-use rates and times will vary by utility.

Resources for public charging

While charging at home is generally preferred due to ease and convenience, many people also charge at public charging stations. These stations can be free, pay-as-you-go or subscription-based, with prices set by charging networks or property owners. Some vehicle manufacturers provide complimentary public charging for certain vehicles.

One popular public charging network charges members \$1.50 per hour to charge on Level 2 and 15¢ per minute for DC fast charging in California. At these rates, charging a 40-kWh battery with a 150-mile range would cost about 6¢ per mile on Level 2 and 7¢ per mile for DC fast charging.

For more information about public charging networks, see [EV Resources page 27](#).

Vehicle range confidence

Range anxiety is one of the main barriers to greater EV adoption. Dealership staff can help customers better understand range and EV charging by matching customer needs and expectations to vehicle capabilities. Framing the question based on driver usage will help gauge which EV is the most practical choice.

Two important questions are

- + How far do you drive on an average day?
- + How often do you take longer road trips?

BEVs and FCEVs are well-suited for the average person who drives only 40 miles a day. Determining whether

the customer has access to home or workplace charging is another EV purchase variable. For customers who don't have access to workplace charging or have a shorter than 4-hour turnaround (time off the road) paired with a long commute, a PHEV may be a more compatible primary vehicle for their driving needs.

As EVs feature regenerative braking, they are a perfect choice for commuters because every time you take your foot off the accelerator the battery recaptures energy as the car brakes. Newer car models consistently continue to improve battery range due to technology advancements.

Total cost of ownership

EV owners may be confronted with higher upfront vehicle prices, but various benefits of ownership can add up to long-term savings.

- + **Low fuel costs:** A 2018 University of Michigan study showed that California gas-powered car drivers pay an average of \$1,407 per year for gasoline, while EV drivers pay an average of \$580 per year for electric charging.
- + **Insurance costs:** Many insurance companies provide premium discounts or comparable rates in the same vehicle class to customers who own EVs.
- + **Service and maintenance costs:** These costs for EVs are typically lower than comparable standard vehicles due to less engine maintenance. This does not necessarily translate to less revenue in the service department, because EV customers may tend to bring their vehicle back to the dealer for regular service needs instead of going elsewhere.
- + **Vehicle costs:** Presently, EVs generally cost more due largely to the high cost of batteries. However, rebates and incentives offset purchase or lease prices.



Maintenance differences

Electric motors tend to require less traditional maintenance services than internal combustion engines.

- + An EV's regenerative braking technology drastically reduces the need for brake pad replacement.
- + Services such as oil changes, spark plug replacements and most fluid transfers are unnecessary for BEVs and FCEVs and greatly reduced for PHEVs.
- + Since BEVs and FCEVs don't have emission control systems, they provide additional savings by not requiring smog checks or paying smog registration fees.

However, because of the complicated vehicle systems in EVs, in some cases it can take many hours just to diagnose a problem and only a few minutes to fix it.

Despite these differences, service departments are vital for EV customers to make repairs on their vehicle's internal switches, electrical systems, fittings, bearings, suspensions, tires and other systems. In addition, collision repair centers will continue to be utilized.

While battery replacement needs depend on use and maintenance, batteries are designed generally to last for the life of the car.

Lack of specialized EV techs

The auto industry in general is facing a vehicle technician shortage, and since EV technicians need more and different training than traditional techs, the shortage is only going to become more pronounced as more EVs are sold. Auto technicians who are knowledgeable about EVs will be in high demand.

Nationwide, the industry is projected to need about 46,000 more technicians by 2026, according to the U.S.

Bureau of Labor Statistics. Because of the increasingly technical and computer-based systems in EVs, next-generation technicians will likely become even more specialized than they are today, have a strong background in electronics, be familiar with new technologies such as special EV scan tools and have access to even more computers in the service bay and software specific to each manufacturer.

Common EV Misconceptions

What about battery degradation?

It is difficult to predict timelines for an individual vehicle's battery life because it depends on several variables, including owner charging habits, driving behaviors and weather conditions. Generally, over time an EV battery may lose some charging capacity and some aspects of vehicle performance may be impacted. To help remedy this the majority of manufacturers offer warranties for an average of 100,000 miles over eight years for FCEV and BEV batteries, but dealers should check with their manufacturer rep for specific details. Due to their emission control systems, PHEVs in California have been mandated to have a 10-year, 150,000-mile battery warranty.

Are electric cars better for the environment?

BEVs and FCEVs do not have tailpipes and produce zero emissions. This helps improve the air quality for the communities they are used in. EVs typically produce fewer life cycle, or total, emissions than conventional vehicles because emissions produced

by electricity generation are overall lower than the process of burning gasoline or diesel, regardless of the electricity source (even if the source is fossil fuels). The exact amount of these emission differences depends on local electricity generation, which varies by location and utility. California has a high use of solar, wind and other renewable sources, so electrical generation is constantly getting cleaner. A specific ZIP code's electricity mix and EV emissions can be looked up on the Alternative Fuels Data Center website.

With both a gasoline engine and an electric motor, PHEVs produce zero emissions in all-electric mode and only produce tailpipe emissions from the fuel system when operating on gasoline. However, PHEVs are more efficient than comparable gas-powered vehicles, so they still produce fewer total emissions—and this is true even when using gasoline.

Today, EV manufacturers are researching second-life options for their batteries including reusing them in household energy storage systems or recycling them to extract rare-earth metals once the battery pack has been fully discharged.

i Are electric vehicles fun to drive?

EVs have quick, smooth acceleration due to the electric motor's ability to supply instant torque to a single-gear mechanical setup. The internal-combustion concept of "engine braking"—using the vehicle's motor to slow down simply by releasing the throttle—can be replicated on an EV by using the motor as a generator, turning kinetic (motion) energy back into electrical energy using a feature called regeneration-on-demand. This is colloquially referred to as "regen mode" and can be toggled on or off on many EVs. Once drivers get used to this system, most driving is accomplished by using one pedal, resulting in a smooth driving experience and instantaneous response.

As an added bonus, electric motors have nearly silent operation, meaning that an EV's cabin is quiet and calm, helping drivers connect more with the outside environment.

i Charging seems so difficult—what if I forget?

One of the elements of purchasing an EV is a new fueling mindset. Electric vehicle owners commonly charge their EVs every night as they would

their cellphone and wake up to a fully charged battery. Charger controls allow for setting on and off times to maximize charging during times of lower electricity rates. Overnight charging ensures that owners can use their EVs every day for commuting, running errands or any other purpose whether close or far from home. During the day, EV drivers can charge up at work or public charging stations—basically anywhere there's an electrical outlet. Most EVs come with a cordset for charging from a 120-volt outlet.

i What is an EV's lifespan?

Due to fewer moving parts and the ability of the motor to act as a brake, there is less wear and tear on EV components. While tire pressure checks and regular inspections by certified EV technicians are recommended, data shows that electric motors, battery packs and brake parts have a much longer lifespan than equivalent gas-powered car components.

i How much do home charging stations cost?

The cost of installing EV charging at home depends on a customer's driving needs and available infrastructure. All EVs are compatible on both Level 1 (120-volt standard

household) or Level 2 (240 volts, like a clothes dryer outlet). Factors used to determine which charging equipment is best include the distance of the customer's daily commute and their turnaround time (time off the road at work or at home when charging). Electricians can provide an estimate on EV installation costs.

i Is an EV a good choice for me if I live in an apartment or a condo?

California is the nation's leader in EV infrastructure for public charging and is working throughout the state to deploy additional chargers. Tenants can work with property managers at their apartment or condo to install on-site charging. They also are encouraged to take advantage of workplace charging and destination charging where they live, work and play. Some cities are installing curbside and street charging infrastructure for residents in high-density population areas.

i What do I do on a longer trip?

Having an EV does not prevent drivers from completing road trips. Depending on the destination, it's relatively easy using online apps to locate charging stations along the route at hotels,

parks, restaurants, shopping malls, etc. With some planning, EV drivers can plan fueling stops when they would normally take a break for eating or relaxing. Such regularly scheduled breaks during trips help prevent driver fatigue, a leading cause of car crashes.

i What if I need to tow my car?

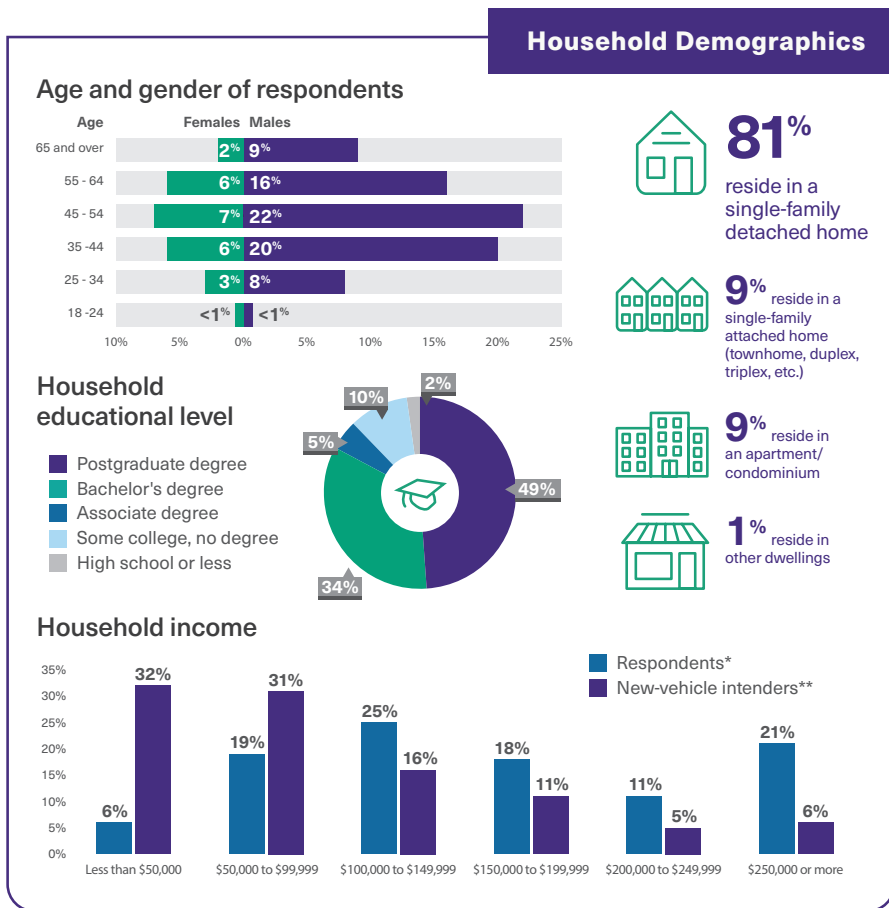
Many towing companies such as AAA are familiar with the protocols needed for EVs. Depending on the EV's battery pack, towing may require a flatbed truck.

i How safe are EVs in a crash?

Manufacturers have created systems of fuses and circuit breakers that disconnect an EV's batteries when collision detectors become aware that the vehicle is about to sustain damage. They also publish emergency response guides for their vehicles and offer training for emergency responders as does the National Fire Protection Association.

Profile of an EV Owner

Due to their overall benefits, interest in EVs comes from many different types of people—consumers of various genders, household incomes, educational levels and lifestyles. The information in this graph was collected from Clean Vehicle Rebate Project consumer surveys from 2012-15. There really is an EV for everyone!



* Respondents who purchased/leased in 2014 (most recent complete year of data)

** Respondents to the 2012 California Household Travel Survey who indicated that they intend to purchase a new or used vehicle within the next five years.

What do EVs Offer Car Shoppers?

Performance and style

EVs are fun to drive. They have quick acceleration because they produce peak torque even from a standstill, unlike gasoline engines that require time to build up their revolutions per minute by accelerating to reach maximum torque and power. EVs also have great handling, in part because the battery pack is positioned in the center of the vehicle, typically beneath the floorboard. This lowers the vehicle's center of gravity, providing superior weight distribution and stability, which improves cornering and minimizes rollover risk.

Convenience and reliability

EVs offer greatly reduced fuel and maintenance costs and often provide access to the carpool (HOV) lane as a single driver. BEVs and FCEVs never

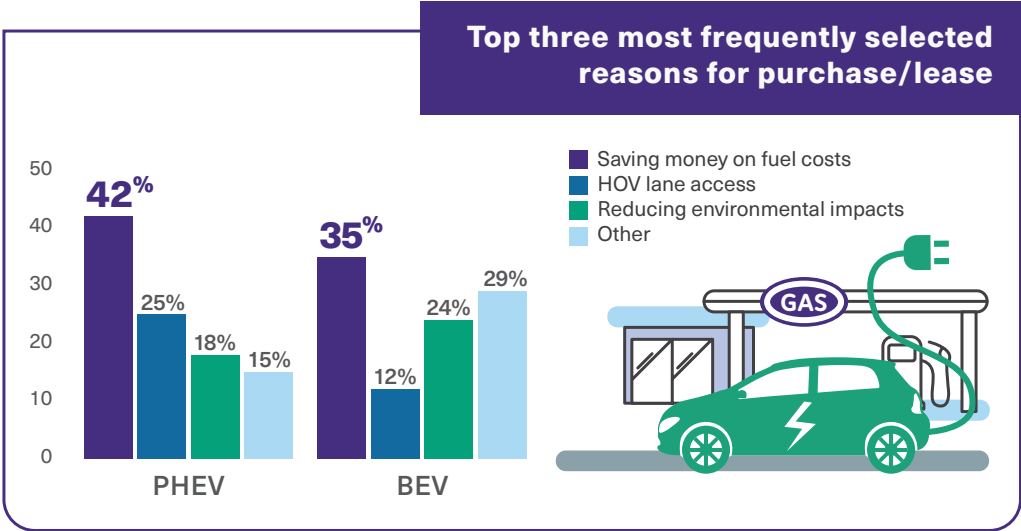
need oil changes, new spark plugs or smog checks. And all EVs offer regenerative braking that utilizes the motor to slow the vehicle rather than the brake pads, extending the brake system lifespan and transferring braking energy to the battery to extend driving range.

Savings on vehicle costs

An EV can reduce fuel and maintenance bills considerably. EV charging in California costs roughly half the price of powering a gas-powered vehicle for driving the same distance. While charging at home provides great savings, even charging at a public station is typically cheaper than filling up with gas. There are various online tools that compare fueling costs between EVs and standard gasoline vehicles (see [EV Resources page 27](#)).

"I can't believe it took me so long to make the switch. Going back to a gas-powered vehicle is not even an option. Want my advice? Run the numbers for your family and do it today. The results just might surprise you."


– Erica, EV owner



* Survey of Clean Vehicle Rebate Project recipients was conducted September 2012-June 2015.

Reduced environmental impacts

According to the California Air Resources Board, Californians drive a total of 825 million miles every day, producing 5.4 million tons of smog-forming pollutants and more than 350,000 tons of greenhouse gas emissions. With more than 50% of California’s total smog and 38% of greenhouse gases coming from motor vehicles, cars are a good place to start cutting air pollution. Fewer vehicle emissions mean less pollutants in the environment, which helps air quality and promotes better health.



In a CVRP consumer survey, 32% indicated household income at less than \$50,000 and 31% at less than \$100,000.

Why are EVs Well Suited to California?

Charging infrastructure

California has committed to electric driving in a way no other state has—nearly 1 in 10 vehicles sold in California has a plug. This commitment is especially evident when looking at the investment of more than \$1 billion in state and utility funding for EV charging infrastructure.

Former California Governor Jerry Brown made transportation electrification a pinnacle policy issue. By Executive Order, he called for the addition of 250,000 publicly available charging stations by 2025 with the

ultimate goal of 5 million ZEVs on the road by 2030. Current Governor Gavin Newsom has expressed support for these same policies.

According to the U.S. Department of Energy, as of late 2019, California has more than 23,000 charging outlets available to the public, 15% of which are fast chargers—almost one-third of all charging stations in the entire country.





State and local incentives

California government agencies, local utilities, air districts and businesses offer numerous programs that provide incentives and discounts for consumers who purchase or lease electric vehicles and install home charging equipment. For a comprehensive listing of incentives, see the Appendix.

The state also is directing investment of \$800 million in settlement funds from Volkswagen subsidiary Electrify America that will be used over the next 10 years on electric vehicle infrastructure, education and access activities to support increased adoption of electric car technology.

Electric vehicle availability

In many parts of the country, auto manufacturers do not allocate electric vehicles to their franchised dealers. However, in California, EVs are readily available on dealership lots. This is

incredibly helpful for customers who want to test drive one and get a feel for the vehicle before purchasing or leasing.

Review of California EV Auto Sales

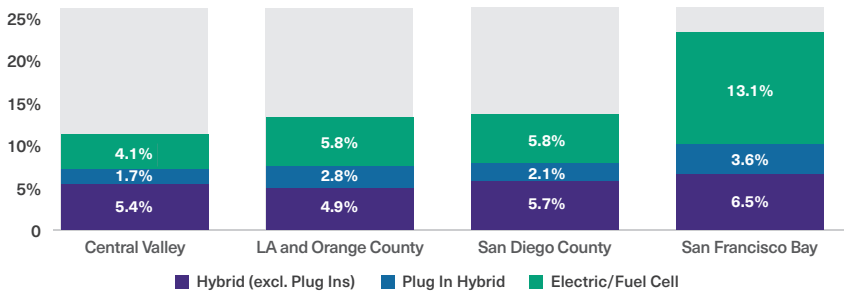
California's new car dealers lead the nation in selling EVs

In 2018, California sold more than 240,000 ZEVs, plug-ins and hybrids, making up 12% of the new vehicle market share statewide. This accounts for nearly 50% of ZEV sales nationwide. With an increase in battery electric and hybrid vehicle sales, it is safe to say that California consumers are opening up to alternatives to gas-powered cars.

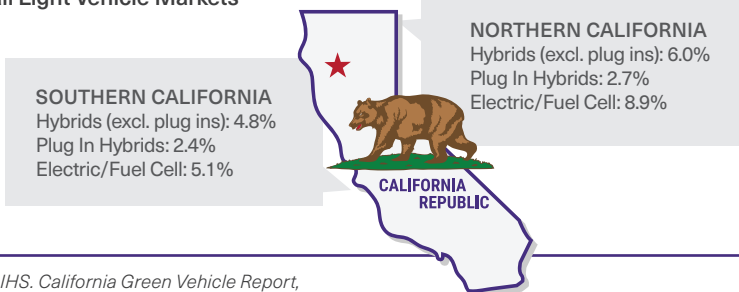
Green Vehicle Market Share Across The State

Year to date 2019, thru June

Alternative Powertrain Share of Selected Regional New Retail Light Vehicle Markets



Alternative Powertrain Share of Northern and Southern California New Retail Light Vehicle Markets

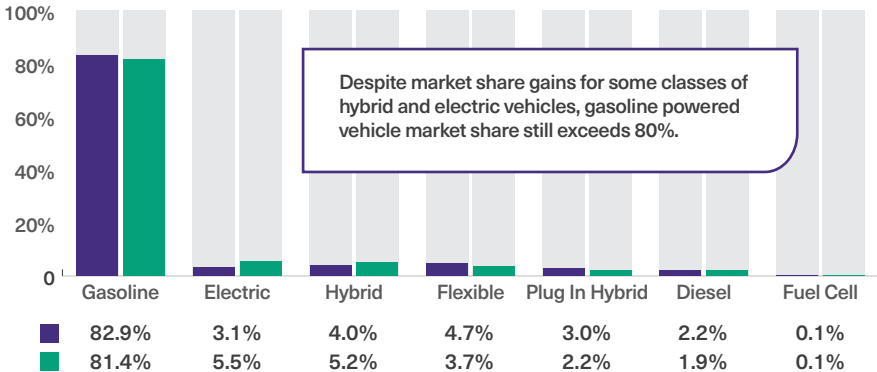


Data Source: IHS. California Green Vehicle Report, Auto Outlook, Inc. on behalf of CNCDA.

Market Trends by Powertrain Type

Year to date 2018 and 2019, thru June

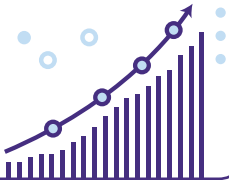
Share of California New Vehicle Market by Powertrain Type



New vehicle registrations in California

Powertrain Type	New vehicle registrations		Percent Change
	YTD '18 - June	YTD '19 - June	
Gasoline	832,731	772,303	-7.3%
Electric	31,616	51,750	63.7%
Hybrid	40,030	48,861	22.1%
Flexible	47,055	35,500	-24.6%
Plug In Hybrid	29,643	21,193	-28.5%
Diesel	22,191	17,887	-19.4%
Fuel Cell	1,391	1,057	-24.0%
Other	13	12	-7.7%

Electric vehicle registrations increased by 63.7 percent so far this year, while hybrids were up 22.1 percent.



Data Source: IHS. California Green Vehicle Report, Auto Outlook, Inc. on behalf of CNCDA.

EVs Have a Long History in the Auto Market

Introduced in the 1830s, early electric vehicles ran on non-rechargeable batteries. Starting in the late 1880s, they outsold gasoline-powered cars because of their simplicity and comfort. In the 1910s, Henry Ford began to mass produce the Model T, choosing gas over electricity or steam largely because gas cars were easier to fuel up, required less servicing and could travel much further between refueling.

Renewed interest in electric vehicles began in the 1960s and 1970s as the federal government sought to reduce air pollution and concerns grew over rising oil prices and international conflicts. A combination of public and private investment spurred the production of electric vehicles in the late 1990s and throughout the 2000s. Today, there are more than 50 models of EVs from manufacturers, ranging in variety and price points to fit the interests of a larger population of car shoppers.



Thomas Edison built a battery-powered, front-wheel-drive electric vehicle in the mid-1890s.

Conclusion

The purpose of this guide is to provide dealership staff with additional resources to help sell and lease electric vehicles. It is important that dealership staff maintain and enlarge their EV knowledge base as customer interest increases and the number of EV models entering the market grows.

For additional information about electric vehicles, please visit the CVRP Dealer Hub at CleanVehicleRebate.org/dealer.

If you have any questions about this guide, please email dealership@energycenter.org.

EV Resources

To find out more information about EVs and charging infrastructure, check these resources for dealerships and customers. In a PDF copy of this guidebook, you can click the links to go directly to the topic pages listed. If you are reading a printed copy, you will need to search the web for the organization or agency and then search for the topic.

EV information

- + FuelEconomy.gov
- + DOE Electric Vehicle Basics
- + EPA Green Vehicle Guide
- + Electric Drive Transportation Association
- + PluginCars

EV & charger incentives

- + Moving California
- + DriveClean
- + Tax Credits and Other Incentives
- + Clean Vehicle Rebate Project
- + California Laws and Incentives
- + Air District and Utility Rebates (CVRP)
- + California Electric Vehicle Infrastructure Project

Clean Air Vehicle - HOV access

- + Calif. Dept. of Motor Vehicles
- + Calif. Air Resources Board
- + Alternative Fuels Data Center

Fuel economy

- + Department of Energy eGallon
- + EPA – EV Label

Charging locations & networks

- + Alternative Fuels Data Center
- + ChargePoint
- + PlugShare
- + Electrify America
- + Blink
- + Open Charge Map
- + Greenlots
- + EVgo
- + ChargeHub

Clean Vehicle Rebate Project

- + CleanVehicleRebate.org
- + Dealer Hub
- + Eligible vehicles
- + Available funding
- + Consumer resources
- + Other rebates and incentives

Appendix – Electric Vehicle Incentives in California

Advanced Transportation Tax Exclusion

The California Alternative Energy and Advanced Transportation Financing Authority provides a sales and use tax exclusion for qualified manufacturers of advanced transportation products, components or systems that reduce pollution and energy use and promote economic development.

Alternative Fuel Vehicle & Fueling Infrastructure Grants

The Motor Vehicle Registration Fee Program provides funding for projects that reduce air pollution from on- and off-road vehicles. Eligible projects include purchasing alternative fuel vehicles and developing alternative fueling infrastructure.

Alternative Fuel Vehicle Parking

The California Department of General Services and California Department of Transportation must provide 50 or more agency-owned and agency-operated parking spaces and park-and-ride lots to incentivize the use of alternative fuel vehicles.

Alternative Fuel Vehicle Rebate Program

The San Joaquin Valley Air Pollution Control District administers the Drive Clean! Rebate Program with funding from California Climate Investments. Drive Clean! offers up to \$9,500 in down payment assistance for low- to moderate-income valley residents to replace their 1999 and older cars with used plug-in electric or hybrid vehicles.

Alternative Fuel & Vehicle Incentives

Through the Alternative and Renewable Fuel Vehicle Technology Program, the California Energy Commission provides financial incentives for businesses, vehicle and technology manufacturers, workforce training partners, fleet owners, consumers and academic institutions with the goal of developing and deploying alternative and renewable fuels and advanced transportation technologies.

Clean Vehicle Rebate Project

Administered by the Center for Sustainable Energy for the California Air Resources Board, the CVRP promotes clean vehicle adoption in California by offering rebates up to \$7,000 for California residents for the purchase or lease of new, eligible zero-emission vehicles, including battery, plug-in hybrid and fuel cell electric vehicles.

Charging Rate Reductions

Sacramento Municipal Utility District, Southern California Edison, Pacific Gas and Electric, Los Angeles Department of Water and Power and San Diego Gas & Electric provide discounted rate plans to residential customers for electricity used to charge qualified electric vehicles.

Enhanced Fleet Modernization Program (EFMP) & Clean Cars 4 All

EFMP is a vehicle scrap and replace program that encourages the voluntary retirement of high-polluting vehicles and offers incentives to replace those vehicles with newer, cleaner and more fuel-efficient models. The current program is open to residents who live within the South Coast Air Quality Management District, San Joaquin Air Pollution Control District and Bay Area Air Quality Management District. The EFMP Retirement-Only program provides \$1,500 to lower-income drivers to retire a vehicle, while the EFMP Retire and Replace program provides up to \$4,500 to lower-income drivers who scrap an older vehicle and buy a newer replacement vehicle. Combined with the Clean Cars 4 All program, they provide up to \$9,500 if a low-income purchaser who lives in or near a disadvantaged community chooses to replace their old vehicle with a PHEV or ZEV. Air district officials in the Sacramento region are planning to launch the Clean Cars 4 All programs in 2020.

Electric Vehicle Supply Equipment (EVSE) & Charging Incentives—Sacramento

Sacramento Municipal Utility District offers residential customers a \$599 rebate or a free Level 2 (240-volt) plug-in electric vehicle charger upon purchase or lease of a new plug-in EV. SMUD is also offering rebates of up to \$3,500 toward the purchase of a new Nissan LEAF.

Electric Vehicle Supply Equipment & Charging Incentives—Sonoma

Qualified Sonoma Clean Power customers are eligible to receive a free JuiceNet-enabled EVSE from eMotorWerks, which allows the EVSE to be connected to Wi-Fi and communicate with the power company's CleanCharge software.

Electric Vehicle Supply Equipment Incentives—San Joaquin Valley

The San Joaquin Valley Air Pollution Control District administers the Charge Up! Program that provides funding for public agencies and businesses for the purchase and installation of new, publicly accessible EVSE. A single-port Level 2 station is eligible for up to \$5,000 per unit, and a dual-port Level 2 station may receive up to \$6,000 per unit.

Electric Vehicle Supply Equipment Loan & Rebate Program

The Electric Vehicle Charging Station Financing Program, part of the California Capital Access Program, provides loans of up to \$500,000 for the design, development, purchase and installation of EVSE at small businesses statewide.

HOV Lane Exemption

Qualified alternative fuel vehicles—including hydrogen, hybrid and electric vehicles—may use designated carpool lanes regardless of the number of vehicle occupants. Qualified vehicles also are exempt from certain road and bridge toll fees. The Clean Air Vehicle Decal Program is administered by the Department of Motor Vehicles in partnership with the California Air Resources Board.

Insurance Discounts

Some insurance companies offer reduced rates for EV owners. For example, Farmers Insurance offers a discount of up to 10% on coverage for hybrid and electric vehicles.

Champions for Clean Air

School district employees and first responders who reside and work in the SDG&E service territory are eligible for a \$1,000 point-of-sale rebate toward the purchase or lease of an all-electric or plug-in hybrid vehicle.

