

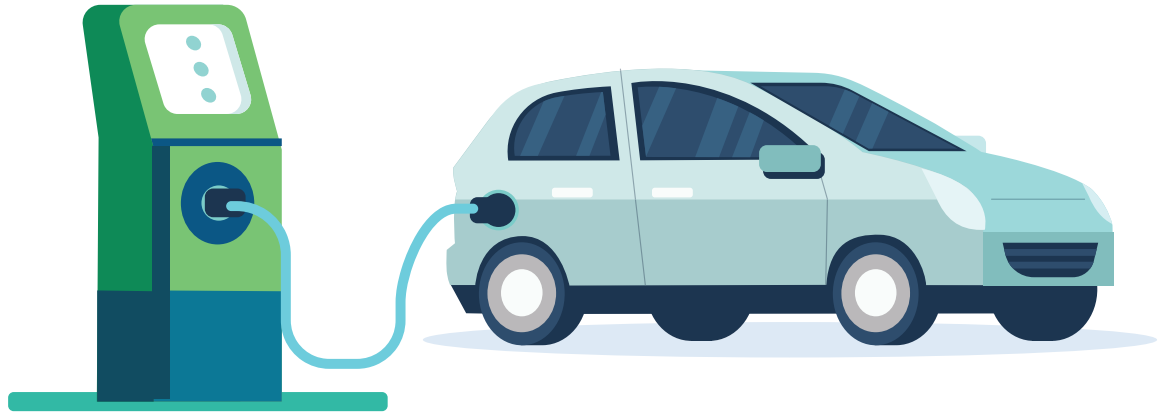
chargekentucky



## Your Electric Vehicle Charging Book

Provided by your trusted energy source, your Touchstone Energy Cooperative

Kentucky's Touchstone Energy<sup>®</sup> Cooperatives 



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# Getting Started

Are you ready for a change that starts with a charge? Like many people, you may have questions about charging an electric vehicle. We get it. Change can be scary, but it's also exciting.

You already know the advantages of EV ownership: lower fuel and maintenance costs, environmental benefits and increased driving ranges. Plus, there's the bragging rights of being an early adaptor.

In this playbook, we'll take a look at the ins and outs of EV charging. Before long, you'll be the expert in your community.



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LEAD THE CHARGE  
BE THE CHANGE

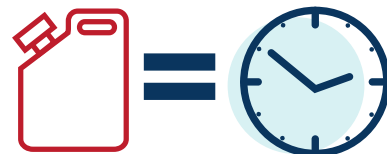
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## Charging at Home

Charging at home is one of the biggest advantages of owning an EV. Studies show that 80% of charging occurs at home among EV owners. Think about how far you drive on a daily basis to work, school, kids' sporting events and errands. You'll most likely have plenty of charge leftover, but you'll want to "top it off" when you get home to ensure you have full charge when you're ready to hit the road in the morning.

Plus, think of all the time you'll save. The average person spends 15-35 minutes a month at gas stations. What will you do with that extra free time?

Another benefit is saving money. When comparing gasoline prices to electricity prices, it's clear that EVs are a winner. On average, a typical gas-fueled vehicle costs \$900 a year to fuel. An average EV costs only \$464 a year to charge. Here in Kentucky, where electric rates are some of the lowest in the nation, EV owners can take advantage of around 10 cents per kilowatt hour. That means you can drive a mile for about three cents.



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# Let's get Technical

First things first. What type of charger do you need at home? (By the way, did you know they aren't actually chargers? A charger is part of the EV, but most people refer to them as chargers. They are technically electric vehicle supply equipment or EVSE. Impress your friends with that term.)

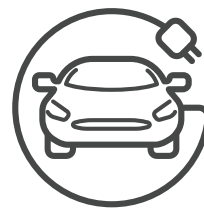
Let's take a look at the different levels.



Charger or EVSE	Miles of Charge Per Hour	Voltage Requirements
Level 1	3 to 4	120-volt (standard plug)
Level 2	10-20	240-volt
Level 3	About 30 minutes to 80% charged	480-volt

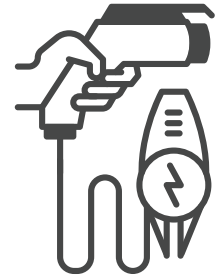
## Level 1

Level 1 equipment may meet your needs if you don't drive many miles each day. It's an economical option because you can use the charging cord included with your car. However, it takes the longest amount of time to charge. If you wanted to add 40 miles of range on a typical EV with this charger, it would take about 10 hours.



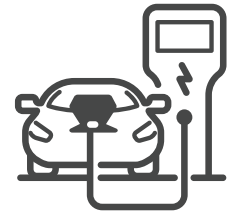
## Level 2

Level 2 equipment is faster. It does require a device purchase and installation of a 240-volt plug. Prices can range around \$500 to almost \$2,000 (and those numbers are changing rapidly) depending upon the features you want or need. With a Level 2 you can charge 30 miles in about 90 minutes. So, if time is of the essence for you, this may be an economical option. Most EV owners go this route.



## Level 3

Level 3 chargers are typically in public areas because they need larger lines to provide electricity than what normally goes to people's homes. We'll talk more about those on page six.



Once you decide on which equipment is best for you, it's time for you to think about location.



Is it your garage? For most people, the answer is yes. The site you select will need a 240-volt plug available (or you can have an electrician install it).

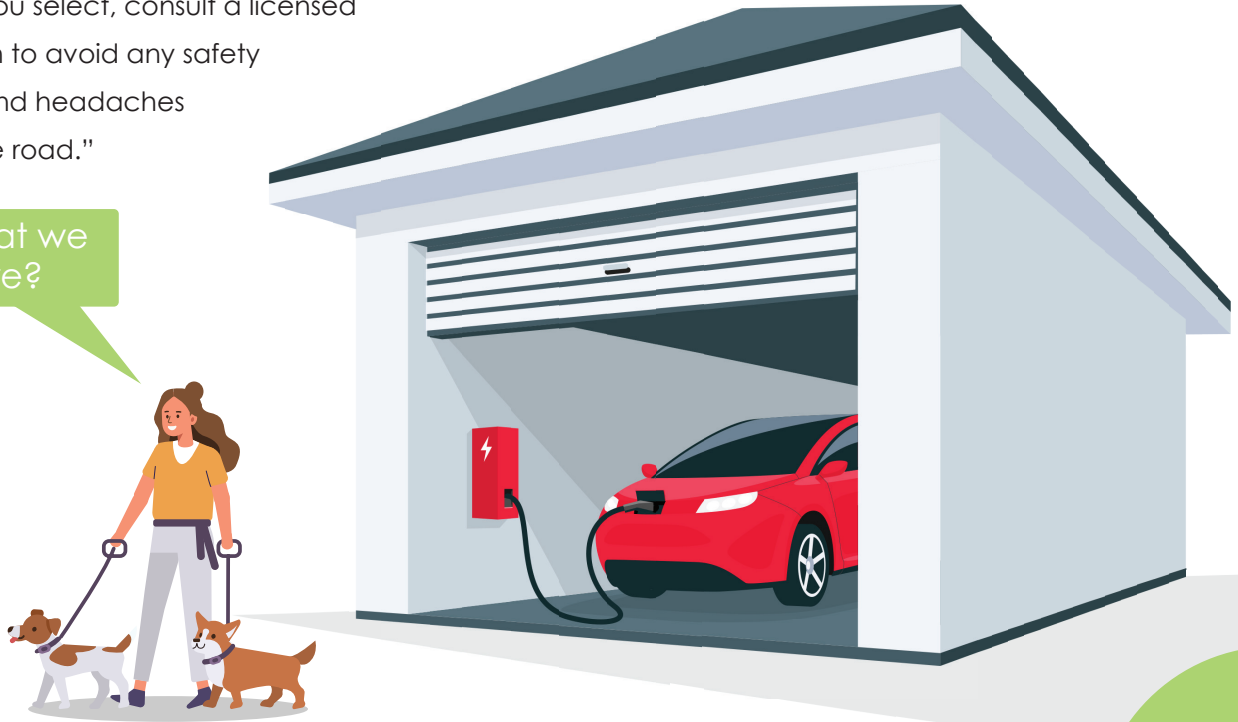
If you choose to charge outdoors, you'll need a specifically-designed charger for outdoor use.

Next, length matters. Measure the distance between where you will park your vehicle from the site of the charger to ensure the proper reach.

Lastly, do you want a hard-wired or plug-in version? If you want to take the charger with you on trips, opt for a plug-in version. It will still require a 240-volt outlet.

A piece of advice: whichever type of charger you select, consult a licensed electrician to avoid any safety hazards and headaches "down the road."

See what we did there?



# Charging in Public


Range anxiety – it's real. It's been noted as one of the top reasons people do not purchase an EV. But, we've got a feeling you've done your research. You probably recall reading earlier in this playbook that 80% of charging is done at home. So, with a little planning for road trips – you got this.

Let's take a look at the number of charging stations available to help ease your anxiety. And remember, the number of chargers is growing at a fast pace.


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## CHARGING STATIONS

number of public & workplace

430  47,117

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2008  2018

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Source: Bloomberg New Energy Finance

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## Get to know the chargers – they are your friend

According to the US Department of Energy, Level 1 charging speed is at two to five miles of range per hour. Obviously, not the best option if you are in a hurry. Or you can charge overnight at many hotels – rest for you and the family during a trip can be a good thing. All EVs are compatible with these chargers.

Level 2 charging speed is at 10 to 20 miles of range per hour. Find one of these at a shopping complex or movie theater and enjoy the family time together. All EVs are compatible with these chargers, and Teslas require an adapter.

DC Level 3 charging is at 60 to 80 miles of range per 20 minutes. Wow. Now, that's where you can really get a move on. EVs manufactured by Chevrolet, BMW, Kia, Nissan, Mitsubishi and Toyota are compatible with these type of chargers. Tesla uses its own connector for these stations.



## Apps, Apps and More Apps

Where do you find chargers? They aren't as elusive as you may think. And, of course, there's an app for that. With more than 18,000 public chargers in the U.S., you'll be able to map out a plan in no time.

Which apps are best for locating chargers? That's a matter of personal preference. Let's take a look.



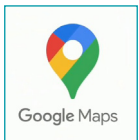
**PlugShare** is one of the most popular apps, as it not only shows chargers around the world, it also allows users to "check-in." That will tell you if the charger is currently occupied. Plus, you can rate and review the charger just like you do with restaurants on Yelp. It allows you to filter your search by charger type and has a trip planner tool. Learn more at [www.plugshare.com](http://www.plugshare.com).



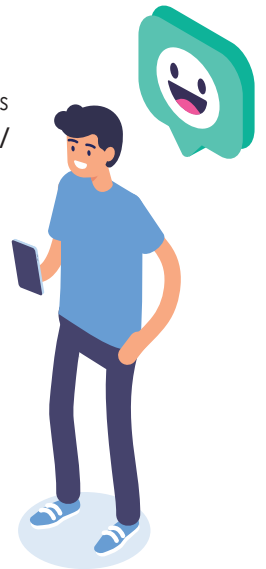
**ChargeHub** is basically the same as PlugShare, but it gives you the option to pay for charging using the app. It also offers discounts on EV products, savings calculators and lots of EV content. Find out more at [www.chargehub.com/en/](http://www.chargehub.com/en/)



**Tesla's app** is very advanced. It will show you Superchargers on your route. Other features include luxury components like summoning the car to you, climate control before getting into the car, remote lock, charging progress and more. There's a reason Tesla is the leader in EVs and their app is no exception. Learn more at [www.tesla.com](http://www.tesla.com).



You probably already have **Google Maps** on your smart phone. But, did you know it will also show EV charging stations? You just need to search for them and viola. Find out more at [www.google.com/maps](http://www.google.com/maps).



What about the costs and payment? With so many new and upcoming charging networks out there, it's best to research which works well for you. As mentioned, some allow you to pay from the app. Some chargers are offered for free as a benefit to customers (such as hotels or supermarkets).

## Rules of the Charge

Public charging etiquette: don't be "that guy." You know – the one who just wants to "top off" his energy tank even though he doesn't need it. Here are a few simple rules to follow to be an EV charging role model. Follow these tips and no need to worry about charging karma.

- 1)** Move along! Once you've achieved the amount of charge needed, unplug it so that the next driver can use it. Imagine the frustration of when people "reserve" beach chairs for hours and hours without using them – same concept.
- 2)** Check in on the app to indicate that charger is in use. This will help your fellow drivers know to move along to the next available charger.
- 3)** Only charge when you really need the miles. Again, no one wants to spoil the fun of owning an EV for a fellow driver.



# Questions

- 1) What are the typical battery warranties?
  - a. Automaker warranties vary significantly, but typically cover eight years or 100,000 miles.
  
- 2) Will my electric bills increase if I charge at home?
  - a. Short answer - yes, and your gasoline bill will go away. Typically, an EV saves about 50% on annual costs to fuel compared with a gas-powered car. Assuming two vehicles are about the same size and driven the same miles, the EV would be about \$100 less per month to fuel. So, you're saving money in a different way.
  
- 3) Can I use renewable energy to charge my EV?
  - a. If you're a member of a participating Cooperative Solar co-op, the answer is yes. You may license the number of panel(s) needed to offset your EV charging needs. Find out more at **[www.cooperativesolar.com](http://www.cooperativesolar.com)**. Members may also purchase renewable energy through our envirowatts (at participating co-ops). Visit **[www.envirowattsky.com](http://www.envirowattsky.com)**.
  
- 4) I need help deciding which EV is best for my family. Where can I find unbiased help?
  - a. You can visit [www.togetherwesaveky.com](http://www.togetherwesaveky.com) and use the EV calculator. It compares all makes and models to help you make the right decision. The site is brought to you by your local Touchstone Energy Cooperative and doesn't have a motive to sell you a certain car. It's just there to provide the facts – only the facts.
  
- 5) What does the future of EV charging look like?
  - a. Ah, that's the big question. Forecasts show that number of EV purchases continue to rise. That indicates the number of public chargers will grow as well. But, remember, most charging is completed at home while you enjoying your family time (or sleeping).

Find out more on EVs and get the latest news at [www.togetherwesaveky.com](http://www.togetherwesaveky.com).

We're here to help as your trusted source of all energy-related services.

## Thanks for reading!



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