



NTEP and CTEP testing services

Instilling confidence in EVSE for the North American market

As the electric vehicle (EV) industry grows, the global EV charging infrastructure is expected to grow at a compound annual rate of 22.7% from 2025 to 2033, reaching \$199.79 billion (USD) in revenue by 2033.¹ But the adoption of EVs will not truly succeed without customer and stakeholder trust in EV charger operation, payment calculation and fraud prevention.

Verifying functionality and accuracy for point-of-use EV charging and payment collection

The National Type Evaluation Program (NTEP) evaluates the accuracy of weighing and measuring devices intended for the United States (U.S.) marketplace. Based on the performance, accuracy, and testing provisions in Section 3.2 of the National Institute of Technology's Handbook 44, NTEP provides pricing transparency by requiring EV chargers to display the real-time unit cost of electrical energy to customers during charging. A resulting Conformity Certificate issued by the National Conference on Weights and Measures (NCWM) enables a device to be used commercially across the U.S. and its territories. UL Solutions offers the NTEP testing and evaluation services needed to certify electric vehicle supply equipment (EVSE) products.

¹ EV Charging Infrastructure Market Size, Share by Companies & Trends by 2033. Straits Research. <https://straitresearch.com/report/ev-charging-infrastructure-market>. Accessed Jan. 2, 2025.

What types of EVSE require NTEP testing?

NTEP requirements apply to all EV chargers that collect payments based on the amount of electricity dispensed. In the U.S., it is adopted state by state, including its associated engineering provisions.

Applications include:

1. Public EV chargers used by consumers at shopping malls, convenience stores and highway stations.
2. Public EV chargers used by fleets of commercial vehicles such as trucks, vans, and light-duty vehicles.
3. Third-party charging services, including those used under contracts for providing electricity dispensed on "pay as you go" basis.

NTEP does not apply to EV chargers that do not base payment on the amount of electricity dispensed, such as free public or workplace charging, owned charging infrastructure or flat-rate charging services.



Where is NTEP compliance required?

In the U.S., NTEP compliance requirements are adopted on a state-by-state basis. NTEP is required in Washington (as of Jan. 1, 2024), and in Oklahoma (as of Jan. 31, 2024). California has codified its own requirements based on the NTEP. California administers these regulations through its California Type Evaluation Program (CTEP), which became effective for alternating current (AC) chargers on Jan. 1, 2021, and for direct current (DC) chargers on Jan. 1, 2023.

On Jan. 1, 2025, NTEP was adopted by Alabama, Arkansas, Connecticut, Delaware and Nevada. Some states, such as Arizona, Indiana, Iowa, and Oregon, may adopt NTEP by vote, possibly delaying adoption. Other states, such as Texas, Florida, Minnesota, and New York, will promulgate their own rules, which could result in state-based adjustments to NTEP requirements.

How is NTEP and CTEP compliance evaluated?

Most states rely on third-party laboratories to perform tests and evaluate compliance with NTEP requirements. The resulting data is presented to the NCWM, which then issues a Certificate of Conformance when compliance is demonstrated. The California Department of Food and Agriculture (CDFA) maintains its own CTEP testing laboratory in California.

NTEP and CTEP testing can be performed at a manufacturer's facility if its testing equipment meets NCWM or CDFA requirements. The UL Solutions testing laboratory in Fremont, California (U.S.), can perform NTEP and CTEP testing for AC and DC chargers. Tests can be performed with an on-site witness provided by an NCWM official or, in California, by a CDFA county official.





What are the steps to NTEP compliance?

- A manufacturer applies to NCWM.
- When an EV charger has been already certified by a NRTL to safety standards and has an existing CTEP Certificate of Approval, the NTEP program does not require additional tests. In all other instances, an authorized laboratory must perform required testing and an NCWM professional must witness and evaluate the following attributes as stated in HB 44 – Section 3.40:
 - Identification and marking
 - Payment operation
 - Display visualization
 - No-load testing of “zeroing” function between charging operations
 - System starting load test
 - Accuracy tests
 - Permanence tests
 - Sealing method
- The NCWM issues a Certificate of Conformance when compliance is demonstrated.

UL Solutions testing laboratory in Fremont, California can support in demonstrating NTEP and CTEP compliance.

What are the steps to CTEP compliance?

- To enter this program, an EV charger must already be certified by a NRTL to one of the following standards:
 - UL 2594, the Standard for Electric Vehicle Supply Equipment, for AC chargers
 - UL 2202, the Standard for DC Charging Equipment for Electric Vehicles, for DC chargers
 - UL 9741, the Standard for Electric Vehicle Power Export Equipment (EVPE), for DC bidirectional chargers
- The manufacturer applies to the CDFA.
- Tests are performed at an ISO/IEC 17025–certified lab while being witnessed on site by a CDFA county officer. The tests are based on the provisions of Examination Procedure Outline – EPO 52:
 - Identification and marking
 - Payment operation
 - Display visualization
 - No-load testing or “zeroing” function between charging operations
 - System starting load test
 - Accuracy tests
 - Permanence tests
 - Sealing method
- The testing laboratory issues an EV charger data report.
- A Certificate of Approval is issued by the CDFA.



Choose UL Solutions for NTEP or CTEP compliance testing services

As a global safety science company and a leader in EVSE testing and certification, UL Solutions supports our customers in the EV sector through our regulatory knowledge and regional laboratories. By leveraging our best-in-class EVSE testing expertise, our customers gain increased confidence that their product can meet requirements for acceptance in the U.S. commercial market. Here's why:

- With highly equipped laboratories and more than 500 renewable energy certification and regulatory experts throughout 40+ countries, we help EV manufacturers gain certification and entry into the global EVSE market.
- Our technical expertise and market knowledge help build in compliance and safety at the beginning of the design process, reducing disruption that wastes time and money.
- UL Solutions' scientists, engineers, problem solvers and innovators can handle complex, high-risk products.
- With decades of experience in renewable energy and laboratories located in key regions, we can help manufacturers access global markets and increase speed to market while protecting EVSE brand reputation.

- UL Solutions has evaluated more than 185 models of EVSE against UL 2594, UL 2202 and UL 9741 safety standards.
- UL Solutions is a leader in certifying EVSE for the North American market.

UL Solutions can provide the complete range of services needed to evaluate NTEP or CTEP compliance. In addition, UL Solutions can:

- Combine testing and certification services for other UL and IEC safety standards.
- Assess bidirectional charger performance in accordance with local utility requirements.
- Evaluate energy efficiency for programs such as ENERGY STAR®.
- Evaluate charger connectors to UL 2251 (the Standard for Plugs, Receptacles, and Couplers for Electric Vehicles) and IEC 62196.

For more information, visit ul.com/evcharging



Enabling EVSE market access

Through our deep technical expertise, extensive market knowledge and laboratories around the world, we help customers gain entry into the EVSE market quickly.