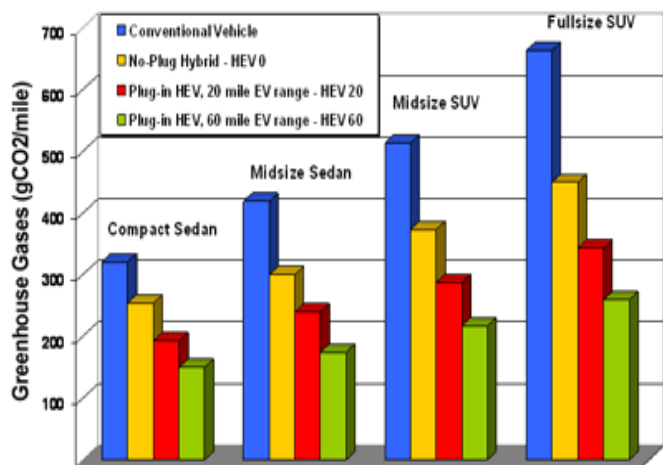


## When and where can I buy one?

Many PHEVs have been available since 2011. Please see CalCars<sup>7</sup> and PlugIn America<sup>8</sup> for more information, including make and models. Start telling car dealers "no-plug, no-deal".

## Why do PHEVs reduce greenhouse pollution?

A study by EPRI, the California Air Resources Board (CARB), the National Renewable Energy Laboratory, Argonne National Laboratory, and others<sup>9</sup> concluded that plug-in hybrids produced substantially lower greenhouse gas emissions than either conventional gasoline cars or unplugged hybrids. The reduction in emissions results from electric operation being much more efficient than gasoline operation.



## References

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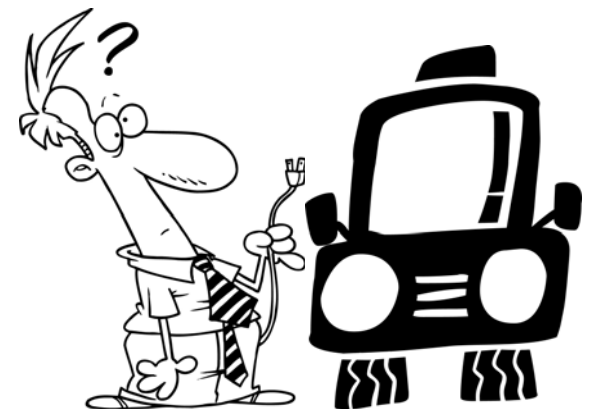
## About the Electric Auto Association

The Electric Auto Association (EAA) is a non-profit educational organization founded in 1967 to promote the advancement and widespread adoption of Electric Vehicles.

The EAA's mission is to act as a public source of information about developments in electric vehicle technology, to encourage experimentation in the building of electric vehicles, and to organize public exhibits and events of electric vehicles to educate the public on the progress and benefits of electric vehicle technology.

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# Plug in a Car?



## What Plug-in car Options are Available?



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## Why plug in a car?



Using electricity to fuel a car is about  $4\frac{1}{2}$  times cheaper than gasoline<sup>1</sup> - \$0.14/mile for gas vs. \$0.03/mile for electricity. Using electricity also reduces greenhouse pollution and helps reduce crude oil imports.

## Battery Electric Vehicle (BEV or EV)

Battery Electric Vehicles (BEVs) use the electric energy stored in batteries to power the motor and must be plugged in to recharge. They have ranges of up to 300 miles. The size of the battery pack is the highest cost component in a BEV, so most BEVs have ranges between 70-100 miles to keep vehicle cost down. The good news is that battery pack costs are declining in price about 14% each year<sup>2</sup>.

## Plug-in Hybrid Electric Vehicle (PHEV)

A PHEV is like a regular hybrid electric vehicle (HEV) but with a larger battery pack and a plug to charge the batteries from standard household current. The vehicle is dual-fuel: powered by either electricity, gasoline, or both. For more information, see CalCars<sup>3</sup> and Wikipedia<sup>4</sup>. Charging the batteries by plugging in is optional - but results in cheaper per mile

cost than just using gasoline.

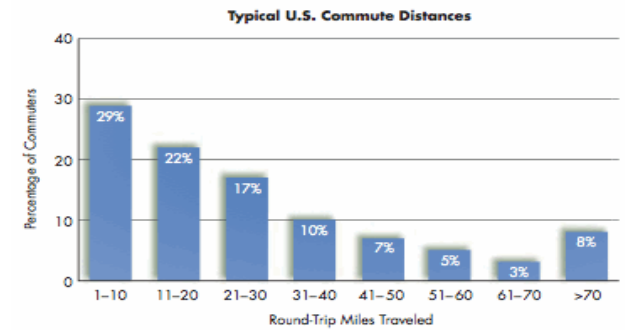
## What is an Extended Range Electric Vehicle (ER EV)?

Sometimes PHEVs are referred to as "extended range" EVs (ER-EVs). They typically have an all-electric range of up to 50 miles. During a trip, if the batteries become depleted, the gasoline engine turns on and is used as a generator to power the electric motor -- providing seamless travel beyond the all-electric range.

## Why can't PHEVs have a higher all-electric range?

For electricity, the fuel is cheap but the tank (the battery pack) is expensive. For gasoline, the fuel is expensive but the tank is cheap. Commute studies show most people drive less than 40 miles a day (see chart). Why increase the vehicle cost for range that is infrequently used? PHEVs combine the best of both by using electricity for your everyday driving, and gasoline for the less common long trips.

The occasional family trip is one reason that PHEVs (with as little as 20 miles of all-electric range), are projected to cut gasoline consumption *only* in half.



## Won't PHEVs require us to build even more power plants?

Not at first. PHEVs will be programmed to charge at night, when electricity demand is low (and cheapest). You simply plug the car in when you get home, and the car will know when to charge. The U.S. Department of Energy's labs (Pacific Northwest National Laboratory) concluded that "84% of cars, pickup trucks, SUVs, and vans could be supported without modifying the existing grid infrastructure"<sup>5</sup>. This is made clear by the chart below (from the Electric Power Research Institute<sup>6</sup> (EPRI), a utility-funded lab).

