



MIKE CAUSEY, INSURANCE COMMISSIONER & STATE FIRE MARSHAL  
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## **Inspection Procedures for Solar Photovoltaic Systems Installed on Residential Rooftops**

This document is intended to provide local inspection departments and installers of solar photovoltaic (PV) systems with a Statewide uniformed inspection procedure where PV equipment is to be installed on a residential rooftop. Because a typical residential rooftop is constructed in a manner that creates unusual safety risks in order to access equipment located on the roof's surface, the State Electrical Division has created the following procedure intended to prevent an inspector from being elevated over eight (8) feet in height while adequately performing his or her duties.

A violation of any Code shall not be created in the installment of a PV system. It shall be the duty of the installer to comply with State and local regulations including conforming to all State Building Codes. Because the inspector will not be required to access the surface of the roof in-person, an inspector cannot be held accountable for any violation of any regulation that cannot be seen while performing inspections in accordance with the following procedure.

The following procedure does not include the alteration of other building systems that may cause additional permits and inspections that may be imposed on the project. Relocation or alteration of a plumbing vent is an example of such modification to the plumbing system that results in a plumbing permit and inspection.

Though this document specifically addresses residential rooftops installations, this logic is not prohibited to be applied to a commercial structure that has a residential type roofing system without access to the equipment. However, permission must be granted from the local inspection department prior to any installation.

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- 1. Application for Electrical and Building Permit must include:**
  - a. Sketch of an electrical design that complies with the NEC
  - b. Structural design drawings/details for the additional roof loads imposed (dead, live, snow, wind) sealed by a North Carolina registered design professional
  
- 2. Electrical Rough-in Inspection at the Project's Location includes:**
  - a. PV equipment must be present on-site with the manufacturer's instructions
  - b. Listing and labeling of all parts to be assembled on the roof
  - c. Detailed instructions for the rapid shutdown of the system at the roof
  - d. Inverter location
  - e. Type and size of conductors to be used
  - f. Details for how the metal frame(s) and the PV electrical system is to be grounded
  
- 3. Electrical Final Inspection Requirements:**
  - a. All equipment over 8 feet must be clearly photographed or recorded to show the following: (Hard copy provided to field inspector at final inspection, to be kept on file)
    - i. All connections (splices, terminations, joints, etc.)
    - ii. The measurement of any items that have a distance value within the NEC
    - iii. Mounting hardware
    - iv. The equipment in the photographs are actually located at the property where the work is being inspected (neighboring or landmark items in some of the images should be noted)
  - b. All electrical equipment under 8 feet from grade shall be inspected in the usual manner
  
- 4. Building Final Inspection Requirements:**
  - a. A field inspection of the installation has been performed by a North Carolina registered design professional or a person under the direct supervisory control of the registered design professional. This field inspection must be definitively acknowledged in the required document below.
  - b. Present a signed written document from a North Carolina registered design professional with a valid seal stating the PV equipment's structural installation has been inspected, will not create a negative impact on the building's structural design, and is in compliance with the North Carolina Residential Code.

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