



Solar Powered Electric Vehicles

CONSUMER GUIDE

There may not be a better pairing than home solar panels and electric cars.

EVs and solar technology represent a major shift away from traditional energy and car options. Together, they are sparking a revolution in self-reliance, while helping to lead to a cleaner future for all. Below is a helpful guide from SolarReviews on the environmental and monetary benefits of home solar to charge your electric vehicle.

📈 Interest in solar powered EVs is on the rise.

Web analytics for SolarReviews.com's article [Cost to Charge a Tesla](#), originally published in 2018, shows there has been a 1,000% increase in solar estimate requests from the article this year compared to last. This signals that people interested in EVs are increasingly interested in solar charging.

1,000% ↑
in solar estimates

💰 Electric vehicles cost less to run and cause much less pollution versus gas vehicles.

According to the US Department of Transportation, the average American drives about 13,500 miles per year, or about 40 miles per day. If each of those miles is driven with a gas-powered car, it would cost \$.10 cents per mile to maintain versus \$.6 cents per mile for maintenance on an all-battery EV. **Over their lifetime, EVs cost 40% less to maintain than gas-powered cars.**

Vehicle Type	Gas-Powered Hyundai Kona	Kona EV
Miles Annually	450 gallons of gas needed for 13,500 miles (based on 30 mpg fuel economy)	3,780 kWh of electricity for 13,500 miles driven
Cost	\$1,350* per year nationally	\$662 per year in California (\$450 per year in a cheap electricity state like Florida)

Sources: Average Price (EIA): https://www.eia.gov/electricity/sales_revenue_price/; Average Annual Miles (U.S. Department of Transportation): <https://www.fhwa.dot.gov/ohim/oh00/bar8.htm>; Gas Prices (AAA): <https://gasprices.aaa.com/>

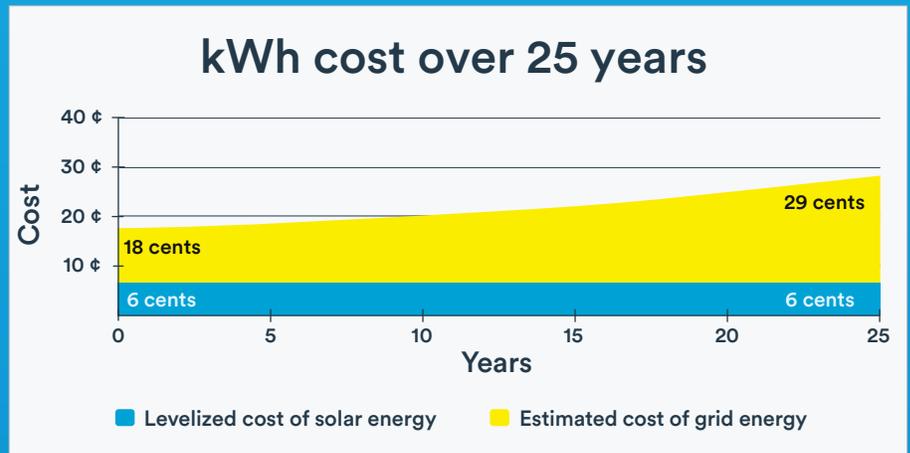
*Gas prices are highly variable and rates in early 2022 indicate significantly higher costs

By choosing home solar, you can make an EV more efficient and less expensive.

Charging your EV with solar panels is the most affordable method to power your car. In nearly every state in the U.S., the long-term cost of solar panels is less than buying electricity from the grid. In some cases, the cost of producing your own solar energy is more than 50% less than buying grid power.

The ongoing cost of fuel from the grid is whatever you currently pay for a kilowatt-hour (kWh). In the U.S., that can be between about \$.10 and \$.40 depending on where you live, but the average is about \$.13/kWh, and rising. Meanwhile, the levelized cost of home solar in good solar states is currently about \$.06/kWh.

You can install enough solar panels to meet your home's energy needs and charge your car, all while saving thousands of dollars over time. Solar panels come with warranties to produce electricity for at least 25 years.



Source: Home solar LCOE (SolarReviews): <https://tinyurl.com/2ve8fwwx>

Solar powered EVs are better for the environment.

Solar will allow you to further cut carbon emissions. Switching to an EV already means you're cutting emissions by eliminating the need for gasoline and oil, **but electricity from the grid still comes primarily from natural gas and coal.**

At the same time, the levelized cost of solar energy is cheaper than grid power in most cases. The cost of grid power goes up over time, while solar panels keep producing electricity without additional cost and with a much lower carbon footprint.

Sources:

Gas prices (AAA): <https://tinyurl.com/mwvw2a76>.

CO2 per gallon of gas (U.S. EIA): <https://tinyurl.com/3xu3a4es>.

CA Energy prices (U.S. EIA): <https://tinyurl.com/228t8asj>.

CO2 per kWh in CA (U.S. EIA): <https://tinyurl.com/4eap97cx>.

Embedded CO2 of lithium batteries (CES, T&E): <https://tinyurl.com/kkeryj2u>.

Home solar LCOE (SolarReviews): <https://tinyurl.com/2ve8fwwx>.

CO2 per kWh of solar (NREL): <https://tinyurl.com/vne7du2a>

Fuel for one year (14,000 mi):



Gasoline - 450 gallons

\$1,350

8,820 lbs CO²



Public EV charger - 3,780 kWh

\$1,058

1,531 lbs CO²



Grid power - 3,780 kWh

\$662

1,531 lbs CO²



Home solar - 3,780 kWh

\$227

368 lbs CO²



Solar powered charging is cheaper and more consistent than other charging sources.

There are three ways to charge an EV: the grid, public charging stations, or your own solar panels. Everyone ends up using public charging at some point, which is why it's important to maximize your savings by charging at home as much as possible - **and choose solar as the cheapest option.**

Type of charging	Cost	Notes
Public charging stations	\$.28 to \$.69 per kWh	Varies based on location and charging station owner; additional idle fees; some require monthly subscription; cost increases over time
Grid power at home	\$.10 to \$.40 per kWh	Varies based on location and time; cheapest at night; cost increases over time
Solar power at home	\$.06 per kWh	Levelized over the course of the solar panels' lifetime; additional solar energy can be used to offset electricity bill

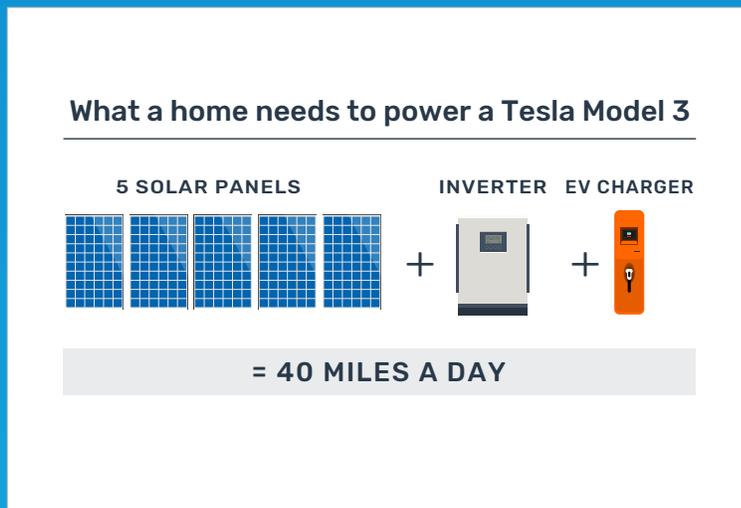


So, how much solar do you need to power your EV?

Of course, you can't just stick solar panels on your roof and plug them into your car. You need a solar panel system and all the equipment that goes with it. A typical solar EV charging setup will include: solar panels on your roof, a central string inverter that combines DC output of the solar panels to AC, and a level 2 (L2) EV charger.

Just a handful of solar panels on your roof is enough to provide energy to charge your first EV. For example, buying all the equipment necessary to charge a Model 3 with home solar might cost around \$6,500 (around \$5,250 for five, 350-watt panels and \$1,200 for an EV charger). But, simply adding 5 panels to an already-planned home solar installation to meet EV charging needs would certainly cost less.

SolarReviews estimates that charging an EV with solar for 25 years could result in \$16,250+ in savings by the end of the solar panels' production warranty.



The future is electric vehicles – and using solar will make your EV investment more affordable and sustainable.

Electric vehicles and home solar panels are the perfect fit. Solar panels can fuel your electric vehicle needs affordably and sustainably, for life.

Learn more at [SolarReviews.com](https://www.solarreviews.com), where you'll find qualified, local solar installers who can help you increase cost savings and lower your carbon footprint with solar power.