



## How long does it take to charge an electric car?

Charging times vary by car and charging station.

Electric vehicle charging times depend on a couple factors:

1. Which EV is being charged? Electric vehicles have various sizes of battery pack sizes; the battery pack size (measured in kWh) determines the amount of energy stored in the vehicle.
2. The power going into the EV: EVs have various power acceptance rates and electric vehicle charging stations have various max power delivery ratings. If the charging station offers less power than the vehicle's maximum acceptance rate, the charging station is the limiting factor in charge time. If the vehicle's acceptance rate is lower than the charging station's maximum output rate, the vehicle is the limiting factor.

To determine the total charge time, divide the EV's battery pack size by whichever number is lower: the EV's acceptance rate (in kW), or the EV charging station's output rate (in kW).

## How much does it cost to charge an electric car?

Calculating the cost to charge your electric car is easy:

1. Find your most recent utility bill to obtain your cost per kWh. The average rate in the U.S. is \$0.1269 per kWh (December 2019).
2. Find your electric vehicle battery capacity (use the EVSE selector tool on [www.clippercreek.com](http://www.clippercreek.com) mentioned below if you don't know it).
3. Multiply the electrical rate from #1 with your battery capacity from #2. This will be an estimate of the cost to fully charge your electric vehicle if it's completely empty.

ClipperCreek suggests contacting your utility provider to be sure you are on the best plan for an EV owner; many utility companies have special rates for EV charging.

## Which home charging station is best for your electric vehicle?


We've created a simple [tool](#) to help you choose the ideal station for every electric vehicle. Choose a vehicle and it will calculate the time and cost to charge for our top three recommended charging stations. *See the example of a Hyundai Kona below.*

Hyundai

Kona

Select the make and model of your vehicle and we'll provide you with the best charging station options to fit your needs.


### Hyundai Kona




Type of Electric Vehicle:	BEV
Acceptance Rate (kW):	7.2
Battery Size (kWh):	64
Electric Range (mi):	258
Vehicle Efficiency (mi/kwh):	4.03
Quick Charge Port?	CCS (SAE Combo)
Timer Function Built In?	YES

**Suggested Charging Stations (EVSE) for Hyundai Kona:**


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**Ideal**  
**HCS-40**  
Output Power (kW): **7.7**  
Charging time\* (from empty): **9h**  
Price starting at: **\$565.00**  
Miles of range per hour of charging\*\*: **29.00**  
Cost to charge\*\*\* (from empty): **\$8.12**



**Lower Cost Alternative**  
**AmazingE FAST (Residential Grade)**  
Output Power (kW): **7.7**  
Charging time\* (from empty): **9h**  
Price starting at: **\$469.00**  
Miles of range per hour of charging\*\*: **29.00**  
Cost to charge\*\*\* (from empty): **\$8.12**



**Future-proofing**  
**HCS-50**  
Output Power (kW): **9.6**  
Charging time\* (from empty): **9h**  
Price starting at: **\$635.00**  
Miles of range per hour of charging\*\*: **29.00**  
Cost to charge\*\*\* (from empty): **\$8.12**

# Charging Station Safety

## What You Need to Know Before You Buy

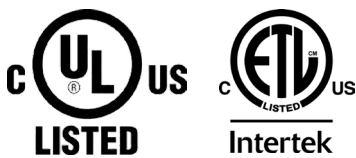
**A**fter deciding to buy a plug-in electric vehicle, often the next decision is to purchase a Level 2 charging station for faster charging at home. The technical name as defined in the National Electric Code for these products is EVSE (Electric Vehicle Supply Equipment), commonly called charging stations.

Safety might not be the first consideration when selecting a charging station, but safety is actually the most important thing to consider. The primary function of a plug-in vehicle charging station is to provide electrical safety for the operator and electrical infrastructure throughout the charging process and specifically to address the risks of fire and electric shock.

The good news is charging an electric vehicle is actually very safe and easy when done with proper, independently safety-certified equipment. The challenge is that not all charging stations on the market are independently safety tested and certified.

When a charging station manufacturer develops a new product, or makes even a minor change to an existing product, they should send samples to a Nationally Recognized Testing Laboratory (NRTL), such as Intertek (ETL mark) or Underwriter's Laboratory (UL mark). Safety engineers at these labs perform months of extensive safety testing that the products must pass before they can be safety certified and made available to the public for sale. Only products with these marks appearing on the manufactured product's rating plate are safety certified.

Look for these (ETL or UL) certification marks on the station itself when shopping for a charging station:



Do a quick experiment in your own home: look around at the electrical appliances purchased from a reputable source and you will see they are all marked with a safety label. If you find a product that plugs into the wall that is not marked, you might want to consider not using it.



Certifications must be on the product itself, not just in paperwork or online descriptions.

### Be Cautious of These Things:

**Deceptive Markings** - Some manufacturers use official-looking marks such as the CE logo. If you only see a CE mark then the product has not been independently certified. CE is a self-certifying mark and it should not be trusted in the US, Canada, and Mexico. A CE mark in addition to the UL or ETL mark is acceptable.



Do **NOT** use a product that **only** has a CE mark.

### Uncertified Products are being sold by what seems like a reputable seller

- Buying the product from what seems to be a reputable seller doesn't mean the charging station has been safety certified. Most large home improvement retailer stores like Lowes and Home Depot have standards in place that require NRTL certification for electrical appliances. However, there are online retailers, such as Amazon, direct sellers, and sources from outside the United States that DO carry and sell unlisted products.

**Deceptive Claims** - When selecting a charging station, if you are unsure about the NRTL certification status of a product, reach out to the product supplier and ask them to provide confirmation that the product you are interested in is NRTL (UL or ETL) certified.

**Non-Grounded Plugs** - If you are purchasing a plug-in charging station, NEVER buy a station with a NEMA 10-30 or 10-50 plug. The NEMA 10-30 and NEMA 10-50 style outlets do not have an earth ground connection. There is NO possibility that a charging station delivered with one of these plugs is properly NRTL safety certified. One of the key safety functions of a charging station is providing an earth ground connection to the vehicle. This assures the vehicle body is safely grounded during charging.

Learn more about Charging Station Safety at [clippercreek.com/safety](http://clippercreek.com/safety).



The AmazingE FAST is an example of an affordable, safety certified (ETL-Listed) charging station. See more at [amazing-e.com](http://amazing-e.com)