Thinking of buying an electric vehicle? Read this first.

Government incentives and charging stations are considerations for the climate-conscious consumer

Sarah Kaplan March 30, 2021

((Michael Parkin for the Washington Post))

Here's a fun fact: The transportation sector is the biggest source of planet-warming emissions in the United States.

Here's another: The majority of those emissions come from cars and light-duty trucks — the vehicles people drive to work, school, the grocery store and grandma's house.

This means one of the most powerful individual actions people can take against climate change is to change the way they get around.

One way to achieve that is to buy an electric vehicle, which produces about a third as much carbon dioxide per mile as a gasoline-powered car. If you're able to charge your car from completely renewable sources — say, solar panels on the roof of your garage — you can drive as long as you want without generating any emissions at all.

But — fun fact — individual actions alone aren't sufficient to avert catastrophic warming. If you really want to make a meaningful contribution to the fight against climate change, experts say, you must consider both how you can curb your transportation-related emissions *and* how you can help make clean, green, reliable transportation available to others.

What questions do you have about climate change? Ask Post reporters here.

Traditional vehicles aren't just bad for the environment — they're wasteful. As little as 12 percent of the energy from a car's gasoline fuel goes toward making it move. Most internal combustion engine cars are so inefficient that the vast majority of energy produced by burning gas gets lost as heat or wasted overcoming friction from the air and road.

About 1.75 million electric rickshaws ply India's roads — more than the total number of

electric cars sold in the United States. (Joanna Slater, Joyce Lee, Vikram Singh/The Washington Post)

In other words, instead of filling my car's 16.6-gallon tank, I might as well put 14 gallons of that gas in an oil drum, light it on fire and watch the smoke drift upward. It's not getting me anywhere anyway. And ultimately, all that carbon is destined to wind up in the sky, where it helps drive up the average temperature of the planet.

It looks like the Batmobile, works on solar energy and could be the future of cars

By contrast, battery electric vehicles are between 60 and 100 percent efficient. Even if the electricity that powers them comes from fossil fuel sources, they're using a lot less of it, so their emissions are far lower.

New EVs can be expensive — even the most affordable have a suggested sale price between $30,000 and $40,000. But as more car manufacturers start producing electric vehicles (General Motors has even said it will *only* make EVs by 2035) the cost of these cars is expected to come down. EVs also tend to have lower fuel and maintenance costs than gas-powered cars, making them cheaper over the course of their lifetimes than combustion engine vehicles, according to recent research from MIT.

Electric vehicle purchases also qualify for federal tax credits of up to $7,500. Depending on where you live, your

city or state might also provide additional financial incentives to go electric. The Department of Energy maintains a full list of rebates, tax credits and other programs offered in each state, and more are expected to become available as President Biden moves to expand the nation's electric vehicle fleet.

Once you've decided to buy an EV, the next big question is: how will you charge it?

There are three categories, or "levels" of charging option. Level 1 is a standard 120-volt outlet, which generally adds about 2-5 miles of range per hour. If you mostly use your car to travel short distances and are able to charge it every night, and there's a free outlet in your garage or near your parking spot, then you're all set. Just make sure there's no other equipment such as a refrigerator using the same circuit — otherwise you're setting yourself up for an overload.

If you want to boost your charging power, you can pay between $500 and $2,000 to upgrade to a Level 2 charging station. This requires special equipment, and your electrical system will have to be capable of providing 240 volts of energy (the same amount required for big appliances such as clothes dryers or an electric stove). But many places offer tax incentives to help cover the cost of installation. These stations provide 10 to 20 miles of range per hour of charging.

If charging at home is not an option — if you live in an apartment building, for example — you can go to a Level 3 fast charging station, which supplies direct current electricity to your car. A Level 3 charging station can add 60 to 80 miles of range in 20 minutes — the amount of time it takes to use the bathroom and buy a cup of coffee for the road. Biden's proposed infrastructure package also contains millions of dollars to expand the country's public EV charging network.

Numerous websites, including the Energy Department, provide maps of public charging stations. The cost of fueling up at these stations can vary based on the price of electricity and whether they charge per minute plugged in or per kilowatt hour of energy provided. But it's generally cheaper than gas; a Tesla Model 3 battery costs about $17 to fully charge and will last roughly 300 miles, whereas the gas to drive an equivalent distance in my combustion engine car costs twice that amount.

Switching to an electric vehicle can make a sizable dent in your personal carbon footprint. But if the change stops with you, it won't make much of a difference in the broader fight against climate change.

Ultimately, everyone needs to be able to get around in a safe and sustainable way, said Alvaro Sanchez, vice president of policy at the Greenlining Institute, an Oakland, Calif.-based nonprofit that researches and advocates for environmental justice programs.

Low-income people of color are disproportionately harmed by pollution from gas guzzling cars, he noted. Historically racist zoning decisions mean they are more likely to live near high-traffic roads. Meanwhile, high housing costs can push people to the outskirts of cities, subjecting them to long commutes. A 2019 study from the Union of Concerned Scientists found that Black Californians were exposed to 43 percent more lung-irritating small particles than White residents, and people who didn't own cars faced higher levels of pollution than those who did.

Yet it's also harder for people in these communities to access new technology such as electric vehicles. They are more likely to live in apartment buildings, or in older homes where the electrical system can't support EV charging, and less likely to live near a public charging station. Most of the government incentives for electric vehicles are directed at new purchases, which means only people who can afford the high upfront cost of a car can access them.

"We designed strategies for about 10 years thinking about lowest hanging fruit in terms of adoption," Sanchez said. Since the people most likely to buy a new EV are wealthier and White, "for a long time we've been subsidizing that demographic," he added.

But several initiatives to expand EV access in California could serve as models for national programs, Sanchez

said. With funding from its carbon and trade program, the state launched the Clean Cars 4 All program, which gives low-income drivers $9,500 for a new EV or hybrid when they trade in older, gas-powered vehicles. The state also offers electric car share programs in Sacramento and Los Angeles, as well as an electric van carpool program for agricultural workers in rural areas.

People who care about expanding access to clean transportation can advocate for similar programs in their states, Sanchez said. But equitably eliminating the nearly 2 billion metric tons of carbon dioxide produced by the U.S. transportation sector will take more than just swapping gas cars for electric, he added. It will require redesigning neighborhoods to make it easier for people to walk and bike. It will require building more affordable housing, so that people aren't forced to live far from where they work. It will take boosting funding for public transit and making sure buses and subways take people where they need to go.

If the United States switches to clean transportation in a way that keeps the most vulnerable people in mind, Sanchez argues, the whole country will benefit.

"When we design for people who face the biggest barriers," he said, "we're also breaking down the barriers for everyone else."