

Comparing Electric and Gas Vehicles: Cost to Fill Up and Drive

Your charging station needs to make charging an electric vehicle less expensive than refueling a gas vehicle. This worksheet will help you calculate those costs based on how much fuel (electricity or gas) a car can store and how many miles it can travel on a full battery (or tank).

Key Terms

- Capacity: how much fuel (electricity or gas) the car can hold
- Kilowatt hours (kWh): a unit of electricity, like gallons of gas
- Efficiency: a ratio that tells you how much fuel, such as gas or electricity, a car uses to travel some number of miles

Example car: Standard Range Tesla Model 3

- Battery Capacity: 50 kWh
- Efficiency: 26 kWh per 100 miles

Step 1: How much does it cost to fill up the battery?

Electric companies charge you for each kWh that you use. In 2019, the cost of electricity in North Carolina was \$0.1165 per kWh. (April, 2019 - <https://www.chooseenergy.com/electricity-rates-by-state/>).

If 1 kWh costs \$0.1165, how much will 50 kWh cost?

Complete the ratio box to find out:

	Electricity (kWh)	Cost (\$)
Cost of 1 kWh	1	0.1165
Cost of 50 kWh	50	___?___

Step 2: How far can you drive on a full battery (or tank)?

Car companies list the fuel efficiency of their cars. The Tesla Model 3 can travel 100 miles on 26 kWh. If a full battery holds 50 kWh, how far can the car travel on a full battery?

Complete the ratio box to find out.

	Distance (miles)	Fuel (kWh)
Efficiency	100	26
Distance on Full Charge	___?___	50

Step 3: How much does it cost to drive a Standard Model of the Tesla Model 3, per mile?

In step 1, we found how much it costs to fully charge a Tesla Model 3 in North Carolina.

In step 2, we found how far a fully charged Tesla Model 3 can drive.

Now, in step 3, use the ratio box below to find how much it costs to drive the Tesla Model 3 per mile.

	Cost (\$)	Distance (miles)
Fully Charged	_____	_____
Per Mile	_____	_____

Now try this for another car.

How much does it cost, per mile, to drive a Nissan Leaf in North Carolina? Use the same steps to figure it out.

Important Information:

- Battery Capacity: 40 kWh
- Fuel Efficiency: 30 kWh per 100 miles
- Cost of Electricity in NC: \$0.1165