

Technology on track to make lower-emitting vehicles as affordable as or cheaper than traditional counterparts

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Argonne National Laboratory led a study released by U.S. DRIVE that shows, for the first time, cost-negative pathways to carbon reduction are possible in the consumer transportation sector. Credit: Shutterstock/Cars Roads Travels

Led by the U.S. Department of Energy's (DOE) Argonne National Laboratory, U.S. DRIVE has assessed the greenhouse gas emissions and costs of a number of light duty vehicle and fuel combinations—both with their current (2020) and anticipated future (2030–2035)

technologies.

U.S. DRIVE, which stands for United States Driving Research and Innovation for Vehicle Efficiency and Energy Sustainability, is a DOE-hosted partnership that includes multiple automotive, energy and utility companies.

[The report](#), an update of one first published in 2016, shows for the first time that cost-negative pathways to carbon reduction are possible in the consumer transportation sector.

The so-called cradle-to-grave (C2G) analysis assessed the cost and greenhouse gas emissions of light duty midsize sedans and small sport utility vehicles across a variety of vehicle-fuel combinations, including conventional internal combustion engine vehicles; flexible hybrid [electric vehicles](#); plug-in hybrid electric vehicles; battery electric vehicles (BEVs) with varying vehicle ranges; and [fuel cell](#) electric vehicles.

Vehicle fuels considered in this study were gasoline; diesel; compressed [natural gas](#); ethanol; hydrogen; and electricity. The study accounted for the [greenhouse gas emissions](#) of both the fuel and vehicle production life cycles and relied on published predictions of the mix of sources that will generate power for the electric grid in 2035.

The study indicated that batteries for BEVs will be primarily responsible for lowering costs. The cost of EV batteries has decreased dramatically over the decade and the trend is projected to continue.

"This study shows that vehicle technology advancement is an important enabler of a lower-GHG future, but deep decarbonization requires concurrent advancement in the [energy sector](#)," said report co-author Jarod Kelly, principal energy systems analyst at Argonne.

Provided by Argonne National Laboratory

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