Electric VEHICLES

Know before purchasing an electric vehicle

A growing trend

Gas prices, the desire to go green or being at the forefront of a growing trend may have you thinking about an electric vehicle. Electric vehicles (EVs) account for only 1.2 percent of the U.S. vehicle market, but sales are booming, growing 25 percent last year. And they are getting better and cheaper as researchers improve the batteries that power them.

EVs provide many benefits compared to traditional vehicles, including:

- **Lower operating costs.** EVs cost significantly less to operate than gasoline-fueled vehicles.
- **Energy efficiency.** Electric motors use 75 percent of the chemical energy in batteries to turn the wheels, while conventional engines convert only 20 percent of the energy stored in gasoline.
- **Environmentally friendly.** Electric power-plant-to-wheels emissions are lower than gasoline well-to-wheel emissions; there are no direct tailpipe emissions from electric vehicles.
- **Superior performance.** Electric vehicles provide quiet, smooth operation and require less maintenance than gasoline engines.
- **Domestic fuel source.** Electric vehicles can help reduce dependence of foreign oil.

Did you know? *Plug-In Electric vehicles displaced 216 million gallons of gasoline in 2017.*

Is an Electric Vehicle Right for You?

There are many considerations to make before purchasing any new vehicle, and EVs have some unique aspects. First, consider your driving habits. Keep track of your actual daily use so you know what range you need from an EV. According to the AAA Foundation for Traffic Safety, the average American drives almost 30 miles a day, and for rural areas, that average is just under 36 miles a day. However, a typical range for an electric car today is over 100 miles, and ranges of 150 to 250 miles are becoming more common.

Also, consider what type of EV would work best for you. Depending on your driving habits, if you own a second gasoline-powered car or require any long-distance travel, you may need to consider a hybrid model. Review the types of electric vehicles on the right to determine your best fit.

Types of EVs

Hybrid electric vehicles (HEVs): Use a traditional internal combustion engine but also have an electric motor and battery. The electric motor and battery are designed to improve fuel economy, so less gasoline is used to operate the vehicle. The battery is charged solely by operating the vehicle; no plug-in is required or possible.

Plug-in hybrid electric vehicles (PHEVs): Have larger batteries than hybrids and use both gas and electricity. These vehicles vary in their electric range, but shift to gasoline-only operation when battery power is depleted. These vehicles must be plugged in to recharge the battery.

Battery Electric vehicles (BEVs): Run solely on electricity and are recharged by plugging in the vehicle. The driving range varies between different vehicles.

Source: energy.gov/energysaver/vehicles-and-fuels

Charging it up

If you decide to purchase a BEV, one of the most important questions to ask yourself is how you plan to charge it. There are three ways to charge an electric car:

Level 1: The simplest charging technique is to plug the car into a standard home outlet. That will charge the battery at a rate that will add from two to five miles to its range each hour. That's pretty slow, but the battery might start the charging session already partly charged, depending on how far it's driven that day.

Level 2: Level two charging stations require a 240-volt plug and a dedicated 40-amp circuit. They will provide between 10 and 25 miles of range for each hour of charging, which would fully charge the battery overnight. Timers can also be used to charge the vehicle in the middle of the night when electric consumption is typically lower.

Level 3: This is the fastest form of charging, and requires specialized equipment more suited to public charging stations. It will charge a car battery up to 80 percent of capacity in 30 minutes. This high-speed technique should only be used for special long-distance driving, since it can degrade the battery over time.

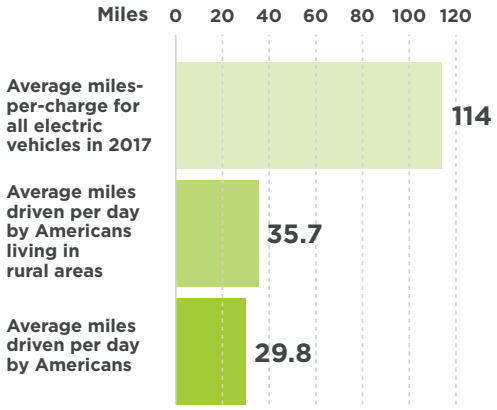
The lack of charging infrastructure to support electric vehicles has been a significant barrier to adoption, but that is changing. According to the U.S. Department of Energy, there are now more than 18,000 public charging stations in the U.S.

How do you find charging stations? With mobile apps such as PlugShare and Next Charge, you can locate a station on the go. With the U.S. Department of Energy's Alternative Fueling Station Locator, you can search for stations near an address or zip code.

Easing Electric Vehicle Range Anxiety

Range anxiety—fear of the battery running out before you're able to recharge—is a roadblock to wider use of electric vehicles.
But statistics show this fear is overblown, even if you live in a rural area. While extra planning may be needed for vacations or longer trips, nearly everyone's daily driving needs can be met with one charge.

AVERAGE MILE COMPARISON



And when you're done driving your electric vehicle for the day, you can plug it in to recharge overnight, "topping off the tank" while you sleep!

Sources: Dept. of Energy, Energy Information Administration, AAA Foundation for Traffic Safety.

EV safety 101

EVs must undergo the same rigorous safety testing and meet the same safety standards required for conventional vehicles sold in the United States. Additionally, the vehicle inlet and charging equipment are required to be safety tested, certified and listed by Underwriter's Laboratory (UL).

EV tax credits

All-electric and plug-in hybrid cars may be eligible for a federal income tax credit of up to $7,500. The credit amount will vary based on the capacity of the battery used to power the vehicle. To find out specific tax credit amounts for individual vehicles, visit the FuelEconomy.gov Tax Credits for Electric Vehicles and Tax Credits for Plug-in Hybrids pages.

Knowledge is key

To learn more about electric vehicles, view the U.S. Department of Energy vehicles and fuels site at energy.gov/energysavers.

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