DIRECT CURRENT FAST CHARGING PROGRAM

Standards and Quality Assurance Checklist Specifications — August 2024

For informational use by: Participating Contractors and their installation contractors, as a reference guide to understanding the quality assurance scoring criteria, and specific requirements when installing measures in the Charge Ready NY 2.0 Program.

NYSERDA maintains the integrity of the Charge Ready NY 2.0 Program through an independent standards and quality assurance team, which manages the quality assurance (QA) system. The QA system includes verifying compliance with program and installation standards using comprehensive field inspections and photo desk reviews. QA field inspections and desk reviews of installations are conducted by a qualified independent third-party competitively selected by NYSERDA and will use these checklists as their guide. Participating Contractors are required to submit proof of all corrective action taken when a specific installation requirement has not been met. The checklist specifications contained in this document are for reference purposes only.

Field Definitions

Measure – Represents a specific component that the inspector is reviewing.

Task – The Task field falls under a Measure and represents the specific inspection checkpoints that an inspector would rate as Pass or Fail for a given component.

Task Description – A detailed description of the task for the inspector to reference in determining if a task should be marked as failed.

Reference – The basis for each task requirement is linked to the project workscope, a program guideline, manufacturer instructions, or code.

Non-Conformance Category – Each task is assigned a non-conformance rating of either incidental, minor, major or critical. Refer to the Non-Conformance Rating Descriptions below for additional detail.

Non-Conformance Category Description	Energy Impact	Non-Energy Impact
Incidental	May result in a savings shortfall, but the impact will be small and may not be measurable.	Not expected, on its own, to pose a substantial risk of system failure or hazard.
Minor	Will result in a savings shortfall, but the impact will be small and may not be measurable.	Requires modifications to address but not expected to pose a substantial risk of system failure or hazard.
Major	Will result in a measurable shortfall in energy savings.	Presents an increased risk of system failure or hazard but not determined to be in imminent danger of failure or hazard.
Critical	N/A	Presents an imminent hazard

Quality Assurance Scoring Matrix

(Scores are determined by counting the number of non-conformances with the highest severity rating. Applies to the whole project, not each individual measure)

Score	Incidental	Minor	Major	Critical
5	Up to 3	Up to 2	0	0
4	More than 3	Up to 3	0	0
3	N/A	More than 3	0	0
2	N/A	N/A	Up to 1	0
1	N/A	N/A	More than 1	More than 0

Quality Assurance Score Descriptions

5: System Meets All Program Criteria – An inspection receiving a score of 5 is generally well-installed, with no noticeable defects in workmanship or expected energy output. These projects are examples of best practices.

3: System Meets Key Program Requirements – An inspection achieving a score of 3 meets basic Program requirements, but the project may require some modification to be considered fully compliant.

1: System Does Not Meet Program Requirements – An inspection receiving a score of 1 indicates a project that has failed to meet key Program requirements and is not expected to meet the expected energy savings. These projects may require urgent attention to address safety concerns.

Checklist Specifications Table of Contents

Standards and Quality Assurance Checklist

Overall Observations				
Measure	**Task**	**Task Description**	**Reference**	**Non-Conformance Category**
Site Verification	Number of chargers, including plug type on site must match the number of chargers on the application.		Program Requirement	Major
	All chargers shall be Underwriters Laboratories (UL) 2594 or 2202 certified.		Program Requirement	Major
	Total capacity of installed chargers are greater than or equal to 600kW per site.		Program Requirement	Major
	kW capacity of each charger is equal to or greater than than listed on the application.		Program Requirement	Major
	Station power configuration supports 4 vehicles charging simultaneously at greater than or equal to 150 kW.	Attempt to verify through project documents submitted and/or the Installer.	Program Requirement	Major
	Layout matches the site plan approved.	Location of the charger(s) on site as indicated in the final satellite image, including proximity to building(s), infrastructure, greenspace, etc.	Program Requirement	Incidental
	At least 1 parking space per site must meet ADA-accessible requirements.	One of the 4 parking spaces must be made ADA-accessible by repainting the parking spot to provide an access aisle and ensuring all equipment heights are ADA-compliant. The preference is for the ADA access lane to be split up to 5' on the charger side and 3' on the other side. The space is not required to be a dedicated handicap space; others may use it.	Program Requirement	Minor
	Site is visible on mobile map applications (networked).	Charging stations need to be registered on plug share, etc. (visible on app).	Program Requirement	Incidental
	Chargers are situated near adequate lighting such that they are clearly visible at night.		Program Requirement	Incidental
	Disturbed ground has been properly patched.		Program Requirement	Minor
	Site equipment and materials were removed.	Ensure fencing, extra materials, scaffolding, etc. have been removed.	Program Requirement	Minor

Overall Observations (continued)				
Measure	**Task**	**Task Description**	**Reference**	**Non-Conformance Category**
Site Verification (continued)	Method(s) of payment accepted meet program requirements.	Two or more methods of payments must be accepted one of which must be a credit card.	Attachment A - Charging Equipment Qualification Worksheet	Minor
	EV Parking While Charging Only signs installed.	“EV Parking While Charging Only" signs must be installed for each charger.	Program Requirement	Minor
Charger Verification	24 hour toll-free customer support service number visible.	24 hour toll-free customer support service number must be posted for customers to report difficulties accessing or operating the charging equipment.	Program Requirement	Minor
	Pricing per kW must be posted.	Pricing per kW must be clearly posted through a digital display on the charging equipment or associated kiosk.	Program Requirement	Minor
	Large cars (Sedan/SUVs) can fit into parking spaces with enough surrounding room to plug in charger without touching another car.		Program Requirement	Minor
	No barriers blocking the parking spot containing the charger.		Program Requirement	Minor
	Protective Infrastructure in place (bollards or wheelstops).		Program Requirement	Major
	Confirm all payment processing system(s) are functional.	Phone number to initiate charging session with credit card is required for DCFC EVSE not equipped with a chip or tap credit card reader.	Program Requirement	Minor
	Charge output as verified on site meet or exceeds expected value.	Output as verified on site meets or exceeds expected output for the vehicle in the charging session and based on the current state of charge of vehicle, compare charging port output value to vehicle input value.	Program Requirement	Major
	User interface is functional and the charger screen is backlit properly.		Program Requirement	Minor
	Charging cord dispenses properly.		Program Requirement	Incidental
	Connector type complies with program requirement.	All connectors must be CCS (Combined Charging System).	Program Requirement	Major

Installation				
Measure	**Task**	**Task Description**	**Reference**	**Non-Conformance Category**
Electrical	Electric Vehicle Branch Circuit is appropriate.	Each outlet installed for the purpose of charging electric vehicles shall be supplied by an individual branch circuit. Each circuit shall have no other outlets.	National Electric Code (NEC) Section 625.40 Electric Vehicle Branch Circuit	Major
	Overcurrent Protection is appropriate.	Overcurrent protection for feeders and branch circuits supplying equipment shall be sized for continuous duty and shall have a rating of not less than 125 percent of the maximum load of the equipment. Where noncontinuous loads are supplied from the same feeder, the overcurrent device shall have a rating of not less than the sum of the noncontinuous loads plus 125 percent of the continuous loads.	National Electric Code (NEC) Section 625.41 Overcurrent Protection	Critical
	Disconnecting Means is appropriate.	For equipment rated more than 60 amperes or more than 150 volts to ground, the disconnecting means shall be provided and installed in a readily accessible location. The disconnecting means shall be lockable open in accordance with 110.25.	National Electric Code (NEC) Section 625.43 Disconnecting Means	Major
	Conductors are protected from physical damage.		National Electric Code (NEC) Section 334.15(B)	Major
Control Pilot	Verification of vehicle connection.	The EVSE is able to determine that the connection is inserted into the vehicle inlet and properly connected to the EV/PHEV by sensing resistance R3 as shown in Figure 1. The diode, D1, is present to help an EVSE determine that an EV/PHEV is connected rather than other potential low impedance loads. If the EVSE does not detect diode D1 (missing or shorted), it may indicate a fault by enter stage F. The EV/PHEV may optionally monitor the control pilot on the anode side of diode D1 as shown in Figure 1.	SAE J1772: Section 4.2.1.3.1	Minor

Installation (continued)				
Measure	**Task**	**Task Description**	**Reference**	**Non-Conformance Category**
Control Pilot (continued)	ESVE not ready to supply energy.	The EVSE is able to indicate to the EV/PHEV that it is not ready to supply energy by not turning on the oscillator and maintaining State B1. State B1 may be used by the EVSE to maintain the current charge session during load management fee transaction, or other events. The EVSE may turn off the oscillator at any time when in State C or D during the current charging session. When the EVSE turns off the oscillator, the EVSE shall terminate energy transfer. The EV/PHEV then opens S2 resulting in State B1. Refer to examples in Appendix E.2, transisiton 14 notes.	SAE J1772: Section 4.2.1.3.2	Minor
	EVSE ready to supply energy.	The EVSE is able to indicate to the EV/PHEV that it is ready to supply energy by turning on the oscillator and providing the square wave signal according to the value derived from Figure 3. The EVSE shall not close contractors unless the oscillator is on and valid per Figure 3. In each of the states specified in Table 1&2, the EVSE may supply the pilot as a DC signal or as an oscillating signal. However, normally the oscillator is only turned on in State B2, State C, or State D.	SAE J1772: Section 4.2.1.3.3	Minor
	EV/PHEV ready to accept energy.	The EV/PHEV indicates that it is ready to accept energy from the EVSE by closing switch S2, as shown in Figure 1, when the current profile on the control pilot oscillator is sensed. The EV/PHEV may de-energize the EVSE at any time by opening switch S2.	SAE J1772: Section 4.2.1.3.4	Minor
	Determination of indoor ventilation.	The EVSE is able to determine if the EV/PHEV requires indoor charging ventilation by sensing the voltage as specified in Table 1 & 2. If required, the EVSE shall provide a signal to turn on the indoor charging area ventilation system according to National Electric Code – Article 625.	SAE J1772: Section 4.2.1.3.5	Major
	EV/PHEV current control tolerance.	The EVSE communicates the available continous current capacity to the EV/PHEV by modulating the pilot duty cycle as described in Table 5 and shown in Figure 3.	SAE J1772: Section 4.2.1.3.6	Minor

Installation (continued)				
Measure	**Task**	**Task Description**	**Reference**	**Non-Conformance Category**
Control Pilot (continued)	EVSE current capacity.	The EVSE shall maintain +/- 0.5% tolerance on control pilot PWM duty cycle generation over the whole range, 55 to 96%. The EVSE is not required to end a charge session of the EV/PHEV draws more than the avaiable current. If the EVSE does initiate a termination of the charge session, due to excess current draw, it should only do so after 1.3 amps above the EVSE nominal available current for currents under 12 amps, or after 111% of EVSE nominal available current for currents above 12 amps. For EVSE nominal available current see Table 5.	SAE J1772: Section 4.2.1.3.7	Minor
	Verification of equipment grounding continuity.	The equipment grounding conductor provides a return path for the control pilot curent to insure that the EVSE equipment ground is safely connected to the EV/PHEV vehicle chassis ground during charging. Loss of the signal shall result in the automatic de-energization at the EVSE.	SAE J1772: Section 4.2.1.3.8	Critical
	Control pilot tolerance.	The overall (EV and EV/PHEV) control pilot tolerance is not to exceed +/- 2%. This tolerance is distributed up to +/- 0.5% for the EVSE and up to 1/5% for the EV/PHEV.	SAE J1772: Section 4.2.1.4	Minor
	Proximity detection.	Upon insertion of the connector into the vehicle, the coupler shall provide a means to detect the presence of the connector in the vehicle inlet as described in Table 6 and shown in Figure 4. Detection of the connector shall occur at a point where damage to coupler, EV/PHEV, or EVSE could occur if the EV/PHEV were to be intentionally moved. Resistors R5-R7 allow for diasnostics of the circuit. S3 is mechanically linked to the connector latch relaease actuator. S3 is normally closed except when the connector latch release actuator is actuated. Proximity detection may be used to meet the requirements in 5.2.2, Coupler Disconnect Current Limit and 4.5.2, Vehicle Movement with Mated Coupler.	SAE J1772: Section 4.2.2	Minor
	EVSE Shutdown – Control Pilot.	The EVSE shall detect the loss of the Control Pilot (Control Pilot transition from State C (or D) to State A) and interpret the DC output current to <= 5A within <= 30ms. See appendix F.	SAE J1772: Section 6.2.1.1	Minor

Operation				
Measure	**Task**	**Task Description**	**Reference**	**Non-Conformance Category**
EVSE Shutdown - Proximity Detection	The EVSE shall monitor the Proximity circuit as shown in Figure 4.	The EVSE shall monitor the Proximity circuit as shown in Figure 4.	SAE J1772: Section 6.2.2.1	Minor
	Valid Proximity Circuit voltages are defined in Table 7. EVSE input impedance shall have high input impedance (>= 10 MOhm) to prevent loading of vehicle proximity voltage monitoring circuit.	Valid Proximity Circuit voltages are defined in Table 7. EVSE input impedance shall have high input impedance (>= 10 MOhm) to prevent loading of vehicle proximity voltage monitoring circuit.	SAE J1772: Section 6.2.2.2	Minor
	DC Charging shall only be allowed when the EVSE detects a Proximity Circuit voltage, that indicates that the latch is relased according to Table 7.	DC Charging shall only be allowed when the EVSE detects a Proximity Circuit voltage, that indicates that the latch is relased according to Table 7.	SAE J1772: Section 6.2.2.3	Major
	The EVSE shall not initiate a charge cycle unless a Proximity Circuit voltage (S3 closed) according to Table 7 is detected.	The EVSE shall not initiate a charge cycle unless a Proximity Circuit voltage (S3 closed) according to Table 7 is detected.	SAE J1772: Section 6.2.2.4	Major
	During a charge cycle the EVSE shall deteect an invalid Proximity Circuit voltage and interrupt the DC output current to <= 5A within ,=30m s. Invalid Proximity Circuit voltage means any other voltage level than a Proximity Circuit voltage with S3 closed according to Table 7. See APPENDIX F.	During a charge cycle the EVSE shall detect an invalid Proximity Circuit voltage and interrupt the DC output current to <= 5A within ,=30m s. Invalid Proximity Circuit voltage means any other voltage level than a Proximity Circuit voltage with S3 closed according to Table 7. See APPENDIX F.	SAE J1772: Section 6.2.2.5	Major
	Digital Data Transfer – A control Pilot duty cycle of 5% indicates that digital communication is required and must be established between the EVSE and vehicle before charging. This is required for DC Charging.	Digital Data Transfer - A control Pilot duty cycle of 5% indicates that digital communication is required and must be established between the EVSE and vehicle before charging. This is required for DC Charging.	SAE J1772: Section 6.2.2.6	Minor
	EVSE Charging Sequence, Timing and Response operates as defined in Appendix F.	Conduct all 3 charging session steps defined in Appendix F.	SAE J1772: Section 6.3	Minor