THE TRANSFORMATION OF THE ENERGY SECTOR

EMISSIONS

90% of U.S. cars must be EVs by 2050 to meet Paris goals

David Iaconangelo, E&E News reporter • Published: Tuesday, September 29, 2020

University of Toronto researchers say the worst effects of global warming could be averted by converting about half the country's cars to electrics by 2050 — but only if overall travel demand remains flat. carlosftw/Pixabay

The United States is not expected to electrify passenger cars fast enough to stay on track with the Paris climate accord's goal of limiting global warming to 2 degrees Celsius, according to a new study.

Published in the journal *Nature Climate Change* yesterday, the **study** by engineers at the University of Toronto concludes that 90% of light-duty cars on American roads would need to be electric by 2050 to keep the transportation sector in line with climate mitigation targets.

That might mean requiring all of the nation's new car sales to be electric as early as 2035, the state target established by California Gov. Gavin Newsom (D) in an announcement last week.

The prospect of a national ban on gasoline-fueled cars emerged throughout the Democratic primaries, where several candidates proposed a 100% EV sales policy for 2035 or earlier. Democratic presidential candidate Joe Biden favors the idea of phasing out gasoline cars but hasn't signed on to a timeline (***Energywire***, Feb. 14).

If California's 2035 target were adopted and implemented nationally, 350 million electric cars would ply the roads in 2050, the study found.

Those would fuel up using the equivalent of 41% of the nation's total power demand in 2018, creating challenges for the grid, in addition to requiring "excessive amounts" of critical minerals like lithium and cobalt, the authors wrote.

"We need to deploy electric vehicles. But we also need to be realistic that they're probably not sufficient on their own," said lead author Alexandre Milovanoff, an energy and sustainability researcher at the University of Toronto.

Instead of focusing exclusively on switching from gas cars to battery-electrics or fuel-cell vehicles, he said, policymakers should simultaneously aim to reduce the public's dependence on personal cars.

Over coming decades, the number of miles racked up by the average car is projected to continue increasing. But if travel demand were frozen at current levels, just 51% of all cars on the road in the United States would need to be electrics in 2050 to meet emissions targets set out in the global Paris accord. That would mean achieving 30% penetration of new car sales by 2030, a goal laid out by the International Energy Agency three years ago.

Huge infusions of money for public transit would be necessary to significantly reduce the nation's reliance on passenger cars.

"It has to be about equity," Milovanoff said of carbon dioxide reductions. "It's about making sure all communities can access these systems."

Land use changes could make it easier for people to live closer to their destinations, as well as to get around on foot or bicycle, he added. New road tolls or taxes on car sales could discourage drivers from buying or using their own cars.

The authors noted another option for driving down emissions: fuel efficiency rules based on a vehicle's weight rather than the "footprint" approach. That would encourage car companies to roll out smaller, less energy-intensive models. That change would better align U.S. and European standards.

The grid's carbon intensity would also prove crucial in determining the effect of EV adoption. The authors assumed that the U.S. electric grid is decarbonized by 2050, combining the use of carbon capture technology, renewable energy and nuclear power.

"So many cities in the U.S. don't even have pavement for pedestrians, or a well-developed subway or bus system," Milovanoff said. "It comes from the fact that these cities are vehicle-centered. They're built on the premise that we'll always use vehicles."

This story also appears in Climatewire.

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