Charger of electric car

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If you"re considering buying your first electric car, you"ll need to ask yourself some questions before you write that check. One of the most important is figuring out how you"re going to charge your car. You need to know what kind of chargers there are, and which of those kinds of charging are best for you. Luckily, we"re here to help.

EV charging can be broken down into three types: Level 1, Level 2 and Level 3. Each charging level has its benefits and drawbacks, but essentially all road-legal electric vehicles (aka not golf carts or scooters) in use today can use all three types to varying degrees. This is in part because of the standardization of hardware (with Tesla being the notable exception, though this is changing) in the form of the J1772 plug for L1 and L2 charging, and the Combined Charging System or CCS plug for L3.

Tesla uses the same plug for L2 and L3 and that"s known as the J3200 or North American Charging Standard (NACS). In a move towards true standardization, now other vehicle manufacturers like Ford, Rivian, Volvo/Polestar and Nissan (among others) are beginning to adopt NACS which gives them access to Tesla"s massive network of public charging stations.

Seeing designations like J1772 or J3200 may seem confusing at first, or at the very least hard to remember, but these designations come from the Society of Automotive Engineers (SAE) and they"re super important - not because you need to remember them - but because these standards make it easier to own and use an EV without the need for adapters or many different kinds of charger. Older standards like CHAdeMO are being phased out in the US, though you might still run into them in older EVs like first-generation Nissan Leafs.

Level 1: L1 chargers run off of 120-volt house circuits, and many electric vehicles come with an L1 charger in the trunk, though some, like Volkswagen"s ID.4, don"t. The problem with L1 is that modern EVs have such large-capacity batteries that in some cases it can take multiple days to charge a car from zero percent to 80 percent.

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If you"re the kind of EV driver who does less than 50 miles a day, you might be able to make L1 charging work for you for running errands within a short distance, but too much more than that and you"ll quickly start looking into an L2 system. According to the US Department of Energy, less than one percent of public chargers are L1.

Another benefit of L2 charging is cost. As an example, in California (which has some of the highest energy costs in the US), it would cost you approximately $12.80 to charge an EV with a 40-kilowatt-hour battery at home, assuming an average per-kilowatt energy cost of $0.32. If you used a public L3 charger, that cost would rise to $20 assuming a not-uncommon $0.50-per-kilowatt charge. Some public chargers also charge by time. On vehicles with considerably larger batteries, like the Lucid Air Pure with its 88 kWh battery pack, these prices escalate quickly.

Level 3: L3, also known as DC fast charging, gets the most press because the figures are the most impressive - "10 percent to 80 percent in 20 minutes," - but these aren"t meant to be used on a daily basis and typically have higher charging costs per kilowatt than other kinds of charging. This is the kind of charger you"d use on a long road trip and they"re the kind of charger you most frequently find along interstates, but for most EV buyers, the bulk of your charging will be done on either L1 or L2 chargers.

L3 chargers are also much more variable in their charge rates. Many chargers advertise 150 kW or even 350 kW fast charge rates but it"s not always common to see these kinds of speeds in practice. This discrepancy is down to a few factors, some on either side of the plug. On the charger side, you could see lower charge rates if grid use is high or if there are a lot of other people fast charging near you.

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