



# Plug in hybrid car charging

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However, when Consumer Reports asked about this in a nationally representative survey (PDF) of 2,519 U.S. adults in September 2022, 37 percent said that hybrid vehicles need to be plugged in and charged in order to run. Less than half, 45 percent, correctly answered that they do not, and 18 percent told us they were unsure.

These numbers reveal a knowledge gap regarding this increasingly popular type of car and suggest that most people still have questions about hybrid vehicles. That's why CR's automotive experts are here to answer them.

Hybrids combine a battery pack, an electric motor, and a gas engine. The gas engine or the electric motor alone can drive the wheels, or they can work in unison. The electric motor gets energy from the hybrid battery, and can power the car at low speeds allowing the gas engine to shut off. The gas engine kicks in for higher speeds, climbing hills, or when recharging the battery. Hybrid vehicles also feature regenerative braking, which uses the car's momentum as it slows down or coasts to create extra electricity.

"Hybrids are so fuel-efficient because they utilize energy that would otherwise be wasted," says Jake Fisher, senior director of CR's Auto Test Center. "When you press the brake pedal, much of the energy that would have been converted to heat through the brake pads instead generates electricity for the electric motor."

One of the benefits of a hybrid over a pure electric vehicle (EV) is that a hybrid can be driven long distances, filling up at gas stations along the way. Pure EVs must be charged once the range is depleted.

Today's plug-in hybrid vehicles (PHEVs) work in much the same way, except they add the option to recharge the hybrid battery by plugging it in at a wall outlet or charging station. This can allow PHEV owners to drive only on electric power for a short distance.

No. Plug-in hybrids can be charged to run on mostly electric power usually for the first 25 to 50 miles before they revert to regular hybrid operation, but they will still operate even if they are never plugged in. Examples include the BMW X5 xDrive45e, Ford Escape PHEV, Hyundai Tucson PHEV, and Toyota RAV4 Prime. Some even qualify for federal tax credits, unlike regular hybrid vehicles.

PHEVs are ideal for drivers who take short trips and can do most of their driving on electricity, reserving the gas engine for longer trips. PHEV owners who charge every day save money because they can avoid using the gas engine. But a PHEV doesn't make sense for long commutes. When the short electric range is depleted, most PHEVs get fuel economy that might be worse than their equivalent regular hybrid, due to their added weight. Case in point: Our RAV4 Prime consumed 35 mpg once its first 40-mile portion of the mostly electric



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drive was depleted. A regular RAV4 hybrid attained 37 mpg consistently.

In some cases, if you don't plug in a PHEV, you'll get even worse fuel economy than a gas-only car. For example, once the BMW 330e xDrive sedan's 20-mile electric range is exhausted, it only gets 25 mpg--3 mpg less than the conventional 330i xDrive's EPA rating of 28 mpg. (CR has not formally tested the 330e, but we got 29 mpg overall from our 330i.)

PHEVs are a great solution for many people, but not everyone.

Read CR's guide to the most efficient plug-in hybrids.

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