



It is cheaper to drive a mile on electricity than it is to drive a mile on gasoline. Though your electricity costs will go up if you're charging your electric vehicle (EV) at home, your gas costs will decrease more. We've done some math to demonstrate cost savings and found that **the average New England driver saves 3.6 cents per mile** by choosing to buy an all-electric car instead of a gas-powered car. That translates to **\$428 per year** or \$36 per month. But the more you drive, the more you'll save.

EVs are particularly advantageous for the budget-conscious because the price of gasoline is volatile and electricity prices remain relatively stable. During the economic slowdown starting in March, gas prices fell to under \$2 per gallon in New England. **Our estimates show that even with record-low gas prices, EVs still deliver on cost savings of 2¢/mile.** With a generally fixed rate for electricity, EV drivers can plan on sticking to their budget for fuel for long-term, reliable savings.

Considered another way, a gas-powered car would have to get more than 40 miles per gallon in order to beat the cost savings of an electric vehicle... but the gas-powered car would still emit twice as much carbon dioxide and be vulnerable to fluctuating gas prices in the future.

Electric cars save 3.6¢/mile (or 2¢/mile during a pandemic)

How much does it cost to drive a mile on electricity?

The average new all-electric car available through the Drive Green program requires about [0.29 kilowatt-hours \(kWh\) per mile driven](#). In Massachusetts and Rhode Island, one kWh costs about \$0.20 (including generation, transmission, and distribution).

$$\frac{0.29 \text{ kWh}}{\text{mile}} \times \frac{\$0.20}{\text{kWh}} = \$0.058/\text{mile} = \text{cost to drive one mile on electricity}$$

Because electricity prices are regulated and stable, Covid-19 caused no fluctuation in fuel costs for EV drivers.

How much does it cost to drive a mile on gasoline?

The average fuel efficiency for new vehicles sold in the United States is [25.1 miles per gallon](#). The average retail gasoline price for all fuel grades in New England in the last year as of 7/15/2020 was [\\$2.35 per gallon](#).

$$\frac{1 \text{ gallon}}{25.1 \text{ miles}} \times \frac{\$2.35}{\text{gallon}} = \$0.094/\text{mile} = \text{cost to drive one mile on gas}$$

What about the impact of Covid-19?

In late March, gas prices declined due to a global oversupply of oil, caused by the economic shutdowns and stay-at-home orders. The average gas price since mid-April was \$1.96 per gallon.

$$\frac{1 \text{ gallon}}{25.1 \text{ miles}} \times \frac{\$1.96}{\text{gallon}} = \frac{\$0.078}{\text{mile}} = \text{cost to drive one mile on gas during a pandemic}$$

How much do I save by switching from a gasoline-powered car to an all-electric car?

It costs 9.4¢/mile to drive a gas-powered car and 5.8¢/mile to drive an all-electric car, so switching to an all-electric car saves the average Massachusetts or Rhode Island driver 4.7¢/mile, *not* including savings from maintenance (which can be as much as [3 ¢/mile](#))

Even when gas prices dropped to unprecedented lows and electricity prices were stagnant, **EV drivers were still saving 2 cents per mile compared to other drivers.** It's worth noting that most drivers could not take advantage of low gas prices anyway because they weren't driving very much; vehicle miles travelled in Massachusetts decreased by 83% by mid-April.

Saving \$428/year or \$36/month

The average licensed driver drives 11,759 miles per year in Massachusetts and 12,781 miles per year in Rhode Island, according to the [Federal Highway Administration](#). We will use the weighted average of these numbers based on each state's population in 2018 for our analysis.

$$11,759 \text{ MA miles} \times \frac{6.89 \text{ million}}{7.92 \text{ million}} + 12,781 \text{ RI miles} \times \frac{1.06 \text{ million}}{7.92 \text{ million}} = 11,896 \text{ miles driven annually}$$

Since switching from a gas-powered car to an all-electric car saves the average Massachusetts or Rhode Island consumer 3.6¢/mile, those savings amount to **\$428.26/year** or **\$35.69/month**.

Of course, drivers in New England are not driving nearly as much in 2020 as they were in 2019 (which is part of the reason why gas prices are so low.) But this estimate still gives you a good idea of how much you can expect to save, even if gas prices stay low in the next year.

How many miles per gallon would a new gas-powered car have to get to be cheaper per mile than the average new electric car?

Assuming a gas price of [\\$2.35/gallon](#), a car would need to get over 40 miles per gallon to be cheaper to fuel than an all-electric car.

$$\frac{\$2.35}{\text{gallon}} \times \frac{1 \text{ mile}}{\$0.058} = 40.5 \frac{\text{miles}}{\text{gallon}}$$

(Cost of a gallon of gas / cost of a mile on electricity = MPG required for a gas-powered car to be more cost-effective than an EV)

The pandemic has showed that owning a gas-powered car makes it difficult to predict fuel expenses. Because oil is a global commodity, gas prices can just easily skyrocket in response to high demand in the same way that they dropped in response to low demand during stay-at-home orders. You won't have any surprises with the costs to own an electric car.

Note: The Union of Concerned Scientists' national cost savings estimate, published in 2017, is \$770/year. Our estimate for New England is lower than the national average because of the region's relatively high cost of electricity, low cost of gasoline, and fewer miles driven in New England compared to other regions. [You can access their numbers here.](#)