Study shows which vehicles pollute the least in every US county



Greenhouse gas reduction is no longer a priority for the US government, but if you're looking for a new vehicle and want to buy something with the lowest life cycle carbon emissions, you're best off looking for a compact with a small battery. That's one of the findings from a group at the University of Michigan of a comprehensive study that calculates the overall cradle-to-grave carbon impact for different types of vehicles, including factors like powertrain options, location (within the country), and use patterns. Even better, they built a tool you can use yourself.

The study, published in Environmental Science and Technology, compares internal combustion engine powertrains with hybrid, 35- and 50-mile range plug-in hybrids, and 200-mile, 300-mile, and 400-mile battery electric powertrains across compact and midsize sedans, small and midsize SUVs, and pickup trucks,

using a life cycle assessment model developed by Argonne National Laboratory and data of model year 2025 vehicles from the Environmental Protection Agency.

If you expected that a gas-powered pickup truck would have the biggest carbon footprint, you'd be right. With a driving profile of 43 percent city driving and the rest highways (no cargo), a pickup will emit about 486 g CO2e per mile. Compared to that, a compact electric sedan with a 200-mile battery has just 17 percent of the life cycle emissions and is responsible for just 81 g CO2e per mile.

A short-range electric pickup—maybe that Slate that so many are salivating over—is nearly as good, with a footprint that's only 25 percent the size of the gas pickup truck.

Comparing powertrains within classes

On the other hand, hybrid powertrains (the kind that don't plug in) only reduce life cycle carbon compared to internal combustion alone by a modest amount—between 11 and 13 percent, depending on the vehicle class. Plug-in hybrids with 35 miles of range can reduce emissions compared to plain combustion by 53–56 percent; with 50-mile batteries the reduction is 56–60 percent, assuming the PHEVs were driven in electric mode for 58 percent and 69 percent of the time, respectively.

When it comes to BEVs, the smallest battery pack always has the least environmental impact. BEV powertrains with 400 miles of range have lifecycle emissions that are 67–69 percent lower than an ICE powertrain in the same vehicle. For 300-mile BEVs, this is an 81–83 percent reduction. A 200-mile BEV can be expected to contribute just 25–26 percent as much CO2e as an equivalent gas-burning vehicle would.

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