

Planning and Development Dept. - Permit Application Center

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Solar Panel Plan Review Checklist

A permit is needed to install solar panels. Depending on the type of installation, roof-mounted or ground-mounted, certain state licenses are required for the installer. Solar panel installations must meet current building codes as well as the City of Rock Hill Zoning Ordinance design standards.

For residential properties, any solar installation must be located on the rear elevation or otherwise configured to the degree practicable to have a minimal visual impact as seen from the street. Solar installations that are visible from the street must either be composed of building-integrated components (such as solar shingles) that are not readily evident, or be designed and mounted to match the shape, proportions, and slope of the roof.

Installation of solar systems on the roof of a structure adds weight to the structure commonly referred to as “dead load.” This additional weight must be accounted for to ensure that the building can safely bear the weight of the solar installation. Solar panels also may impose loads generated by seismic forces, and in some areas, by snow accumulation. Solar panels must also resist wind forces.

Before purchasing any solar panels you should consult with the City’s Permit Application Center and Utilities Department to determine if the type and location of the panels are feasible as well as if the system can be safely interconnected with the utilities grid.

Plan Submittal & Permit Process

Plans should be submitted to the Permit Application Center (PAC) at the address above and will be routed to the appropriate City departments for review. Plan review may take up to 10 business days. Plans may be submitted for review the following ways:

- **Electronically** - Electronic plan submission is preferred and allows for a faster plan review. Please combine all sheets into one .pdf file and add bookmarks listing the sheet number to each page. Once plans are approved a paper copy will be requested. Submit plans using the following –
 - Via Online Services website at www.cityofrockhill.com/onlineservices
 - Via FTP site (contact us for login info)
- **Paper** - Plans may be mailed or hand delivered to the address above. Two paper copies are needed.

Submit the following forms or information:

- Construction Plans and Electrical Plan
- Site Plan or Elevation Drawings
- Equipment Specifications and Cut Sheets
- Structural Analysis from SC licensed engineer for rooftop-mounted systems
- Solar Permit Application/ Electrical Permit application – this form should be completed by the licensed contractor
- Plan Submittal Form – this form tells us who to notify with plan review comments • HOA Approval letter, if applicable
- Utilities Forms:
 - Tri-Party Net Billing Power Purchase Agreement
 - Standard Interconnection Agreement for Customer-Owned Renewable Generation System
- Contract to purchase or lease agreement between homeowner and solar company
- Homeowners insurance/ liability insurance as required in Standard Interconnection Agreement – Residential \$100,000 per occurrence, commercial \$300,000 per occurrence.

Once the plans are approved you will receive an email. The plans and permit application will be forwarded to a permit technician to prepare the permit. The permit technician will contact you with the total permit fee and give further instructions.

Contractors are required to have a SC state electrical contractor's license and a City of Rock Hill business license. Inspections are required to ensure the installation complies with all applicable codes and the approved plans.

Plan Checklist

- Specifications and cut sheets for solar panels and all components including module, inverter, racking and mounts, and other major electrical components.
- Structural analysis - A structure specific structural analysis must be submitted by a SC licensed engineer with an evaluation of the structural components for the additional loads and rooftop-mounted photovoltaic systems need to resist components and cladding wind loads. The ICC specifies that a single unit must be used to establish the effective wind area.
- Must comply with the International Fire Code sections for Fire department access for venting.
 - **2015 IRC R324.3 Photovoltaic systems.** Photovoltaic systems shall be designed and installed in accordance with Sections R324.3.1 through R324.7.2.5 and NFPA 70. Inverters shall be *listed* and *labeled* in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.
 - **R324.3.1 Equipment listings.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703.
 - **R324.4 Rooftop-mounted photovoltaic systems.** Rooftop mounted photovoltaic panel systems installed on or above the roof covering shall be designed and installed in accordance with Section R907.
 - **R324.4.1 Roof live load.** Roof structures that provide support for photovoltaic panel systems shall be designed for applicable roof live load. The design of roof structures need not include roof live load in the areas covered by photovoltaic panel systems. Portions of roof structures not covered by photovoltaic panels shall be designed for roof live load. Roof structures that provide support for photovoltaic panel systems shall be designed for live load, L_R , for the load case where the photovoltaic panel system is not present.
 - **IRC SECTION R907 - ROOFTOP-MOUNTED PHOTOVOLTAIC SYSTEMS**
 - **R907.1 Rooftop-mounted photovoltaic systems.** Rooftop mounted photovoltaic panels or modules shall be installed in accordance with this section, Section R324 and NFPA 70.
 - **R907.2 Wind resistance.** Rooftop-mounted photovoltaic panel or modules systems shall be installed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).
 - **R907.3 Fire classification.** Rooftop-mounted photovoltaic panels or modules shall have the same fire classification as the roof assembly required in Section R902.
 - **R907.4 Installation.** Rooftop-mounted photovoltaic panels or modules shall be installed in accordance with the manufacturer's instructions.
 - **R907.5 Photovoltaic panels and modules.** Rooftop-mounted photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703 and shall be installed in accordance with the manufacturer's printed instructions

Electrical Plan

- Power riser diagram and panel schedules. Show location and size of electrical service, meter, disconnects, panels, transformer, etc. in accordance with NEC Article 690.5. The diagram must show the meter base separate from the panel. The meter should be shown schematically as self-contained with the service passing through meter. The PV connection cannot be made inside the utility meter base. Inverters should be equipped with integrated ARC-fault and rapid shutdown per NEC 690.5.
 - Add the following notes on the plans:
 - Add note, "A lockable disconnect shall be located within 6' of the utility meter on an exterior wall and accessible to utility personnel at all times."
 - Power riser must state "In the event of a Utility power outage the PV system will automatically disconnect from the utility." Maximum Voltage per NEC 690.7 (A-E) and circuit sizing NEC 690.8.
- Bidirectional meter will not be installed until all necessary Net metering Documentation has been submitted and approved by the Electrical Engineering Department.

- List the specific UL and IEEE certifications (UL 1741 & IEEE 1547) that apply for systems interconnecting with an electric utility provider on the one-line diagram.

Building Elevation Drawings for Roof Mounted Systems

- Provide an overhead elevation drawing or site plan drawing of the building showing the location of the panels on the roof with the street shown for reference and property lines. Include North arrow. Include the location of any utility lines.

The Rock Hill Zoning Ordinance has specific design standards for the installation of solar panels. Please see the sections below.

Article 6-800 (B) Residential Design Standards - Any solar installation must be located on the rear elevation or otherwise configured to the degree practicable to have a minimal visual impact as seen from the street. Solar installations that are visible from the street must either be composed of building-integrated components (such as solar shingles) that are not readily evident, or be designed and mounted to match the shape, proportions, and slope of the roof.

Site Plan for Ground Mounted Systems

- Site Plan showing the arrangement of the panels on the ground, north arrow, property lines and dimensions and distance from property lines, street name and location, existing home location with front and rear labeled.

The Rock Hill Zoning Ordinance has specific design standards for the installation of solar panels. Please see the sections below.

Article 4-400 (18) Ground-Mounted Solar Installations

In instances where roof-mounting of solar panels or solar thermal collectors is not practicable due to efficiency or aesthetic considerations, ground-mounting may be necessary. Due to differences in scale between residential and commercial/institutional/industrial solar systems, separate standards apply as follows:

(a) Residential

1. Must be located to the rear of the principal structure and screened from view from public streets.
2. Must be as close to the ground as practicable and in no case higher than the principal structure.
3. The mounting framework must be neutral in color or screened from view from surrounding residential properties.

(b) Commercial/Institutional/Industrial

1. Every effort must be made to completely screen the devices from view from public streets. In instances where complete screening is not possible, the devices must be screened and/or located as to have a minimal visual impact as seen from public streets.
2. Must be as close to the ground as practicable and in no case higher than the principal structure.
3. The mounting framework must be neutral in color or screened from view from public streets.

Allowable yard encroachments - Installations that are six (6) feet or less in height shall not project more than two (2) feet into a required yard, based on the required yards for accessory structures. Installations taller than six (6) feet may not encroach into required yards unless approved as a variance by the Zoning Board of Appeals.

