

Comparing the Cost to Travel: Electric Vehicle Fill-Up Savings by State

Sara Baldwin, Jack Conness
August 2023

Electric vehicles (EVs) made up [14 percent of global vehicle](#) sales in 2022, with over 20 million vehicles sold worldwide. The United States is now the third largest EV market, having experienced exponential growth over the past decade—the number of EVs on the road jumped from about 22,000 in 2011 to over 2 million in 2022. The U.S.' [accelerated transportation electrification](#) is driven by a combination of state and federal policies and growing consumer demand for non-polluting vehicles that provide instant fuel cost savings.

For the average driver, however, determining expected savings one can expect from an EV compared to a gas or diesel vehicle can be challenging. Unlike gasoline prices, which are advertised prominently at every corner gas station, electricity prices are not as readily accessible. Furthermore, the price of electricity varies depending on where you're charging (i.e., at home, at a business, or at a public charger) and the type of charger (i.e., slower level 1 chargers may be less expensive than DC fast chargers). The rate also varies across states and utility service territories. The type of vehicle you're driving also impacts the cost to fill-up, given the size of the EV battery versus the size of the gas tank as gas-vehicles average [over 400 miles on one fill-up](#) while the average EV range is [currently around 290 miles](#).

Energy Innovation's cost comparison tool, [EV Fill-Up Savings by State](#), is designed to fill this information gap and help drivers estimate the average cost to drive an EV versus equivalent gas counterparts across states.

TOPLINE RESEARCH FINDINGS

We modeled several vehicles in every state and find that the cost to drive an EV is cheaper than a gas-powered vehicle for primary passenger vehicle classes: sedans, SUVs, and trucks. The biggest cost savings are in the Pacific Northwest, where high gas prices and cheap electricity create significant savings for the average driver.

Washington State boasts the highest gas prices in the country (at \$4.98/gallon) and the least expensive residential electricity prices in the country (at \$0.10/kWh). This translates to nearly \$50 in savings per trip for EV drivers when filling up the battery



Washington State's high gas prices and low electricity rates result in considerable cost savings for EV drivers – nearly \$50 per trip for SUVs in this example from the [EV Fill-Up Savings by State](#) tool.

of their SUV, nearly \$60 per trip when filling up their EV sedan, and over \$80 per trip when filling up their EV truck. These savings reflect differences in vehicle range and battery size.

On the other hand, Hawaii EV drivers will see lower cost savings, given the state's substantially higher average residential electricity rates (at \$0.43/kWh). Nonetheless, EV drivers in the Aloha State can still expect to save compared to gas vehicle drivers. Average EV fill-up savings range from \$15 for SUVs to \$26 for sedans.

The Southeast states of Mississippi, Louisiana, Tennessee, Alabama, and Arkansas have the five-lowest gas prices in the country, and their residential electricity prices are lower than average U.S. electricity rates. The most popular vehicles sold in those states ([all pickup trucks](#)) offer around \$30 in cost savings per trip with the EV models compared with their fossil fuel counterparts.

While average U.S. electricity prices have [not been immune to inflation](#), they remain cheaper and less volatile than gasoline, which just saw its [biggest price increases](#) in a year. As such, EV drivers in all states, regardless of the vehicle they drive, can expect cost savings on a per trip and annual basis, compared to a gas vehicle.

METHODOLOGY

We calculate the cost to fill-up an EV versus a gas vehicle across different vehicle models across three vehicle classes: sedans, SUVs, and trucks. All vehicle selections are 2023 base models. For each EV, we calculate the average number of kilowatt-hours required for a full charge, based on the battery size. For all gasoline vehicles, we use the assumptions from the U.S. Environmental Protection Agency's [fueleconomy.gov](#). We assume that [80 percent of charging is done at home](#) and use 2022 residential electricity rates provided by [the U.S. Energy Information Administration](#). We assume the remaining 20 percent is done with public charging, and the electricity rates applied are based on [Electrify America's](#) published rates by state. We use [July 2023 gas prices from AAA](#) and assume average miles traveled by a driver per year to be 14,263, based on 2019 [Federal Highway Administration data](#). The calculations do not incorporate any assumptions for total cost of ownership (TCO), EV tax credits, registration fees, or operation and maintenance expenses. We also do not assume any EV-related rate designs, EV charging discounts or free charging, or electric time-of-use pricing.

POLICY INSIGHTS AND RECOMMENDATIONS

- EV cost savings are a compelling reason to purchase or lease an EV over a gas vehicle, so state utility regulators and electric utilities should be mindful of how changes to rate design may impact EV drivers and all electric ratepayers.
- As EV adoption rates and the volume and duration of EV charging increases, regulators and utilities should investigate and adopt rate design measures, such as [time-varying rates \(TVRs\)](#) and [managed charging](#) with smart charging infrastructure, that can help manage EV charging load. These tools can avoid straining the grid and exacerbating peak demand – which may make electricity generation and delivery more costly for ratepayers. They are also effective at motivating customers to shift their energy usage to off-peak, while supporting a more reliable and resilient grid.
- Public charging is critical to ensure equitable access to EV charging, especially for those unable to charge at home. States and the private sector should take advantage of federal funds to deploy strategic public charging infrastructure, while also ensuring equitable and affordable charging rates.
- States should explore the role of utilities in providing public charging in lower-income and underserved communities, while still enabling market participation from third-party public EV charging providers.