National Conference on Weights and Measures

National Type Evaluation Program

Electric Vehicle Fueling Systems

Checklists • Test Procedures

NCWM

Publication 14

© 20XX

National Type Evaluation Program
Electric Vehicle Fueling Systems – Checklists and Test Procedures

1. Indicating and Recording Elements

Code Reference: G-S.5.1. and G-UR.1.1. General and EVSE S.1.2.

Indicating elements must be appropriately designed and adequate in amount. Specifically, a device must have sufficient display capacity to indicate the quantities and total prices, if it applies in the normal encountered specific application. Electronic devices shall either have sufficient display capacity to indicate the normal quantities and money values or automatically stop the delivery before exceeding the display capacity of either the quantity or total price.

1.1. An electronic digital indicating element shall either:

1.1.1. Have adequate display capacity for the application [(1)]. **OR** ☐ Yes ☐ No ☐ N/A

automatically stop the delivery before exceeding the maximum quantity or maximum total price that can be indicated. ☐ Yes ☐ No ☐ N/A

1.1.2. Displays for a minimum of 15 seconds after activation by the user. ☐ Yes ☐ No ☐ N/A

1.1.3. All indications and representations of energy sold are clearly identified. ☐ Yes ☐ No ☐ N/A

1.1.4. All indications and representations of time-based charges are clearly identified. ☐ Yes ☐ No ☐ N/A

[(1)] Adequate is defined as able to register at least 12 hours of charging at maximum deliverable power or 999.999 KWh whichever is less.

Code Reference: G-S.5.2.2. Digital Indication and Representation; G-S.5.5. Agreement Between Indications and EVSE S.2.4.4.

Basic operating requirements for devices are that:

- All digital values of like value in a system shall agree.
- A digital value shall agree with its analog representation to the nearest minimum graduation.
- Digital values shall round off to the nearest digital division that can be indicated or recorded.
- When a digital zero display is provided, the zero indication shall consist of at least one digit to the left and all digits to the right of the decimal point.

Tests for agreement of digital values shall be performed in the post pay, prepay money, and pre-set volume modes. Agreement should be checked at several unit prices including the maximum unit price and with the EVSE operating at its maximum energy level.

1.2. All quantity, unit price, and total price indications within a measuring system shall agree for each transaction. This test is performed during the tests under load -see section 4. ☐ Yes ☐ No ☐ N/A

1.3. All total sale money value indications in a computing system are primary indications and must agree prior to the application of any post-delivery discount. ☐ Yes ☐ No ☐ N/A

1.4. The following applies when a quantity value indicated or recorded by an auxiliary element such as a point of sale, ticket printer, or remote customer display, is a derived or computed value based on data received from a retail EVSE. ☐ Yes ☐ No ☐ N/A

1.4.1. All indicated or recorded total money values for an individual sale shall agree. **AND** ☐ Yes ☐ No ☐ N/A

1.4.2. The indicated or recorded quantity, unit price, and total sales price values shall be in mathematical agreement to the closest cent (e.g., within each element, the values indicated or recorded must meet the formula [quantity x unit price = total sales price] to the closest cent.) ☐ Yes ☐ No ☐ N/A

Examples: $1.5549 rounds to $1.55

$1.5551 rounds to $1.56

$1.5550 rounds to either $1.55 or $1.56

1.5. All recorded transaction representations (receipt displays or prints) must comply with G.S.5.5. Money Values, Mathematical Agreement to the nearest cent (unit price x volume = total sale ± 0.5 cent.) ☐ Yes ☐ No ☐ N/A

Code Reference: G-S.5.5. Digital Money Values, Mathematical Agreement

Any recorded money value and any digital money value indication on a primary indicator must agree mathematically with its associated energy representation or indication to the nearest one cent.

Formula: Unit Price x Indicated Energy = Total Sale

1.6. Check mathematical agreement of all primary indications (e.g., EVSE, point of sale, printer) under the following conditions:

1.6.1. At the two charging levels in section 4.2.1 (0ver 85% and under 10%) rates, including maximum and minimum ☐ Yes ☐ No ☐ N/A

1.6.2. Turning on and off the charging several times during delivery. Check mathematical agreement each time the charging is halted. ☐ Yes ☐ No ☐ N/A

1.6.3. Repeat 1.6.1 and 1.6..2 at several unit prices ☐ Yes ☐ No ☐ N/A

Code Reference: G-S.5.1. Indicating and Recording Elements/General

Selectable Unit Price Capability S.2.4.3

Selectable unit price capability is a design feature that permits the customer to select the unit price for a particular transaction at the time of sale. A ~~dispenser~~ EVSE may then allow the unit price for a delivery to be selected from two or more unit prices through the deliberate action of the purchaser using: 1) controls on the device; 2) personal or vehicle mounted electronic equipment communicating with the system; or 3) verbal instructions.

If the customer selects the unit price at the ~~dispenser~~ EVSE (e.g., cash or credit price), the selection may be made at any time prior to the start of ~~product flow~~ the charging. The ~~dispenser~~ EVSE coupler may be engaged when the selection is made. A system shall not permit a change to the unit price during delivery of product.

After a transaction is completed, the unit price displayed at the ~~dispenser~~ EVSE may be changed to a base unit price. However, the quantity and total price must be displayed on the face of the EVSE for at least 5 minutes or until the next transaction is initiated. Any display of quantity, unit price, and total price that does not mathematically agree occurs between transactions. This is permitted (in response to demands of device users) because the displayed values between "transactions" are not "significant" relative to the actual delivery process (transaction.)

The displayed unit price may revert to the base unit price immediately after the completion of a transaction, defined as the time the delivery has been terminated and payment has been settled. The payment may be automatic if the delivery is to a pre-paid amount. If the sale is prepaid, the delivery is considered terminated after the "handle" is in the off position or after the plug has been returned to the designed hanging position. This will allow the customer adequate time to observe that the prepaid amount has been reached. If the delivery stops short or overruns a prepaid amount, settling the payment means that money is either refunded or collected from the customer and the transaction is "cashed out" by the point of sale operator.

In the case of invoice billing systems, such as card-lock or key-lock systems which compute the total sale price, it is considered not appropriate for the displayed unit price to revert to the base unit price immediately following a transaction. Because a receipt for the transaction may not be available, the customer must be allowed an adequate period of time following the delivery to record the transaction information. The transaction unit price must be displayed for at least 30 seconds, and the total price and the quantity must be displayed for at least 5 minutes following the completion of the delivery or the start of the next transaction. The delivery is considered complete after the "handle" is off or the plug has been returned to its designed hanging position.

1.7. An EVSE may be equipped with means for selecting more than one unit price, provided that the selected unit price cannot be changed after the initial flow begins. ☐ Yes ☐ No ☐ N/A

1.8. The selected unit price must be made clearly evident on the EVSE. ☐ Yes ☐ No ☐ N/A

Once selected the unit price cannot be changed at the point of sales prior to or during the delivery except when the change is triggered by a notified Time Of Use (TOU) modification. In case TOU unit price modifications are allowed, the following customer options shall be offered before a charging session could be started: ☐ Yes ☐ No ☐ N/A

1.8.1. Customer accepts TOU based rate increases ☐ Yes ☐ No ☐ N/A

Verify that when a session is active if a TOU rate increase occurs the charge session continues.

1.8.2. Customer elects to terminate charge session when a TOU rate increase occurs ☐ Yes ☐ No ☐ N/A

Verify that when a session is active if a TOU rate increase occurs the charge session terminates.

1.8.3. Customer does not accept any TOU option ☐ Yes ☐ No ☐ N/A

Verify that the system properly resets to an pre-transaction state and that no billing to the customer occurs

1.9. The selected unit price displayed at the EVSE prior to the delivery of product must be continuously displayed at the conclusion of the delivery by moving the operating mechanism to the "off" position, until the start of the next transaction by: ☐ Yes ☐ No ☐ N/A

1.9.1. Movement of the operating mechanism to the "on" position. OR ☐ Yes ☐ No ☐ N/A

1.9.2. "Authorization/Approval" by the point of sale operator, whichever occurs first. ☐ Yes ☐ No ☐ N/A

1.10. When a delivery is completed, the total price and quantity for that transaction shall be displayed on the face of the EVSE for at least 5 minutes or until the next transaction is initiated by using controls on the device or other user-activated (e.g., customer-activated) controls. ☐ Yes ☐ No ☐ N/A

In a system where a base unit price is automatically displayed on the EVSE after the completion of a transaction (e.g., product is dispensed and payment is settled), the EVSE may display the values for quantity, unit price, and total price that do not result in a mathematically correct equation. That is provided when the total price value displayed is divided by the quantity value displayed, the result is a unit price that is "posted" for a particular kind of transaction. ☐ Yes ☐ No ☐ N/A

Code Reference: S..2.5.1 Money-Value Divisions, Digital

1.11. A computing type device with digital indications shall comply with the requirements of paragraph G-S.5.5. Money Values, Mathematical Agreement, and the total price computation shall be based on quantities not exceeding 0.5 MJ or 0.1kWh ☐ Yes ☐ No ☐ N/A

Code Reference: S.1.3.1 Primary Units

1.12. The units of measured energy are kWh. Or MJ ☐ Yes ☐ No ☐ N/A

Code Reference: S.1.3.2 Value of Smallest Unit

1.13. The value of the quantity division is 0.005MJ or 0.001 kWh ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.7 . Indication of Delivery

1.14. Retail devices shall automatically show their initial zero condition and amount delivered up to the nominal capacity of the device. ☐ Yes ☐ No ☐ N/A

☐ Yes ☐ No ☐ N/A

Code Reference: S.2.3. Provisions for Power Loss

Even if power fails during a delivery, it is still necessary to correctly complete all transactions in progress at the time of the power failure. Quantity and total sales price information shall be recallable for at least 15 minutes after the power failure. The information may be recalled at the EVSE or at the point of sale if the point of sale indications are accessible to the customer. Transaction information, such as energy and money value totals, shall be retained in memory during a power failure. The transaction information is not required to be recallable during the power failure, but shall be recallable after power is restored. Test to determine if the indications are accurate when the delivery is continued after a power failure.

Note: For remote controllers (e.g., cash register, console, etc.) which have the capability to retain information pertaining to a transaction (e.g., stacked completed sales.) If the information cannot be recalled at the EVSE following a power outage, means (e.g., uninterruptible power supply or other means) must be provided to enable the transaction information to be recalled and verified for at least 15 minutes following a power outage.

1.15. The quantity and total sales price shall be recallable for 15 minutes after the power failure. ☐ Yes ☐ No ☐ N/A

1.16. The quantity and total sales price values shall be correct if the power fails between deliveries. ☐ Yes ☐ No ☐ N/A

1.17. The quantity and total sales price values shall be correct if the delivery is continued after a power failure. ☐ Yes ☐ No ☐ N/A

1.18. The transaction information shall be retained in memory during a power failure. ☐ Yes ☐ No ☐ N/A

1.19. Remote controllers which stack completed sales must have a means to enable the transaction information to be recalled and verified for at least 15 minutes. ☐ Yes ☐ No ☐ N/A

1.20. For EVSEs in parking areas where vehicles are commonly left for extended periods, the information needed to complete any transaction in progress at the time of the power loss is determinable through one of the above means for at least eight hours. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.1 Return to Zero

The primary indicating and recording elements of a retail device shall return to zero indication prior to the start of a new transaction. The primary indicating and recording elements shall not go beyond their correct zero position. Primary indicating elements shall not be resettable to zero during delivery.

1.21. Does the device have a primary recording element? ☐ Yes ☐ No ☐ N/A

1.22. The indicating and recording elements of an EVSE shall readily be returnable to a definite zero indication. ☐ Yes ☐ No ☐ N/A

1.23. Primary indicating and recording elements shall not go beyond their correct zero position. ☐ Yes ☐ No ☐ N/A

1.24. Primary indicating elements shall not be resettable to zero during charging. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.4.1. Display of Unit Price

A computing or money-operated device shall have a means on the face of the device for displaying the unit price at which it is set to compute or dispense. If energy is offered for sale at more than one unit price from a device, then all of the unit prices at which that product is offered for sale shall be displayed or shall be capable of being displayed on the EVSE using controls available to the customer prior to the delivery of the product. The unit price shall be expressed as a decimal value in dollars.

1.25. Means shall be provided to display the unit price on the face of the device. ☐ Yes ☐ No ☐ N/A

1.25.1. Shall be displayed prior to the delivery of the product. OR ☐ Yes ☐ No ☐ N/A

1.25.2. Shall be capable of being displayed on the EVSE through the deliberate action of the purchaser using: 1) controls on the device; 2) personal or vehicle mounted electronic equipment communicating with the system; or 3) verbal instructions. ☐ Yes ☐ No ☐ N/A

The unit prices for each service and price level may be:

a. Displayed simultaneously for all products.
b. Displayed simultaneously for each product separately.; or
c. Displayed individually in a unit-price display only if controls permit the customer to sequence the display through the unit prices for each and every product.

1.26. The unit price shall be expressed in dollars and decimals of dollars using a dollar sign. ☐ Yes ☐ No ☐ N/A

Code Reference: EVSE S.2.4.2. Equipment Capacity and Type of Voltage

1.27. The EVSE conspicuously indicates the type of energy being transferred. ☐ Yes ☐ No ☐ N/A

1.28. The EVSE conspicuously indicates the maximum rate of transfer. ☐ Yes ☐ No ☐ N/A

Code Reference: S. 2.4.3. Selection of Unit Price

1.29. Prior to delivery using controls on the device. OR ☐ Yes ☐ No ☐ N/A

1.30. Through deliberate action of the purchaser using: 1) controls on the device; 2) personal or vehicle mounted electronic equipment communicating with the system; or 3) verbal instructions ☐ Yes ☐ No ☐ N/A

Code References: EVSE S.2.6. Recorded Representations; and S.1.6.8. Recorded Representations for Transaction Where a Post-Delivery Discount(s) is Provided.

For transactions conducted with point-of-sale systems or devices activated by credit cards, debit cards, electronic payment (ApplePay) or other electronic payment method recorded representation containing information about the transaction shall be available to the customer as outlined in the following items. Printable receipt must always be available to the customer upon request ~~and printing of the receipt may be initiated at the option of the customer.~~ See also NCWM Publication 14, Code Reference: G-S.5.6. Recorded Representations.

Device capabilities: ☐ Printable Receipt ☐ Electronic Receipt

1.31. The system must provide a receipt to be made available to the customer at the completion of the transaction through either:

1.31.1. a built-in recording element OR ☐ Yes ☐ No ☐ N/A

a separate recording element that is part of the system OR ☐ Yes ☐ No ☐ N/A

an electronic device (phone, computer, etc.) accessible by the system ☐ Yes ☐ No ☐ N/A

1.31.2. The total quantity of energy delivered with the unit of measure. ☐ Yes ☐ No ☐ N/A

1.31.3. The unit price applied at each phase; ☐ Yes ☐ No ☐ N/A

1.31.4. The total purchase price for the quantity of energy delivered during each phase ☐ Yes ☐ No ☐ N/A

1.31.5. The unique EVSE identification number. ☐ Yes ☐ No ☐ N/A

1.31.6. Start and Stop Time of each phase during which one of the multiple unit prices was applied ☐ Yes ☐ No ☐ N/A

1.31.7. Maximum rate of energy transfer and type of current ☐ Yes ☐ No ☐ N/A
☐ Yes ☐ No ☐ N/A

1.31.8. The final total price of the complete transaction. Grand Total ☐ Yes ☐ No ☐ N/A
☐ Yes ☐ No ☐ N/A

1.31.9. Business name and address.

1.31.10. Additional information needed if there are separate charges. Time Based:

1.31.11. The time and date when the service begins and the time and date when the service ends; or the total time interval purchased, and the time and date that the service either begins or ends; total quantity, unit price, and total computed price that were displayed on the EVSE at the end of the delivery prior to any post-delivery discount(s); ☐ Yes ☐ No ☐ N/A

1.31.12. The unit price of the time based service ☐ Yes ☐ No ☐ N/A

1.31.13. The total purchase price for the quantity of time measured for the complete transaction. ☐ Yes ☐ No ☐ N/A

2. Computing

A retail computing device shall be capable of computing total sale prices for all unit prices and for all deliveries within the range of measurement or computing capacity. The maximum quantity-value divisions for digital devices are prescribed.

Code Reference: S. 2.5. Money-Value Computations

2.1. A retail computing device shall compute total sale prices for all quantities and unit prices within the range of its quantity and computing capacities. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.5.1 Digital Money-Value Divisions

2.2. Total price indications shall agree to the nearest cent. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.5.2 Money-Value Divisions, Auxiliary Indications

2.3. Money value divisions on devices such as remote point of sales and auxiliary indicating elements are the same as on the EVSE. ☐ Yes ☐ No ☐ N/A

3. Measuring Elements

Code Reference: S.3.3 Provision for Sealing

Measuring elements shall be designed with adequate provisions to prevent changes from being made to the measuring element or the flow rate control (if the flow rate control affects the accuracy of deliveries) without evidence of the change being made. These provisions can be an approved means of security (e.g., data change audit trail) or physically applying a security seal which must be broken before adjustments can be made. When applicable, the adjusting mechanism shall be readily accessible for the purposes of affixing a security seal.

3.1. A measuring element shall have provisions for either:

3.1.1. Applying a physical security seal. OR ☐ Yes ☐ No ☐ N/A

3.1.2. An approved means of security (e.g., data change audit trail) so that no changes may be made to its adjustable components. ☐ Yes ☐ No ☐ N/A

3.2. Any adjustable element controlling the delivery rate shall provide for sealing or other approved means of security (e.g., data audit trail) if the flow rate affects the accuracy of deliveries. ☐ Yes ☐ No ☐ N/A

3.3. When applicable, the adjusting mechanism shall be readily accessible for the purposes of affixing a security seal. ☐ Yes ☐ No ☐ N/A

3.4. Audit trails shall use the format set forth in the General Code Criteria section of this checklist (Code Reference G-S.8) and in Appendix A, Philosophy for Sealing, and Appendix B, Requirements for Metrological Audit Trails. ☐ Yes ☐ No ☐ N/A

3.5. EVSEs with remote configuration capabilities shall be sealed according to Appendix A, Philosophy for Sealing, and Appendix B, Requirements for Metrological Audit Trails (Table S.2.2.) and under the " General Code Criteria" section of this checklist ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.2 Zero-Set-Back Interlock

The zero-set-back interlock on a EVSE is critical to prevent fraudulent practices. An EVSE shall have an effective automatic interlock such that once the EVSE shuts off, it cannot be restarted without resetting the indicating

element to zero. This requirement also applies to the recording element if one is present. The EVSE shall be designed so that the session initiation/termination mechanism must be in the shut-off position and the interlock activated before the discharge plug can be returned to its designed resting holder. If a single EVSE supplies more than one EV, then each EVSE shall have an automatic means that prevents energy from being delivered until its indications have been set to zero.

3.6. After the device is turned off by the session initiation/termination mechanism, a subsequent delivery shall be prevented until the indicators (and recording element if present) have returned to their correct zero positions. ☐ Yes ☐ No ☐ N/A

3.7. The session initiation/termination mechanism shall be in shut off position and zero-set-back interlock activated before the vehicle connector can be returned to its designed resting holder. That is any position where the tip of the plug is placed in its designed resting holder and the lock can be activated. ☐ Yes ☐ No ☐ N/A

3.8. The interlock shall be effective under all conditions when any control on the point of sale, except a system emergency shut-off, is operating and after any momentary power failure. The interlock shall not operate for EVSE-EV systems that allow unattended resumption of the charge after a power failure. ☐ Yes ☐ No ☐ N/A

3.9. All conditions activating the session termination detection mechanism shall be evaluated in all possible combinations

Diversion of Measured Electricity

Code Reference: EVSE S.4.1.

This paragraph does not apply to devices that comply with Paragraph S.3.2.

To prevent fraudulent practices, no means for which any measured energy can be diverted from the measuring meter.

3.10. EVSE automatically terminates the transaction in the event of an unauthorized disconnection. ☐ Yes ☐ No ☐ N/A

3.11. Effective means to prevent the reversal of energy ☐ Yes ☐ No ☐ N/A

4. Test of the EVSE System (Hb44 N and T Sections)

4.1.General

4.1.1. Voltage. All tests shall be made within the operating voltage range of the EVSE unless otherwise indicated in specific tests.
For metering functions with wide voltage range: When devices with voltage ratings encompassing more than one of the rated voltages listed above are tested for acceptance, each test shall be performed at both the lowest rated voltage and at the highest rated voltage unless otherwise specified.

All alternating current tests shall be conducted on a circuit supplied by a sine-wave source with a distortion factor not greater than 3%.

4.1.2. Ambient conditions. All type tests shall be made at 23 ºC +/- 5 ºC, unless otherwise indicated in specific tests**.**

4.1.3. Power Factor. All tests shall be made at unity Power Factor, unless otherwise indicated in specific tests.

4.1.4. Frequency. Nominal frequency should be 60Hz.

4.1.5. Minimum Test Draft – Minimum Measured Quantity (MMQ). – Full and light load tests shall require test of the EVSE System for a delivery of the minimum measured quantity as declared by the manufacturer.

4.2. **Accuracy.** The energy metering accuracy shall be measured at the charge coupler and shall be 1% or better meet HB44 Section T. Tolerances.

Accuracy error = Abs (DUT measurement – Test instrument measurement) / Test instrument measurement (all units kWh). ☐ Yes ☐ No ☐ N/A

4.2.1. AC systems

4.2.1.1. Accuracy test of the EVSE system at a load of not less than 95 % of the maximum deliverable current (MDA) for a total energy delivered of at least twice the minimum measured quantity (MMQ). ☐ Yes ☐ No ☐ N/A

4.2.1.2. Accuracy test of the EVSE system at a load of not greater than 10 % of the maximum deliverable current (MDA) for a total energy delivered of at least the minimum measured quantity (MMQ). ☐ Yes ☐ No ☐ N/A

4.2.1.3. Accuracy test of the EVSE system at a load of 40-60% of the maximum deliverable current (MDA) for a total energy delivered of at least twice the minimum measured quantity (MMQ). ☐ Yes ☐ No ☐ N/A

4.2.2. DC Systems

4.2.2.1. Accuracy test of the EVSE system at a load of not less than 95 % of the maximum deliverable current (MDA) for a total energy delivered of at least twice the minimum measured quantity (MMQ). ☐ Yes ☐ No ☐ N/A

4.2.2.2. Accuracy test of the EVSE system at a load of not more than 10 % of the maximum deliverable current (MDA) for a total energy delivered of at least the minimum measured quantity (MMQ). ☐ Yes ☐ No ☐ N/A

4.2.2.3. Accuracy test of the EVSE system at a load of 40-60 % of the maximum deliverable current (MDA) for a total energy delivered of at least the minimum measured quantity (MMQ). ☐ Yes ☐ No ☐ N/A

Code reference T3

4.3. Repeatability Tests. – Tests for repeatability should include a minimum of three consecutive tests at the same load, similar time period, etc. and should be conducted under conditions where variations in factors are reduced to minimize the effect on the results obtained.

4.3.1. Tolerances. When multiple load tests are conducted at the same load condition, the range of the load test results shall not exceed 25 % of the absolute value of the maintenance tolerance and the results of each test shall be within the applicable acceptance tolerance.

☐ **Yes** ☐ **No** ☐ **N/A**

4.4. No Load Test. – A no load test shall be conducted on an EVSE measuring system by applying rated voltage to the system under test and no load applied. An EVSE measuring system shall not register when no load is applied. ☐ Yes ☐ No ☐ N/A

4.5. Starting Load Test. – A system starting load test may be conducted by applying rated voltage and 0.5 ampere load. Indication shall start registering if starting load is applied

☐ Yes ☐ No ☐ N/A

4.6 Permanence Tests

All new-design EVSE embedded meters are subject to a permanence test. If the meter is the same as one in a previously tested EVSE, a permanence test is not required. Permanence performance could be tested in the lab or in the field.

4.6.1 Lab Testing

Permanence accuracy tests performed in a laboratory shall be conducted after at least 10 days and no more than 20 days of EVSE charging at a minimum rate of 3 charges a day, minimum 3 hours/charge. The tests shall be the ones in sections 4.2.1.2 (or 4.2.2.2) and 4.3 above conducted at ambient temperature before and after the permanence testing period

4.6.2 Field Testing

Permanence accuracy testing performed in the field shall be conducted after a minimum of 20 days or 20 charging sessions with loads exceeding 6 A and lasting more than 2 hours/charge after installation, whichever comes first. The tests shall be the ones in sections 4.2.1.2 (or 4.2.2.2) and 4.3 above conducted before and after the permanence testing period.

5. Totalizers

Code Reference: EVSE S.7 Totalizers for EVSE Systems

1.1. The EVSE is equipped with a non-resettable totalizer for the energy delivered through the metering device.

a. Provided by the system and readily available OR ☐ **Yes** ☐ **No** ☐ **N/A**

b. Via on-site internet access ☐ **Yes** ☐ **No** ☐ **N/A**