

# Fact Sheet

## Solar Tax Abatements: Installation Inspections

Property owners seeking a Property Tax Abatement (PTA) for solar installations must have the installations inspected and approved by the Department. Without construction and electrical inspections, the final sign-off cannot be submitted for the PTA approval. It is important to have your installer, electrician, and the approved plans on site when the inspection is scheduled.

The following items will be included in the Construction Inspection:

1. **AC 28-104.7**
  - a. Confirm that the installed solar electric system substantially conforms to the approved plans.
  - b. Verify that the panels are not installed on any questionable non-permitted structures (illegal decks, extensions, and garages).
  - c. Verify adequate firestopping at any roof and/or fire rated wall penetrations.
2. **RCNY §105-02 (e)(1)(ii)(A) & ZR 23-62/33-42/ 43-42**
  - a. Verify that installed solar panels match the proposed zoning diagram.
3. **RCNY §105-02 (d)(e)(1)(ii)(D) & NY RPT Law Title 4-C §499-aaaa(10)**
  - a. Verify that the solar electric generating system installation does not include any equipment connected to the solar electric generating system that is a component or part of a non-solar electric generating system or that uses any sort of recreational facility or equipment as a storage medium.
  - b. Verify and confirm location of electric disconnect, meter and inverter boxes match location shown on proposed plans.
4. **RCNY §105-02 (e)(1)(ii)(E), FC 504**
  - a. Verify all proposed Fire Code (FC) clearances and clear paths of solar panels, roof equipment and fixtures: 3'-0" min. clearance in all directions at skylights, fire escapes, roof top access ladders, and roof hatches; 6'-0" clearance in all directions are provided from each door opening onto rooftop from a dwelling unit, stairway, bulkhead, or other occupied space or means of egress, as measured from the door hinge.
  - b. Verify and document any roof top obstructions that are not shown on the plan(s).
5. **FC504.4.2 (2): Roof Top Obstructions**
  - a. Verify that all conduits and piping installations located within FC clearances, are marked with durable and waterproof reflective or luminescent markings.
6. **RCNY §105-02 (d)(e)(1)(ii)(G), NY RPT Law Title 4-C, BC 1606/09, & PC 1105**
  - a. Verify roof construction, and framing connections details of PV panels to roof or framing, i.e. waterproofing details, sealants etc.
  - b. Verify location of roof drains, down spouts, plumbing or HVAC vents.

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The following items will be included in the **Electrical Inspection**:

## ADMINISTRATIVE REQUIREMENTS

- **Electrical Permit.** Permits are obtained and displayed as required.
- **NEC 110.2 690.4 (D); 690.60**
  - **Equipment Approval.** All equipment is identified and listed for the application (includes UL 1703 listing for modules and UL 1741 for inverters and charge controllers).
- **NEC 690.6; 690.52**
  - **AC Modules.** AC modules have appropriate markings, overcurrent protection, disconnects, and ground fault protection.

## CONDUCTORS AND WIRING METHODS

- **NEC 300; 690.31(A)**
  - Standard building wire conductors and appropriate wiring methods are used. Conductors are rated for conditions of use. PV source and output-circuit conductors operating at more than 30 V are installed in readily accessible locations.
- **NEC 690.31(B)(C) [E]; 400.5**
  - **PV Source-Circuit Wiring.** Conductors have 90° C, sunlight, and wet service resistances. Single conductor type USE-2 and specifically listed and labeled PV wire is permitted in PV source circuits. Tracking or movable array mounts use flexible conductors identified for hard service and outdoor use. Where DC PV source circuits are run inside a building they are in metal conduit from the point of penetration into the building to first accessible disconnect. Ampacities calculated according to 400.5.
- **690.33; 690.34; 314**
  - Connectors are polarized, non-interchangeable guarded, latching or locking, have "first-to-make/last-to-break" contact for grounded conductor and either are rated for interrupting current or require tool to open. Junction boxes are at appropriate type and size and allow the conductors within to be accessible.

## OVERCURRENT PROTECTION

- **NEC 690.9(A)(B); 240**
  - **Protected Circuits.** PV source circuit, PV output circuit, inverter output circuit and battery circuit conductors and equipment are protected in accordance with Article 240. Circuits connected to multiple power sources are provided overcurrent protection from each source. Overcurrent protection devices are rated for no less than 125% of the maximum currents calculated or determined in 690.8(A).
- **690.9(B)(C)(D); 450.3**
  - **Transformers.** Overcurrent protection is provided for power transformers in accordance with Section 450.3. Branch circuit or supplementary-type overcurrent protection devices are permitted on PV source circuits. Overcurrent protection devices in DC circuits are listed for such use and have the appropriate voltage, current and interrupt ratings.

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## DISCONNECTS

- **NEC 690.13; 690.14[C]; 690.31[E]**
  - **Array Disconnect.** A disconnect is provided between the PV power system output and other building conductors. Array disconnect is installed at a readily accessible location either on the outside of the building or structure or inside nearest the point of entrance of the system conductors. Each PV system disconnect is marked as such and suitable for the intended use. There are no more than six disconnects for each source of power. Disconnects for each power source are grouped together.
- **690.15, 690.16, 690.17**
  - Disconnects are provided to disconnect equipment (inverters, batteries, charge controllers etc.) from all underground conductors of all underground sources. Disconnects are provided to independently disconnect a fuse from all sources of power if the fuse is energized from both directions. Disconnects open all underground conductors, are ready accessible, externally operated, have ON/OFF indication, and have appropriate interrupt rating. Manually operated switches and circuit breakers may fulfill these requirements.

## GROUNDING

- **690.35; 690.4[C]**
  - **Underground Systems.** Underground systems include disconnects, overcurrent protection and ground-fault protection. Equipment is listed for use with undergrounded systems.
  - **Module Grounding Continuity.** Module connections are such that removal of a module does not interrupt a grounded conductor to another PV source circuit.
- **690.5; 690.41; 250.4(A)**
  - **Ground-Fault Protection.** Ground fault protection is provided for grounded arrays. PV System Grounding. One DC conductor is grounded for two-wire PV systems operating above 50V.
- **690.43; 690.45; 250.122**
  - **Equipment Grounding.** Non-current-carrying metal components are grounded including module frames, mounting structures equipment, conduit and boxes. Equipment grounding conductors are routed with PV circuit conductors. If array has GFP, the equipment grounding conductor is sized according to 250.122. If array does not have GFP, the equipment grounding conductor is sized for at least twice the de-rated circuit conductor ampacity.
- **690.47(A)[C]; 650.47(B); 250**
  - The AC system is grounded according to 250.50 through 250.60. The DC system is grounded according to 250.165 or 250.169.
  - **Common Grounding.** If system includes both AC and DC systems, the grounding electrode systems are bonded together. The bonding conductor is sized for the larger of the AC and DC requirements. Separate DC and AC grounding electrodes are permitted or both grounding systems may use the premises AC grounding electrode. The grounding electrode conductor is sized to meet both AC and DC grounding requirements. Array is grounded with separate grounding electrode system, unless it would be within 6' of premises electrode.

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## MARKINGS AND LABELS

- **690.5[C]; 690.51**
  - **Array Ground-Fault Protection.** Interactive inverter, ground fault indicator and/or battery bank label warns of shock hazard during ground fault.
  - **Modules.** PV modules are labeled with open-circuit voltage, operating (maximum power) voltage, maximum permissible voltage, operating (maximum power) current, short-circuit current and maximum power.
- **690.53; 690.54; 690.55**
  - **Systems Info at DC Disconnect.** PV power source is labeled with maximum power current, maximum power voltage, maximum system voltage, short-circuit current and maximum rated output current of charge controller (if installed) at the DC disconnect.
  - **Inverter Info at AC Disconnect.** Point of interconnection is labeled with inverter operating AC voltage and rated AC output current at the AC disconnect.
  - **Batteries.** Battery bank is labeled with maximum operating voltage, equalization voltage and polarity.
- **690.56(A)(B)**
  - **Stand-Alone Systems.** Exterior visible notice indicates the structure contains a stand-alone system and identifies the locations and disconnects.
  - **Interactive Systems.** Exterior visible notice identifies the locations of array disconnect and utility service disconnect, if not located together.
- **690.10 [C]**
  - **Single 120V Supplies.** A stand-alone system supplied by a 120V inverter includes a label warning against connecting multiple branch circuits.
- **690.17**
  - **Disconnect Energized While Open.** If all terminals of a disconnect are energized when open, a label warns as such.
  - **Marking.** Panels contain overcurrent protection devices supplying power to busbar are marked to indicate all sources of supply.
  - **Back-Fed Breakers.** Back-fed circuit breakers for load-side connections are labeled as inverter output connections with a warning not to relocate.

## CONNECTION TO OTHER SOURCES

- **690.60, UL1741**
  - **Inverters UL Listed.** Inverter is listed and identified for interactive operation.
- **690.64(B)(1)(2)**
  - **Point of Connection.** The output of interactive inverter is connected to either the supply side or the load side of the utility service disconnect.
  - **Load-Side Connection.** If load-side connection, the inverter output is made at dedicated circuit breaker or fusible disconnect. 120% of Busbar Rating. Sum of ampere ratings of all breakers supplying power to panel does not exceed 120% of the Busbar rating.