

Q&A

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The State of Tesla Electric Vehicles

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Q. Jay: What do you know about the high charge density, faster charging, less fire-prone, may be polymeric smaller size battery development?

A. With the boom in EVs, there is a lot more effort going into advancing the development of Li-Ion batteries. However, the technology was stagnant for years as few devices required many cells until EVs required 1000's of cells per vehicle.

A. In recent years the battery OEMs have moved the needle forward at the request of their customers. Tesla is working on their own battery technology to improve their cells which other manufactures could use in their vehicles. Last year Tesla hosted Battery Day that went into detail on the plans to improve the batteries that will be used in Tesla vehicles in the future. Here is a link to those presentations:

<https://www.tesla.com/2020shareholdermeeting>

Q. Jason: Opinion of ioniic and ev6 from Hyundai families

A. This is a new family of vehicles. The details at this point are limited, but if they can meet the advertised specs, they should be fine vehicles. We will need to wait until the first vehicles are released in 2022 for specifics.

COMMENT: Alan: And the charge you get from a shopping center charger is only about 5 miles an hour, isn't it? Only the supercharger is 1/2 hour.

A. It depends on the charging station. For most level 2 chargers, this provides charging at 220v/30A. In a Tesla vehicle, this provides about 28 miles per hour charge. These chargers are typically at a shopping center or location with high traffic. Somewhere that the owner wants you to spend a few hours in their establishment. At this time, you should receive a sufficient charge to be on your way.

Q. Edward: Resale value compared to conventional cars.

A. Tesla vehicles have the highest resale value of any vehicle. However, after three years, you typically lose about 10% of the value of a Tesla vehicle. As always, your mileage may vary, but check out kbb.com for the latest values.

Q. Jay: I just saw on the internet that it took 1 hour and 48 minutes to fully charge using a supercharger.

A. Maybe if the car was completely drained to zero and you wanted to go to 100%, it was a slow charger with people using all of the other chargers. This is an absolute worst-case scenario and would be a very rare instance.

I would like to know all of the circumstances on why it took so long to charge.

Q. Chris: How might computer hacks at Tesla (or other manufacturers) affect the operation of electric/self-driving vehicles?

A. Tesla has a standing 'bounty'; basically, if you can show a repeatable hack into the car, it's yours. This has been in place for the past five years, and no one has been able to override the security features. To my knowledge, this is the same for all of the other manufacturers to this point.

Ken: Can you say anything about utility and home batteries to store solar, etc.?

A. Tesla has energy products. They also have battery packs for the home. The most popular option is the Solar Roof option, details can be found here: <https://www.tesla.com/solarroof>

This provides solar from your roof to the battery packs and out to the electrical grid. In addition, Tesla has a product called Auto-bidder which will sell the captured solar energy to the grid at the highest price. This can significantly offset the cost of the system.

Q. Marshall: How much does the range of EV's fall off during cold weather?

A. As with any vehicle, cold weather can have an impact on the efficiency of the vehicle. With an EV, it can affect the range of 20-30%. Many factors need to be taken into account, but specifically, how cold it is. Down to about freezing, not much impact, 20-30F, but a 10% reduction in range, 20-0F about 20%. This is about the same for ICE vehicles also.

Q. Chris: What is the name of the company that supplies most of the charging stations?

A. Tesla builds their own charging stations. Some other popular manufactures are Schneider Electric, Siemens, and ABB, to name a few.

Q. Ann: Does using air conditioning take away from those miles before charging?

A. As with any vehicle, the air conditioner will affect your range. With Tesla is has a 3-5% impact, depending on the environment.

Q. Marshall: Do EV batteries have a rated limit on the number of charge/discharge cycles, or is it strictly a total mileage estimate?

A. They do have a cycle life. Recent batteries have a cycle life of 2500-3000 cycles. This is one of the improvements that manufactures are working on. Longer battery life and more cycle life will provide for longer life of the vehicle.

Q. Bob: What is the normal maintenance cycle. Like gas models change oil and check brakes, etc.

A. With an EV, very few items require maintenance compared to an ICE vehicle. For example, I replaced the tires and the windshield wipers on my Tesla Model 3, which I have had since June 2018. I have had Tesla examine the car about three months ago, and nothing needs to be done after 50k+ miles. They thought I would be fine for at least another 50k miles.

Q. Jeff: What type of maintenance is required for an EV? What is the period for required maintenance?

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Q. Marshall: How does the weight of an EEV compare to an equivalently sized conventional powered vehicle?

A. It does weigh more. This is mainly due to the battery pack. I don't have specifics on exactly how much more.

Q. Alan: To be sure I don't run out of power, would I be wise to get every adapter I can think of so I can use every other power provider?

A. Tesla includes several adapters with the mobile charger bundle. This includes the J1722 adaptor, the NEMA 5-15 adaptor, and several voltage converters. However, the one you will use the most is the J1722 adaptor, the standard level-2 charger type.

Q. Jay: Which Tesla model compares to Camry in size?

A. The Model 3 is closest. But still a bit bigger than a Camry.

Q. Peter: Are all plugs for the EV manufacturers standardized? For example, can a Chevy EV use a Tesla charging station?

A. Tesla has their own proprietary connection. When Tesla began, there was no other vehicle on the market for high-speed charging. So Tesla offered their solution to the industry. Unfortunately, other OEMs chose to go a different route. Recently Tesla has made offers to the auto industry to open their chargers to other manufacturers, but the other manufacturers will need to make the adaptors that will work between Tesla and their vehicles.

Q. Peter: Is there any news about the Chevy Bolt and Chevy's recent suggestion to charge their cars away from their homes?

A. GM has a significant issue with the Bolt. Recently they issued a recall of ALL Bolts manufacturers. This has been expanded from the 2017-2019 vehicles.

IMO this issue is due to a lack of vertical integration. LG makes the batteries, the supporting components are made by a variety of other companies, the software is developed by out-sourced companies, and all of this is then finally assembled by GM. Many issues can break in this chain.

Q. Peter: Can we have an estimate for how much a full charge would cost if charging from/at home?

A. This is going to vary, depending on how much you pay per kWh at your home. Some power companies offer off-peak, which you could take advantage of if you charge at night, for example. But as a rule of thumb, it will cost you from low to full charge, about \$5-\$6.