

# Most drivers could go electric within 10 years

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Credit: Steffen Thoma/Public Domain

Electric and hybrid electric vehicles are in the fast lane to wider adoption, according to a new study by University of Michigan researchers.

The researchers analyzed the present status of [electric vehicles](#) in the U.S., their life-cycle greenhouse gas emissions, and progress toward lifting barriers to broader acceptance. The study is a literature and technical review that synthesizes and analyzes recent findings from many

sources.

"We feel that within the next decade, electric vehicles are positioned to be more suitable for most drivers to use on a daily basis," said Brandon Schoettle, project manager at the U-M Transportation Research Institute. "That's due to recent improvements such as longer driving ranges, faster recharging times and lower vehicle prices."

The report discussed recent advances for both types of plug-in electric vehicles: battery electric vehicles and plug-in hybrid electric vehicles. Hybrid vehicles rely on both [electricity](#) and gasoline. Battery electric vehicles run solely on electricity.

Schoettle and colleague Michael Sivak, a research professor at UMTRI, found that sales of [plug-in electric vehicles](#) in the U.S. have increased by more than 700 percent since 2011. Still, electricity fills just 0.1 percent of the nation's transportation-related energy needs. Ninety-two percent comes from petroleum.

The researchers examined the average "well-to-wheels" [greenhouse gas emissions](#) for several vehicle types. Based on today's power sources for electricity generation, they found that battery electric vehicles emit an average of 214 grams of carbon dioxide per mile; two varieties of plug-in hybrids average 253 to 279; and current gasoline-powered vehicles, between 356 and 409.

"The results of our analysis indicate that using a typical battery electric vehicle emits approximately half the greenhouse gases as a typical internal combustion engine vehicle," Schoettle said. "Even though some plug-in hybrid electric vehicles get very few miles on electric power alone, they are still cleaner than a comparable vehicle with a conventional engine. Miles on electricity are much cleaner than miles on gasoline, so a little mileage on batteries still makes a difference."

Other key findings include:

- **Availability:** The number of individual electric vehicle models that consumers can choose from has increased rapidly, nearly doubling from 13 in model year 2016 to 23 in 2017. Recent price trends make [plug-in hybrid vehicles](#) more affordable and more similar in price to the average [internal combustion engine](#) vehicle.
- **Charging infrastructure:** The number of public charging stations has grown rapidly since 2010, with approximately 16,000 now available across the U.S., supplying approximately 35,000 individual connections (for comparison, there are roughly 112,000 gas stations).
- **Driving range:** The driving distance between charges of battery electric vehicles continues to improve. The range of all electric vehicles has increased to an average of 110 miles. Several studies the researchers cite estimate that a range of 120 miles can cover 99 percent of household [vehicle](#) trips.
- **Fuel prices** Compared to gasoline, electricity prices have been low and stable over the past decade or more, and they're projected to remain that way over the next several decades.

"Electric vehicles can offer a more sustainable transportation future," Schoettle said. "Today, 86 percent of electricity in the U.S. comes from nonrenewable sources and 65 percent from greenhouse gas-emitting fuels, so the clean nature of electric and hybrid electric vehicles can be improved considerably by increasing the use of renewable fuels to generate the nation's electricity. Solar-powered charging stations could also be a practical solution."

Provided by University of Michigan

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