Level Up: Electric Vehicle Owners with Permanently Installed Level 2 Chargers Reap Benefits from Their Investment, J.D. Power Finds

Tesla Receives Inaugural Home Charging Experience Award

TROY, Mich.: 3 Feb. 2021 — Home charging is a significant part of the electric vehicle (EV)1 ownership experience, with 88% of owners who say they charge their vehicle at home “often” or “always.” Overall home charging satisfaction is highest among EV owners who install a Level 2 permanently mounted charging station, with a score of 749 (on a 1,000-point scale), according to the inaugural J.D. Power U.S. Electric Vehicle Experience (EVX) Home Charging Study,SM released today.

The study measures EV owners’ satisfaction within three charging segments:2 Level 1 portable; Level 2 portable; and Level 2 permanently mounted (permanent) charging stations. Satisfaction is measured across eight factors: fairness of retail price; cord length; size of charger; ease of winding/storing cable; cost of charging; charging speed; ease of use; and reliability, providing a comprehensive assessment of the owner experience and charger performance.

Satisfaction is highest among EV owners who use a permanent Level 2 charger (749) than among owners who use a portable Level 2 charger (741). Satisfaction is notably lower among EV owners who use a much slower Level 1 charger, just 574.

“Permanently mounted chargers are a significant expense, so owners of such chargers need to determine if it’s the right investment for them based on their usage and vehicle,” said Brent Gruber, senior director of global automotive at J.D. Power. “Many such owners need to upgrade their service panel to accommodate their EV’s amperage, and installation may require extra permits. The cost experience is so different for these owners because many spend thousands of dollars to have a charger permanently installed. The upside for those who have done so is higher satisfaction.”

Following are key findings of the 2021 study:

• **Owners of Level 1 chargers dramatically less satisfied with speed:** Satisfaction with charging speed is 352 points lower among owners of Level 1 portable chargers than among owners of Level 2 permanently mounted chargers. This is exacerbated by owners of Level 1 portable chargers citing charging speed as being almost twice as important as it is to owners of Level 2 permanent chargers. Despite knowing that their charging speed will be very slow, owners of Level 1 chargers are still very dissatisfied. In addition to considerably lower satisfaction for charging speed, scores for Level 1 chargers are lowest in six of the seven remaining home charging experience factors.

• **Northeast EV owners most critical of charging costs:** While cost of charging has the least variation between the three segments—they are only separated by 73 points—regional differences in satisfaction scores are more pronounced. A gap of 167 points exists between the New England region (609) and the West South Central region (776), most likely due to high electricity costs.

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1 Electric vehicles (EV) include battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV) and hybrid electric vehicles (HEV).

2 J.D. Power defines charger segments as Level 1 portable; Level 2 portable; or Level 2 permanently mounted (permanent). Level 1 portable charging stations offer simple electric vehicle charging capabilities at home through a standard 120-volt electrical outlet. Level 2 portable charging stations offer faster charging capabilities at home through an upgraded 240-volt electrical outlet. Level 2 permanently mounted charging stations use an upgraded 240-volt electrical outlet via a permanently wall-mounted format.
• **Tesla provides best overall home charging experience:** More than half (54%) of respondents own a Level 2 permanent charger, with Tesla ranking highest in this segment in six of the eight factors measured in the study. Notable, too, is that satisfaction scores for reliability are 54 points higher among owners of Tesla Level 2 permanent chargers and 52 points higher for cord length. The Tesla Level 2 permanent charger also performs well in ease of use; size of charger; charging speed; and ease of winding/storing cable.

• **Problems affect overall satisfaction with Level 2 permanent chargers:** The most-often-cited problems with Level 2 permanent chargers are charger stopped working/needs repair (29%) and Wi-Fi issues (22%). While only 9% of problems with Level 2 permanent chargers are related to slower-than-normal charging speed, when this problem is experienced, it has the largest overall negative effect: satisfaction declines 126 points.

• **Cost-saving utility programs are underused:** Satisfaction with the cost of charging increases if EV owners use multiple utility offerings and/or programs such as lower rates during certain hours; EV-only electrical rate plans; itemized costs for home EV charging usage; and incentives for Level 2 permanent charger installation. Satisfaction improves 76 points when four or more programs are utilized instead of just one. However, only one in five owners (21%) say their utility provider utilizes multiple savings options. “Communication between utility companies and automakers is important to help alleviate frustration for EV owners,” Gruber said. “If utility companies have these cost-savings options available, but automakers aren't helping to promote them, it's a disservice to all involved parties.”

**Study Ranking**

The study examines the home-charging experience of EV owners across all three charger segments, but only Level 2 permanent charging stations are award eligible.

**Tesla** ranks highest among Level 2 permanent charging stations with a score of 798. The segment average is 749.

The U.S. Electric Vehicle Experience (EVX) Home Charging Study is driven by a collaboration with PlugShare, the leading EV driver app maker and research firm. This study sets the standard for benchmarking satisfaction with the critical attributes that affect the total or overall EV ownership experience for both BEV and PHEV vehicles. Survey respondents for the inaugural study included 9,127 owners of 2015-2021 model year BEVs and PHEVs. The study was fielded in October-November 2020.


See the online press release at [http://www.jdpower.com/pr-id/2021007](http://www.jdpower.com/pr-id/2021007).

Based in El Segundo, Calif., **PlugShare** maintains the most comprehensive census of EV infrastructure in the world. They make the PlugShare app for iOS, Android and the Web, the most popular EV driver app globally, in use by most drivers in North America and over one million EV drivers worldwide. PlugShare also provides sophisticated data tools, reports, custom consulting and comprehensive research on EVs for automakers, utilities, charging networks, government and the rest of the EV industry. It operates the world’s largest EV driver survey research panel, PlugInsights, now with over 63,000 members.
**J.D. Power** is a global leader in consumer insights, advisory services and data and analytics. A pioneer in the use of big data, artificial intelligence (AI) and algorithmic modeling capabilities to understand consumer behavior, J.D. Power has been delivering incisive industry intelligence on customer interactions with brands and products for more than 50 years. The world's leading businesses across major industries rely on J.D. Power to guide their customer-facing strategies.

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NOTE: One chart follows.
J.D. Power
2021 U.S. Electric Vehicle Experience (EVX) Home Charging Study℠

Overall Customer Satisfaction Index Ranking
(Based on a 1,000-point scale)

Level 2 Permanently Mounted Charging Station

<table>
<thead>
<tr>
<th>Company</th>
<th>Score</th>
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<tbody>
<tr>
<td>Tesla</td>
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<tr>
<td>Segment Average</td>
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<td>ClipperCreek</td>
<td>745</td>
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<td>ChargePoint</td>
<td>730</td>
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Source: J.D. Power 2021 U.S. Electric Vehicle Experience (EVX) Home Charging Study℠

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