



City of Stuart Guide to Solar Permitting

The City of Stuart encourages the installation of solar energy systems and has streamlined the review process for solar photovoltaic and water heating projects. All new installations require review for building permits and for interconnection with Florida Power and Light. This guide has been developed primarily as an overview of city permit requirements. If you will be rewiring or replacing your electrical panel, please contact the permitting department for possible additional requirements.

Definitions:

Solar Photovoltaic (PV) are solar collector modules that capture the sun's energy and converts it into electricity.

Solar Thermal or Solar Water Heating Systems (SWHS) are solar collector modules and a storage tank that captures the sun's energy to heat water either for indoor or swimming pool use. This type of system may be considered an active system with the inclusion of mechanical components or passive if without such components.

Building Integrated Photovoltaic (BIPV) refers to solar PV integrated into construction materials such as roof tiles, awnings and curtain walls.

Permits for solar installations are offered at no fee and are processed within three days.

Submission Checklist for Residential Photovoltaic Installations

General Requirements:

1. A scaled, dimensioned Site Plan. The Site Plan must show all property line dimensions and the dimensions and locations of all structures on the parcel. Show the location of all electric service and PV equipment; meter(s), inverter(s), AC & DC disconnects, etc. whether they are new or existing. Include a project data section which states the address of the project and the contact information for the owner and contractor.

Structural Requirements:

1. A Roof Framing Plan. Specify the size, grade and maximum spans of all roof framing members that will carry the weight of the PV arrays. Specify the roofing material and number of overlays, if applicable. Show the location of all arrays on this drawing.

2. Installation details and instructions. Attachment details for PV modules. Provide enough information to clearly verify the size, type, and spacing of all fasteners. Structural calculation (stamped and signed by a Florida licensed design professional) are required.

3. Show how waterproofing will be addressed.

Electrical Requirements:

1. "Cut Sheets" for: PV modules. Inverters.

2. One-line diagram; please include:

- Load calculations for arrays.
- Wire types and sizes.
- All associated equipment and disconnects whether they are new (N) or existing (E).
- Location, wire sizes, and details for all grounding methods.

3. When considering the location of disconnects, be sure to consider how any given piece of equipment can be replaced or serviced, without the hazard of "hot" conductors.

Photovoltaic Inspection Guidelines

Residential Interactive Systems

In General:

- Per 2014 NEC 690.4(C) – the equipment and systems in 690.4(A) through (D) and all associated wiring and interconnections shall be installed only by Qualified Persons.
- Customer/Installer shall provide Approved Plans on site for inspector.
- Photovoltaic module number and location of installation must match Approved Site Plan.
- Customer/Installer shall provide access to all areas needed for inspection.
- On Roof, inspections shall be done by drone.
- In House – If wiring in attic and/or garage area, the customer/installer shall ensure access to attic and/or garage.

On Roof:

- Verify all structural supports are properly installed per listing and properly sealed.
- Verify all metallic raceways, J-boxes, supports and modules are properly grounded. Modules shall be grounded separately to allow removal of a single module and without disrupting the grounding of other modules by means of properly installed wires, lugs, screws, bolts or other listed methods.
- (Sheet Metal Screws are not allowed – 250.8). 2014 NEC, Article 690.43
- Verify all exposed wiring is listed Sunlight Resistant. 2014 NEC, Article 690.31
- Verify all module interconnections connectors require a tool for opening. 2014 NEC, Article 690.33

DC Disconnect:

- If DC wiring is run through the building, a DC Disconnect shall be installed prior to the conductors entering the building or the conductors shall be installed in metallic raceways, mc cable or metallic enclosures from the point of entrance to the DC Disconnect and all conduits and J-boxes shall be labeled **“PHOTOVOLTAIC POWER SOURCE”**. 2014 NEC, Article 690.31(E)
- Verify proper and permanent labeling with the following information; **“PHOTOVOLTAIC DC DISCONNECT”** and **“WARNING ELECTRIC SHOCK HAZARD – DO NOT TOUCH TERMINALS – TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION”**. 2014 NEC, Article 690.17. And for ungrounded systems, **“WARNING – ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED”**. 2014 NEC 690.35(F).

- The DC disconnect shall also be properly and permanently labeled with the following Installed System Information:
 - (1) Rated Maximum Power-Point Current
 - (2) Rated Maximum Power-Point Voltage
 - (3) Maximum System Voltage & (4) Short Circuit Current. 2014 NEC, Article 690.53
- Note: Rooftop Micro-Inverter Systems have no DC Disconnect Switches. AC Disconnect shall be installed on the roof or at the Utility panel and be capable of being locked OFF. Installed System Information shall be installed on Utility Service Panel.

Grounding:

- Photovoltaic systems shall be grounded per 2014 NEC, Article 690.41
- The Utility Service Panel shall have a grounding electrode system. 2014 NEC, Article 690.47(A)
- Both the DC system and the AC system shall have a copper grounding electrode conductor and both electrode conductors shall be solidly bonded to the Utility Service Panel electrode system as well as any new grounding electrodes. 2014 NEC, Article 690.47(B, C), sized per Article 250

AC Disconnect and Utility Panel:

- The AC Disconnect shall be permanently identified with (1) Maximum AC Output, and (2) Operating AC Voltage. 2014 NEC, Article 690.54
- If DC Disconnect, Inverter, and/or AC Disconnect are not in the same location as the Utility Service Panel is located, a permanent Plaque shall be installed on the Utility Panel identifying the location(s) of the other equipment. 2014 NEC, Article 690.56
- Photovoltaic interconnection circuit breaker at the Utility Service Panel shall comply with 2014 NEC, Article 705.12

Testing

- ☑ Energize system and check display for output (wait time could be up to 5 min).
- ☑ Once output observed, turn off AC power at PV interconnection circuit breaker and verify inverter output drops to 0 watts. 2014 NEC, Article 690.61

Note: Rooftop Micro-inverter Systems have LED lights to show conditions or a Voltage tester can be used at load terminals of the circuit breaker/disconnect at the service panel.

Submission Checklist for Solar Water Heating Systems Up to 120 Gallons

General Requirements:

Please provide plans and or documents that clearly show the following:

1. Basic roof plan to scale, which shows the location and number of collector panels.
2. Solar Rating Certification Corporation (SRCC) listing, with diagram.
3. Manufacturer's installation instructions including attachment details for solar collectors to roof
 - Attachment detail must be specific to the type of roofing.
 - Must be designed by FL Registered Design Professional to withstand a wind load of 160 MPH.
 - Provide enough information to clearly verify the size, type and spacing of all fasteners

Structural Requirements:

1. Structural drawings and calculations may be required if:
 - The weight of the solar collectors exceeds 5 pounds per square foot.
 - Storage tank is in the attic, on the roof, or on a raised floor.

In the City of Stuart's commitment to sustainability all solar permits will be no fee permits and issued within 3 days of application.

Permit Application Link: <https://stuartfl.seamlessdocs.com/f/Construction>

Building Department Forms: <http://cityofstuart.us/284/Building-Forms-and-Checklists>