



Will Your Next Car Be Electric? Frequently Asked Questions



Drive Electric Hudson Valley is a program of education and outreach that helps drivers figure out whether an electric vehicle is the right choice, supports dealerships in making EVs available, and assists communities in scaling up charging infrastructure. We offer these answers to questions that might be on your mind.

1. What are the basic types of electric vehicles?

There are **conventional hybrid** vehicles which have an internal combustion engine (gas or diesel) and an electric motor. They get more MPG than a plain internal combustion engine -- from 40-60 MPG. **Plug-in hybrids** (PHEV) are newer, and are designed so that the battery can be plugged into an outlet or charging station to re-charge. In a PHEV, the gas engine takes over if you drive beyond the electric range. These get 70-80 MPG. Finally, **100% electric vehicles** (EV) use only an electric motor and battery pack to power the vehicle, with no internal combustion engine. These achieve the equivalent of 99-1000 MPG -- known as *MPGe*.

2. What kind of range is possible today?

Current plug-in hybrids range from 14 to around 53 miles of electric range, after which it shifts to gas powered and you can keep driving as far as you need to. The range for 100% electric vehicles is typically from 80 to over 300 miles. You can get the best mileage by your vehicle's "Eco Modes" and regenerative braking system. At this point, EVs can go anywhere as long as the trip is planned properly. That means they can be a good choice for your main car, not just for a backup.

3. What is involved in charging an EV?

Plug the car into a charger at home or in public. Level 1 is your existing home socket, which may take 8 - 12 hours to charge your EV. Level 2 is a faster station (similar to a clothes dryer plug) that can be installed at home and is found in many public locations. Level 2 can charge most plug-in hybrid and battery EVs in 3 - 6 hours. Tesla Superchargers and DC Fast Chargers are found at rest stops and major tourist locations. These powerful systems can charge an EV 80% in about 15 minutes and fully charge the car in under an hour.

4. Where are charging stations located?

All over the place -- over 2,000 in New York, with a concentration in the Hudson Valley. Refer to Plugshare.com, Chargepoint.com, EVConnect.com and other apps for location finders.

5. How much does it cost to charge an EV?

It depends on the electric rate from your utility, and the battery size in the car. For example if the electric rate is \$0.14 per kWh and the battery size is 24kWh then $\$0.14 \times 24 \text{ kWh} = \3.36 cost to fully charge the battery. Some EV dealerships have free charging at their locations. There are also municipalities, workplaces and other businesses that offer free/reduced cost charging options. Some charger-finding apps will tell you how much energy is being put into the vehicle, distance equivalent in miles and cost per charge. For example, fast chargers on the NYS Thruway, provided by the NY Power Authority in the Hudson Valley cost \$8 per charge.

6. So how do I estimate the real cost of owning an EV?

Up-front cost depends on the dealer, down payment, discounts available and structure of monthly payments. Maintenance costs are reduced since there are no oil changes, tune ups, fuel or air filters to be replaced. Charging cost will depend on electric rates or charging stations rates. According to Plugin America, charging costs usually amount to around \$1 per gallon equivalent.

7. Can a solar electric system (PV) be used to charge an EV?

Absolutely. In fact, NYSERDA has an online tool to help you figure out if an electric vehicle is right for you and how you can get the best benefit by adding solar: <https://nyserda.wattplan.com/>

8. What about handling, nimbleness and speed?

Not to worry. EVs are faster to accelerate than gas cars. They have 100% torque at zero RPM. The suspension and handling are as good as any conventional car. Since the batteries are usually underneath the seating and trunk, they have a low center of gravity and can hug the ground. Many drivers feel an EV handles better than a gas powered vehicle.

9. What happens if you run out of charge?

Well before you are out of charge, the vehicle's warning systems will alert you. In most EVs, the onboard computer system will help you find the closest charger. In spite of all this, if you still run out of charge, the vehicle will drift to a stop -- just like if you run out of gas. If you're mindful of your range and plan your trip to recharge periodically, you'll be fine.

10. What kind of maintenance does an EV require?

Overall, electric vehicles have fewer moving parts, and there's less wear and tear due to their design. You may need a software update now and then. There's no oil to change or fuel filters to replace. However, you will need to

replace interior air filters, add washer fluid, rotate the tires and check battery coolant, and wiper blades now and then. If the vehicle is plug-in electric, there are still engines and transmission that need maintenance. In addition, electric vehicles have a feature called regenerative braking, which helps to refresh the battery charge as you brake. These and other mechanical systems may eventually need repair or replacement, but there is much less to go wrong than in a conventional car.

11. When do the batteries need to be replaced?

Battery issues don't tend to arise until late in the life of the vehicle. All EV batteries must be warrantied for at least 125,000 miles in New York.

12. What about the decision on whether to buy or lease an EV?

There are reasons for each option. Leasing gives you a predictable monthly cost and lets you make regular upgrades (like a cell phone). Purchasing gives you access to financial incentives such as federal and state tax credits and rebates. It may be cost-effective to take out a loan to finance that purchase if the terms are favorable and the tax credit is important to you.

13. Are there any incentives or rebates to help with purchase?

Yes. They're not simple, but they're worth understanding.

- There is a federal tax credit of up to 7,500 available for qualified plug-in electric vehicles.
- New York offers the Drive Clean rebate of up to \$2,000. This rebate is available for over 40 makes and models, in hundreds of dealerships throughout New York.

All these benefits are subject to phase-down and change. If you want the best deal, do your homework now.

16. What is the best part of switching to an electric vehicle?

Low cost of operation, smooth driving, low impact on the environment, ability to use new technology, and the enthusiasm of other EV drivers you will meet.

17. Are there any down-sides of driving an EV?

Besides the need to stay on top of trip planning, the lack of noise sometimes takes getting used to. You need to be more vigilant of pedestrians and cyclists because they may not hear you coming.