NY-Sun

Quality Assurance Policies and Procedures

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Overview

NYSERDA maintains the integrity of the NY-Sun Residential and Nonresidential Program through an independent Standards and Quality Assurance Team, who manages the quality assurance system for the Program.

The quality assurance (QA) system has several components, including a review of qualifications and credentials, paperwork audits, establishment of program standards, and comprehensive field and photo inspections. QA inspections involve verification of the contracted scope of work, accuracy of site analysis, comparison of installation to submitted design drawings, and compliance with New York State Uniform Building Code, including references to the International Building Codes and National Electrical Code (NFPA 70) as they relate to the overall quality of the solar electric installation. NYSERDA or its representatives may make a reasonable number of visits to the customer site before, during, and/or after installation of a solar electric system to assess overall compliance.

NY-Sun Participating Contractors and Builders (contractors and builders) can view inspection scores and reports in their Salesforce portal in two ways:

- Each Salesforce project record contains an Inspection Information section (located below the project equipment details). This section contains information for both field and photo inspections, including that individual project's inspection status, date, score, and a link to the inspection report.
- Charts and data of all inspection scores are also available on the Dashboards tab. These charts show, for example, average score by quarter over time. Clicking on a specific chart will open the underlying data, that can also be exported into a spreadsheet.

Corresponding with NYSERDA's Standards and Quality Assurance Team

When corresponding with NYSERDA's QA team, inspections@nyserda.ny.gov is the appropriate email address.

Program Roles and Responsibilities

The program relies on contractors and builders to provide complete turnkey services for new solar electric systems for customers seeking incentives through the program. The contractors and builders have different roles and responsibilities in the program.

Contractor Roles and Responsibilities

- Holds the agreement (contract) with the customer
- Responsible for builder performance, including subcontractors
- Receives incentive payments
- Agrees to terms of the NY-Sun Program's participation agreement
- Agrees to terms of contractor and builder relationship agreement
- Responsible for resolution of customer complaints
- Responsible for warranties, and production guarantees

Builder Roles and Responsibilities

- Responsible for installation and quality of project
- Responsible for maintaining a credentialed person on staff
- Agrees to terms of contractor and builder relationship agreement

Inspections will primarily focus on the quality of the builder's installation, and average inspection scores will be calculated at the builder level. However, since the contractor is responsible for the builder's performance, inspection scores may be rolled up at the contractor level. Both the contractor and builder will be included in any correspondence related to project inspections.

Selecting Completed Projects for Inspection

The purpose of the QA inspection is to provide NYSERDA with an opportunity to evaluate the accuracy of the site analysis and design documents, as well as to verify that the electric system and structural components were installed according to Program requirements. The QA inspection also includes selected health and safety and performance items, and specific compliance items per applicable code.

NYSERDA selects specific completed projects for QA inspections through a randomized sampling process. The process utilizes a strategic sampling of completed projects with rates primarily based on the builder's current program status and recent inspection scores.

NYSERDA intends to conduct both field and photo inspections based on the following sampling rates:

- **Provisional** status builders will initially be subject to up to 100% inspection, and after demonstrated competency will move to full status. Inspections may be a series of field and or

photo. Builders must achieve a score of 3 or better on three consecutive inspections to advance to Full status. If any of the first three inspections receive a failing score (2 or below), the builder may be subject to disciplinary action.

- **Full** status builders will be subject to 10% field inspection and 10% photo inspection.
- **Probation** and **Suspended** status builders will be subject to up to 100% inspection.

NYSERDA may select any completed project for inspection based upon customer complaints, warranty related issues, or as part of the review of a contractor or builder under status review or Program disciplinary action.

Field Inspections

QA field inspections are scheduled at the customer's convenience. Customers are encouraged to allow the contractor and builder to attend the inspection to answer questions and perform minor fixes on site. If the customer agrees, the contractor and builder will be notified by email between 5 to 14 days of the upcoming inspection. Every effort will be made to accommodate the schedule of the contractor and builder, but the customer's convenience takes precedence.

Customers have the right to request that the contractor or builder not attend the QA field inspection. In these situations, the contractor and builder will not be notified of the scheduled inspection but will receive the report within 15 business days of the inspection.

Solar Plus Energy Storage Field Inspections

QA field inspections will be conducted on each project applying for the Solar Plus Energy Storage incentive. In addition to the components of the standard QA field inspection, Solar Plus Energy Storage project inspections will also confirm that the installed storage equipment is as approved by the program, ensure general quality of the storage installation complies with codes, standards and industry accepted practices, and inspect that appropriate metering and data logging are in place.

QA field inspections will be conducted after the contractor submits the invoice for the Solar Plus Energy Storage Incentive. This inspection may also include review of up to one-week post-commercial operational data to check proper operation of the energy storage system, and any automated controls operating the charge and discharge functions of the storage system.

Photo Inspections

The contractor or builder is required to take construction photos for each project built. NYSERDA expects that contractors and builders take photos throughout the installation process. It is not the intention for contractors and builders to obtain photos after a request for photos is received.

The Program may request construction photos for purposes of conducting a photo inspection at any time. A photo documentation sample is available at nyserda.ny.gov/solar-contractor-resources. This sample document is not an all-inclusive list of required photos. Taking multiple pictures of everything installed will help ensure a smooth photo inspection process.

If photos are requested, the contractor and builder will be notified and provided with a link to NYSERDA's quality assurance database for submission. **The contractor or builder must provide pictures within seven days of the request**. The database will only allow a single submission. All photos must be submitted at the same time.

If the inspector finds there are photos missing or not clear enough to make a determination, a Can Not Verify (CNV) notice will be issued via email. **The builder will have seven days to resubmit required photos through the CNV request**. If the CNV is not responded to within seven days, a deficiency for each CNV will be documented. There are no extensions granted for photo requests or CNVs.

The Authority Having Jurisdiction (AHJ), local code official, or third-party electrical inspector may also request copies of these photos for their records.

QA Inspection Report

The QA inspection report will provide a summary of all evaluated elements of the project and list any nonconformances identified during the inspection. The report will provide an overall score of the project and identify it as a pass or fail.

The report will be made available to the contractor and builder within approximately 15 days after the inspection following an internal review and scoring by NYSERDA. The report will be made available to the customer upon a direct request to NYSERDA. The report will contain a score based on the scoring criteria and a list of any nonconformances found during the inspection.

Scoring Criteria

The scoring criteria characteristics will be used as a guideline for inspectors to gauge relative installation quality. These QA scores will:

- Allow NYSERDA to gauge the relative quality of installations across installers, regions, or other screening criteria
- Allow NYSERDA to track trends in installation quality over time
- Provide valuable feedback to contractors and builders, local code officials, and inspectors

Classification of Program Nonconformances

It is important to understand the magnitude of nonconformances found during onsite inspections. A high-quality solar electric system will:

- Comply with the New York State Uniform Building Code
- Comply with NFPA 70 AKA the National Electric Code (NEC), and International Building Codes as amended and adopted by New York State
- Meet all NYSERDA Program requirements and standards
- Safely and reliably generate electricity consistent with pre-installation estimates

Table 1. Summary of Nonconformance Classifications

Nonconformance Category	NEC Compliance	Program Compliance	Estimated Performance Verification
Incidental	No rewiring, minimal deviation	Equivalent equipment change	Submitted TSRF does not match inspection TSRF
Minor	Rewiring, minimal deviation	Missing/inadequate meter	X
Major	Rewiring, moderate deviation	Incentive amount requires adjustment	X
Critical	Rewiring, imminent hazard	X	X

Nonconformance Categories

Incidental

An incidental nonconformance is a violation of NEC that does not require rewiring to address and is not expected on its own to pose a substantial risk of system failure or hazard. Examples of incidental nonconformances include:

- Missing screws on indoor enclosure covers, but cover is still secure and renders interior of enclosure inaccessible
- Installation debris (e.g., bits of wire, packing materials) left on site
- Poor wire management that is NOT expected to cause a fault condition
- Equipment installed does not match Program records, but is considered equivalent
- Missing/incomplete labels
- Incorrect color code on wires

Minor

Minor nonconformances require rewiring to address but not expected to pose a substantial risk of system failure or hazard. Examples of minor nonconformances include:

- Bonding neutral to ground in a meter enclosure
- Insufficient clearance around boxes
- Not adequately protecting conductors from accidental contact by unqualified personnel

Major

Major nonconformances present an increased risk of system failure or hazard but not determined to be in imminent danger of failure or hazard. As compared with an NEC compliant system, these systems have a higher risk of failing or posing a hazard at some point within their expected lifetime. Examples of major nonconformances include:

- Allowing circuit conductors to be in contact with abrasive surfaces or sharp edges
- Improper system or equipment grounding
- Missing or inadequate thermal expansion joints in long conduit runs
- Noncontinuous grounding electrode conductor

Critical

Critical nonconformances present an imminent hazard and/or probability of system failure. These issues should be addressed quickly to prevent injury or damage to property. Examples include:

- Observed inverter ground fault conditions
- Lack of or oversized overcurrent protection
- Oversized array strings that could lead to DC voltage in excess of inverter limits
- Use of non-DC rated equipment in DC circuits

This list is not intended to be exhaustive, and inspectors will fully evaluate each installation on a case-by-case basis. Issues listed as examples in one of the categories could be problematic in other inspection areas, and thus fall into a different category for that installation.

Overall QA Inspection Scoring Criteria

Each inspection will receive a score on a five-point scale. This score is an indicator of the overall quality and compliance with Program requirements based on the number and type of nonconformances observed.

Table 2. Inspection Score Criteria

QA Score	Defect Class			
Score	**Incidental**	**Minor**	**Major**	**Critical**
5	Up to 3	0	0	0
3	More than 3	Up to 3	0	0
1	More than 3	More than 3	More than 1	More than 1

QA Score Descriptions

5: System Meets All Program Criteria
A system receiving a score of 5 is generally well-installed with no noticeable defects in workmanship, code compliance, or expected energy output. These systems are examples of best practices in solar electric installation.

3: System Meets Key Program Requirements
A system achieving a score of 3 meets basic Program requirements, but it may require some modification to be considered fully compliant.

1: System Does Not Meet Program Requirements
Systems receiving a score of 1 have failed to meet key Program requirements and are not expected consistently to generate electricity safely. These systems may require urgent attention to address safety concerns.

Procedure for Handling Nonconformance and Corrective Action

The QA inspection report will provide details of all evaluated elements of the project and list any nonconformances identified. The report will provide an overall score for the project and identify a pass (a score of 3 or more) or fail (a score of 2 or less). Projects that have nonconformances related to critical (health and safety) or major (system performance) attributes will automatically fail. Projects that have minor or incidental nonconformances may pass or fail based on their overall merits.

All identified nonconformances are expected to be addressed and corrected and should be addressed in future work performed by the contractor in the Program. Acknowledgment and plans for preventing future problems may be requested with the report. Nonconformances may be corrected post-installation through corrective action to the documentation, adjustment of the incentive applied to the project, or remediation of the installation or its components.

Contractors or builders are required to respond to NYSERDA with proof of corrective action for projects that received a failed inspection report (score of 1 or 2). The contractor and builder are always responsible for correcting nonconformances identified and is required to submit proof of correction for all major or critical items identified. **A failed inspection report must be disputed within seven days for photo inspection or 15 days for field inspections by contacting NYSERDA; or, remedied within 30 days of the report**. Sufficient evidence of remediation must be provided to NYSERDA documenting the completion of required actions. NYSERDA may, at its discretion, conduct a field verification of the remediated installation.

NYSERDA has the right to provide a copy of the QA report or specific information from the inspection directly to the customer, AHJ, or the interconnecting utility based on health, safety, and compliance concerns. In an emergency, NYSERDA or its representatives may shut down the system and will notify the contractor and builder of such action as soon as possible.

NYSERDA may communicate with any Program customer on any matter relevant to a project. Such communications may be in reply to an inquiry from a customer or at NYSERDA's initiation.

Inspections Requiring Corrective Action

1. All deficiencies are required to be addressed within 30 days of NYSERDA issuing report.
2. Critical and major deficiencies require a response through the quality assurance database link sent with the report.
3. Corrective Action Responses (CARs) will be reviewed, evaluated, and responded to by NYSERDA staff.
4. If NYSERDA staff accepts the corrective action, the deficiency will be marked resolved.
5. If NYSERDA does not accept the corrective action, the deficiency will be marked resubmit and a description of why the response was not accepted will be sent to the contractor or builder. The deficiency will remain open until NYSERDA accepts a response.

System Shutdowns

When deemed necessary, NYSERDA or its representatives may shut down the system. NYSERDA will notify the contractor and builder whenever it takes such action as soon as possible.

In the event an inspector determines a solar electric system, as installed, presents an imminent hazard to persons or property, the following procedure will be followed:

1. NYSERDA QA inspector, along with other NYSERDA staff, will review critical issues and confirm shutdown.
2. NYSERDA QA inspector takes appropriate steps to safely shutdown and secure the system and informs the customer of the decision.

3. NYSERDA QA inspector calls the system contractor and builder to notify them of the situation and the shutdown. The contractor and builder are instructed that the system may not be re-energized without corrective action being taken. The contractor or builder may address critical issues before receiving the NYSERDA issued report.
4. The contractor and builder receive the report and must then coordinate any required re-inspection by the local authority having jurisdiction or third-party designee.
5. The contractor and builder are required to provide proof of the corrective action as specified by the NYSERDA QA Inspector.

Procedure for Contesting an Inspection Score

A contractor or builder may contest the findings of an inspection by emailing supporting documents and information to inspections@nyserda.ny.gov.

- For field inspections, the request must be submitted to NYSERDA within 15 days of the release of the inspection report.
- For photo inspections, the request must be submitted to NYSERDA within seven days of the release the inspection report.

Upon review, if NYSERDA agrees with builder, the deficiency will be removed. The inspection score may or may not change based on other deficiencies. If NYSERDA agrees with the original inspection report, the deficiency will stand, and the score will remain the same.

Prescriptive Probation and Disciplinary Action

When a contractor or builder fails to consistently complete projects that pass NYSERDA QA evaluation, or fails to respond to or remedy failed inspections, NYSERDA may review their status in the Program and take further action.

A contractor or builder may be moved to Probation or Suspended status, in which a timeline for improvement will be prescribed and monitored. The contractor or builder may be terminated from the Program if determined necessary.

Complete details of the participation status and review process can found under the Participation Status section of the Program Manual, available at nyserda.ny.gov/solar-contractor-resources.

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